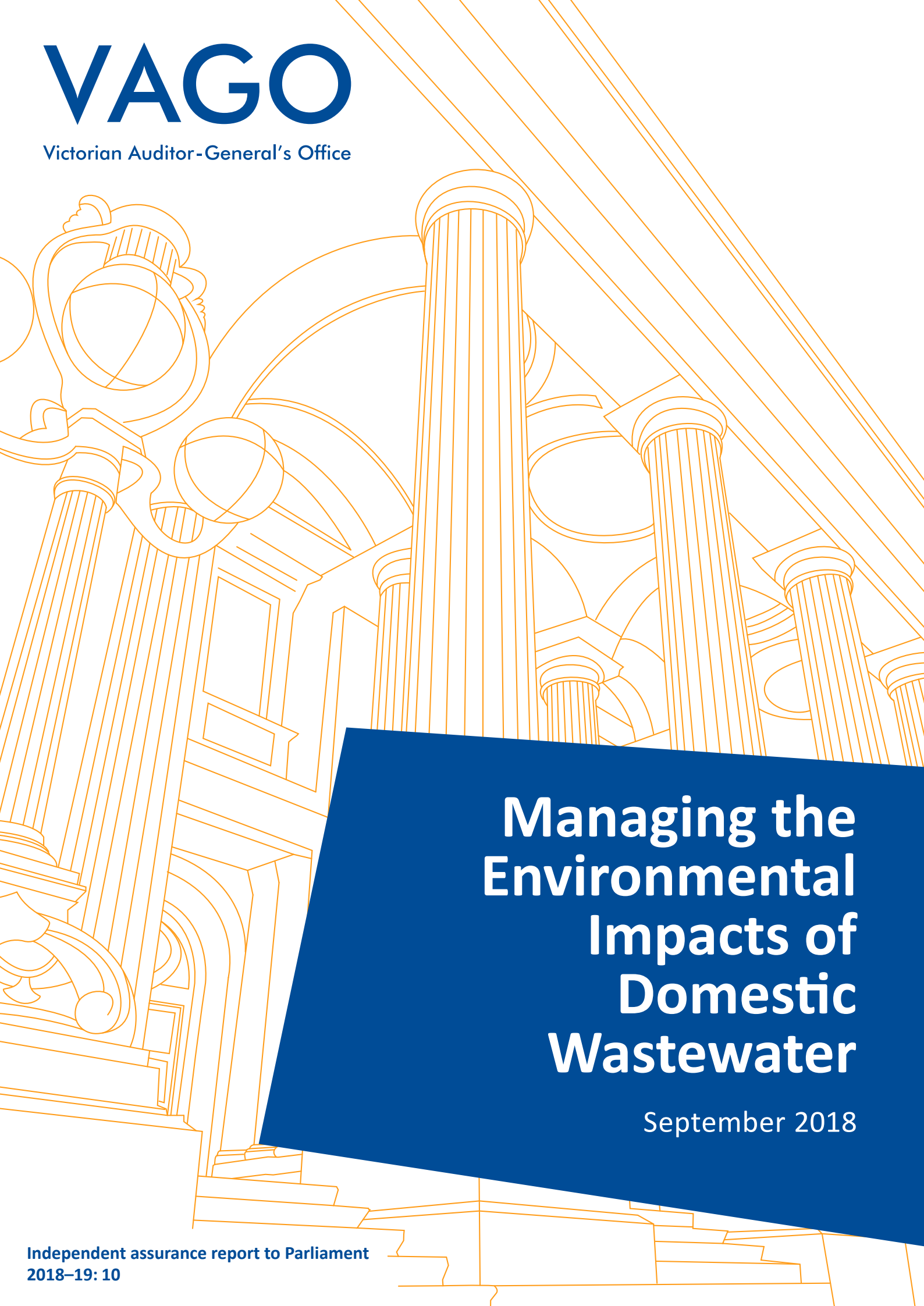
VAGO

Victorian Auditor-General's Office



Managing the Environmental Impacts of Domestic Wastewater

September 2018

Independent assurance report to Parliament
2018–19: 10

VAGO
Victorian Auditor-General's Office

Managing the Environmental Impacts of Domestic Wastewater

Independent assurance report to Parliament

Ordered to be published

VICTORIAN GOVERNMENT PRINTER
September 2018

PP no 440, Session 2014–18

This report is printed on Monza Recycled paper. Monza Recycled is certified Carbon Neutral by The Carbon Reduction Institute (CRI) in accordance with the global Greenhouse Gas Protocol and ISO 14040 framework. The Lifecycle Analysis for Monza Recycled is cradle to grave including Scopes 1, 2 and 3. It has FSC Mix Certification combined with 99% recycled content.

ISBN 978 1 925678 34 5

VAGO
Victorian Auditor-General's Office

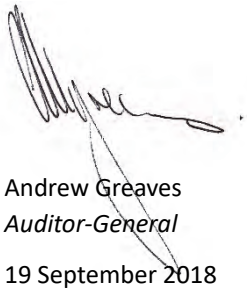
The Hon Bruce Atkinson MLC
President
Legislative Council
Parliament House
Melbourne

The Hon Colin Brooks MP
Speaker
Legislative Assembly
Parliament House
Melbourne

Dear Presiding Officers

Under the provisions of section 16AB of the *Audit Act 1994*, I transmit my report *Managing the Environmental Impacts of Domestic Wastewater*.

Yours faithfully



Andrew Greaves
Auditor-General

19 September 2018

Contents

Acronyms and abbreviations

2018 EP Amendment Bill	Environment Protection Amendment Bill 2018
CoP	code of practice
CSP	Community Sewerage Program
DELWP	Department of Environment, Land, Water and Planning
DSE	Department of Sustainability and Environment
DWMP	domestic wastewater management plan
EPA	Environment Protection Authority Victoria
EP Act	*Environment Protection Act 1970*
GIS	geographic information system
IWCM	integrated water cycle management
ISO 31000	AS/NZS ISO 31000:2009 *Risk management—Principles and guidelines*
LCA	land capability assessment
MAV	Municipal Association Victoria
MoU	memorandum of understanding
MPSC	Mornington Peninsula Shire Council
MW	Melbourne Water
P&E Act	*Planning and Environment Act 1987*
Peninsula ECO	Peninsula Early Connection Option
PH&W Act	*Public Health and Wellbeing Act 2008*
RME	Responsible management entity
SEW	South East Water
SEPP (WoV)	*State environment protection policy (Waters of Victoria)*
SoO	Statement of Obligations
VAGO	Victorian Auditor-General's Office
VMIA	Victorian Managed Insurance Authority
YRC	Yarra Ranges Council
YVW	Yarra Valley Water

Audit overview

Effective treatment and management of domestic wastewater—generated by kitchens, laundries and toilets—is integral to managing the public health and environmental risks posed by this waste. This is done either by treating the waste on site or by connecting to sewer.

Sewer is the network of pipes, pumps and equipment that transfers all sewage (including domestic wastewater) from homes and businesses to a central treatment plant.

Onsite systems are standalone systems designed to treat and contain waste within a property's boundaries—most commonly a septic tank.

Alternative services—the systems and servicing approaches, different to traditional sewer and onsite solutions, to treat and manage domestic wastewater in a way that provides equivalent environmental and public health outcomes to sewer.

Traditionally, sewering has been the preferred option for managing high-risk unsewered townships and properties. However, for remote townships or those with challenging topography or soils, providing sewer may not be the most cost-effective option. In these situations, water authorities must explore other wastewater treatment solutions that deliver similar environmental and human health benefits, such as contemporary onsite systems.

Councils oversee the installation, use and management of onsite systems by property owners. They must also ensure that property owners install an onsite system approved by the Environment Protection Authority Victoria (EPA). Owners are responsible for regularly servicing and maintaining the system so that their wastewater is treated and contained within the boundaries of their property.

In Victoria, the *State environment protection policy (Waters of Victoria)* (SEPP(WOV)) requires councils to develop a domestic wastewater management plan (DWMP) where they identify that an unsewered township is high risk due to either the number of unsewered properties or the risk posed by properties unable to contain their wastewater on site.

When developing their DWMPs councils must assess risks from properties unable to contain their wastewater on site, identify strategies to manage them and refer high-risk unsewered townships to water authorities so they can be connected to either a sewer system or an alternative service.

Water authorities are responsible for determining the most cost-effective, fit-for-purpose domestic wastewater treatment option for an unsewered high-risk township. They must consider community and other stakeholder views, costs, and environmental and health benefits in their decisions.

In our 2006 audit report *Protecting our environment and community from failing septic tanks*, we found that agencies were not effectively protecting the environment from poorly performing onsite systems. Since then policy has evolved, priorities for water authorities and community views have changed, and councils and water authorities have implemented a range of new initiatives to better understand and manage domestic wastewater risks. It is timely to examine this issue again to determine whether agencies are effectively protecting the environment and public health from poorly performing onsite systems.

In this audit, we focused on the management of domestic wastewater in two parts of metropolitan Melbourne where unsewered areas have been identified as high-risk—the Yarra Ranges and the Mornington Peninsula. We examined the performance of the two responsible councils, Yarra Ranges Council (YRC) and Mornington Peninsula Shire Council (MPSC), and the responsible water authorities, South East Water (SEW) and Yarra Valley Water (YVW). We also examined the regulatory and oversight roles of EPA and the Department of Environment, Land, Water and Planning (DELWP).

Conclusion

Since our 2006 audit, the responsible agencies have made some progress, but it is too little to sufficiently protect the environment and public health, and longstanding issues remain. The agencies are still not adequately managing the individual and cumulative risks and impacts from poorly performing onsite systems despite their attempts.

The ongoing issues are partly the result of poor leadership and limited collaboration between EPA and DELWP who are responsible for overseeing the regulatory framework that councils and water authorities use to manage the risks posed by poorly performing onsite systems. This has resulted in:

- an overly complex, onerous and duplicative regulatory framework
- a continued lack of clarity around roles and responsibilities
- regulatory tools that do not adequately drive property owners' compliance with planning permits and legislation
- councils not being held to account for their role in domestic wastewater management.

SEW and YVW's backlog programs for connecting high-risk unsewered townships to sewer have generally been successful. Both water authorities have implemented a range of innovative projects and actions to improve the timeliness and cost effectiveness of their services and sewer schemes, aimed at improving environmental and public health benefits. However, overall connection rates and the time taken to reach optimal sewer connections to mitigate risks vary significantly.

SEW and YVW are exploring alternative service options for suitable properties in high-risk areas to improve the cost effectiveness and timeliness of services while achieving environmental and health benefits equivalent to sewer. However, regulatory barriers and gaps in governance and approval processes are hindering the timely implementation of these approaches.

Findings

Managing risks

MPSC and YRC have limited assurance that they are effectively managing the risks posed by poorly performing onsite systems and that the environment and their local communities are protected from the potential threats from inadequately treated domestic wastewater.

This is because councils have not adequately addressed information gaps about onsite systems in high-risk unsewered townships and because of limitations in the councils' risk assessment processes.

Information gaps

MPSC and, to a much lesser extent, YRC have improved the way they collect the information they need to accurately assess risks from poorly performing onsite systems. However, they still do not have comprehensive and accurate information about all onsite systems. Significant gaps in councils' information include the:

- ongoing performance of onsite systems in safely treating and maintaining domestic wastewater on site
- number, location and performance of legacy systems.

Legacy systems are onsite systems installed before 1996 that do not have a permit, have a permit without adequate maintenance requirements or were approved to discharge domestic wastewater offsite.

Within both municipalities, legacy systems represent a significant number of the estimated total number of onsite systems—77 per cent in the Yarra Ranges and between 12 to 60 per cent of onsite systems across the 11 Mornington Peninsula townships where the age of onsite systems is known.

Without this information, neither council has been able to accurately determine which unsewered areas they should prioritise for sewering. Both councils identified these information gaps in background papers that informed their DWMP development—MPSC in 2007 and 2014, and YRC in 2010—and also documented actions to address them in their DWMPs.

YRC did not finalise its draft DWMP, so it has not implemented its proposed actions and, as a result, has made limited progress in improving the information and data it collects about its onsite systems. In contrast, MPSC has implemented or partially implemented most of the actions identified in its approved DWMP to improve the gaps in its information.

Risk assessment frameworks

Both councils have improved their risk assessment processes to identify high-risk unsewered townships and properties since our 2006 audit. However, they do not address all the elements of a better practice risk assessment process, as outlined in AS/NZS ISO 31000:2009 *Risk management—Principles and guidelines* (ISO 31000) and the Victorian Managed Insurance Authority's (VMIA) 2016 *Victorian Government Risk Management Framework Practice Guide*. As a result, their risk assessments are not as rigorous as they need to be.

MPSC and YRC do not comprehensively assess their controls for managing risks from poorly performing onsite systems, which means they cannot accurately assess the residual risks or the effectiveness of the controls.

Consequently, councils may refer properties in unsewered areas to water authorities for servicing when an onsite system is a feasible option. Water authorities must and do undertake their own risk assessments to ensure they are not subsiding properties to connect to sewer if they could safely treat wastewater on site and, as a result, imposing unnecessary costs on their customers because of councils' risk assessment processes.

All agencies, including the two councils and water authorities, use property size to measure the risk of whether a property can safely contain wastewater on site. Victoria's planning zone controls for low-density residential areas state that properties under 4 000 square metres must be connected to sewer because, theoretically, they cannot safely treat and contain wastewater on site. As a result, councils initially deem any unsewered property larger than 4 000 square metres as low risk. SEW does not generally prioritise properties greater than 4 000 square metres for servicing.

In 2015 and 2017, YVW's risk assessments of individual properties in high-risk unsewered townships showed that:

- at least 50 per cent of properties assessed by YRC as low risk—greater than 4 000 square metres—were discharging wastewater offsite
- 40 per cent of properties assessed as high risk—less than 4 000 square metres—were safely containing wastewater on site.

Consequently, YVW now uses more comprehensive risk measures to prioritise properties for sewering, including:

- property owners' understanding of their onsite system and their willingness and ability to maintain it in accordance with system and permit requirements
- the effectiveness of council controls for overseeing the performance of onsite systems and compliance with permit conditions and policies.

These two critical factors better allow agencies to determine whether a system and the property can safely treat and contain wastewater on site rather than relying on property size alone.

Environmental and health impacts

In our 2006 audit, we found that the impacts of poorly performing onsite systems on the environment and public health were unclear. This was because of the lack of water quality monitoring, and poor information collation and sharing of available data.

Water quality monitoring programs

Rigorous water quality monitoring programs can be correlated with information about onsite systems to help identify impacts on the environment and public health from onsite systems.

Since 2006, the four audited agencies have improved their water quality monitoring programs, particularly SEW and MPSC. Monitoring by YVW and YRC remains limited.

YVW monitored four townships it provided with sewer, only one of which is in Yarra Ranges, but it found it difficult to measure the effectiveness of its service because of the short-term, limited nature of its monitoring programs. It is undertaking extensive monitoring of its trial of alternative service options in Park Orchards and will use the results to inform the implementation of alternative services in the Yarra Ranges.

SEW and MPSC undertake a more comprehensive monitoring program of groundwater, drains and local waterways to assess the environmental impacts of poorly performing onsite systems on the Mornington Peninsula. These programs provide significant data to help SEW and MPSC prioritise townships for sewering and are a significant step forward. However, reviews show that improving the coverage and frequency of their sampling would allow both agencies to better determine the source of pollutants and extent of environmental and health impacts. SEW and MPSC must weigh the cost of monitoring programs against the risks posed by poorly performing systems.

Pooling of domestic wastewater from failing onsite system. Photo: South East Water.

There is limited data about health impacts from poorly performing onsite systems. This type of monitoring has typically been cost prohibitive and, until recently, the required technology was not available.

YRC is attempting to understand the specific human pathogen load in waterways from poorly performing onsite systems through a small-scale pilot study in an unsewered township in the Yarra Ranges. SEW has also conducted sampling on the Mornington Peninsula to determine human pathogen loads in two catchments but at fewer sampling sites.

There is still limited evidence that the audited agencies are using all available water quality data effectively in their risk assessments and prioritisation processes. This includes data from EPA, Melbourne Water (MW) and the Bureau of Meteorology.

MPSC and SEW have a collaborative working relationship, and YVW and YRC have both indicated the need to improve their collaboration. EPA and DELWP interact with councils and water authorities in a reactive manner. All the audited agencies must continue to work together to better share knowledge, data and costs involved in protecting environmental and human health from poorly performing onsite systems.

Exposure to potential risks and impacts

Poorly performing onsite systems in unsewered areas continue to expose communities to risk. This is because property owners and the two councils generally do not manage performance of onsite systems well, though MPSC is taking significant steps to rectify this in high-risk unsewered townships. The two councils do not assess how well the controls they have implemented are mitigating risks.

Permits for onsite systems

Permits for onsite systems are a key legislative tool for managing potential risks and impacts. Property owners apply to their local council for a planning permit to ensure an onsite system is compatible with the land use zone, permitted land uses and property size under the *Planning and Environment Act 1987* (P&E Act). Once the council has approved the permit, applicants must then apply to council for a permit to install, use and alter these systems under the *Environment Protection Act 1970* (EP Act). There are also associated approvals under the *Building Act 1993*.

The audited councils are effectively assessing applications for onsite systems under the P&E Act and the EP Act. However, councils find the approval process duplicative and onerous. Council resources for onsite systems mostly focus on approving systems, rather than monitoring their ongoing performance, resulting in greater risks to the environment and public health.

Permits require that onsite systems safely treat and maintain wastewater on site and that property owners ensure this through regular servicing and maintenance in accordance with the system's EPA approval certificate. However, this does not apply to:

- permits issued prior to 1996, before the implementation of the EPA code of practice—onsite wastewater management (CoP), when maintenance requirements were less stringent
- permits issued for systems before 1988, which were able to discharge offsite.

As it stands, permits are issued in perpetuity. This means that these older systems continue to operate with insufficient maintenance requirements and can continue to discharge wastewater offsite, posing a high-risk to the environment and public health.

Compliance inspections

The Municipal Association of Victoria's (MAV) 2005 model DWMP states that a council should develop an inspection program for all onsite systems to ensure they comply with permit conditions and other legislative requirements.

MPSC's compliance inspection program has significantly improved since our 2006 audit, with the introduction of maintenance and servicing inspections through its Septic Track system, risk-based compliance inspections and audits of three high-risk unsewered townships.

However, MPSC's compliance inspection program is still not systematic or rigorous. It has not implemented all the actions in its 2014 DWMP to address this issue, and its compliance inspections currently cover only 23 per cent of all onsite systems while its audits cover 3 per cent of onsite systems on the Mornington Peninsula. There is also no overarching compliance strategy outlining MPSC's approach, particularly for systematic follow ups to determine if property owners have rectified noncompliance and reported outcomes in a timely manner.

For onsite systems approved since 2007, MPSC is also improving its oversight of property owners' compliance with maintenance conditions in permits. Property owners must submit maintenance reports to MPSC through paper-based reports, or have contractors submit reports electronically through MPSC and SEW's Septic Track system. However, this only captures property owners who comply with their permit conditions for maintenance, not those who do not. MPSC's intention is that Septic Track will capture all property owners with onsite systems in the future.

YRC does not undertake any regular compliance inspections or audits to ensure that property owners meet permit conditions and that systems comply with legislative requirements. Council officers only inspect an onsite system after receiving a complaint.

Neither council has a comprehensive inspection program for townships where sewer is available but property owners have chosen not to connect. While properties over 4 000 square metres may be able to contain wastewater safely on site, inspections by MPSC and YVW have shown a significant number of these properties are not safely doing so.

Both councils indicated that the extent of compliance tasks for onsite systems exceeds available council resources, particularly given the unknown number of legacy systems in each municipality.

Education of property owners

MPSC and YRC, in 2007 and 2010 respectively, found the need to improve property owners' knowledge about how to properly manage their onsite systems. They noted that education programs were particularly important in the absence of regular inspections and tools to upgrade legacy systems.

Both councils—particularly MPSC—have improved their education for property owners through a wide range of activities. However, neither has an overarching community information and education strategy for onsite system maintenance and management, nor a formal evaluation mechanism to ensure that the community education program is reaching its audience and is effective.

Councils and water authorities also need to provide more information to property owners about the life cycle costs of onsite systems, including ongoing maintenance. This will allow property owners to compare the costs of onsite systems against the cost of connecting to sewer.

Provision of sewer to backlog areas

Water authorities can control potential risks and impacts from onsite systems in high-risk unsewered townships by connecting properties to sewer, but it is difficult to assess with any accuracy the real number of high-risk properties that water authorities should include in their backlog programs.

Councils do not have accurate information about onsite systems within their municipalities that would help them to assess individual and cumulative risks from poorly performing systems. Neither council has good annual records of the number of systems decommissioned, nor do the two water authorities provide them with up-to-date, timely records of properties that have connected to sewer.

Backlog programs

SEW and YVW have generally met the targets in their water plans for providing sewerage services through their backlog programs since 2008.

Sewering of high-risk unsewered townships is a staged process, and it can take more than 30 years from when a water authority first identifies a township as high risk. In 2005, the then Minister for Water wrote to the metropolitan water authorities requesting they accelerate the provision of sewer to backlog areas by 2025.

YVW developed its backlog program in 2005–06 to service 17 200 properties by 2025 across a range of municipalities. It revised the target to 15 742 in 2014. There are currently 7 482 properties in the Yarra Ranges on YVW's backlog program.

In 2005–06, SEW's backlog program aimed to provide 19 766 properties across MPSC with access to sewer. Approximately 16 900 of these properties were in the southern Mornington Peninsula. SEW accelerated the provision of sewer to these properties—the Peninsula Early Connection Option (Peninsula ECO)—in addition to its traditional backlog program.

Water authorities have a general target that 80 per cent of households connect to sewer within 10 years of having access to it.

Both water authorities have reviewed their backlog programs in response to challenges they have identified and, as a result, have taken a different approach or added projects to meet their Statement of Obligations (SoO), issued by the Minister for Water, and their water plan targets.

South East Water's Peninsula ECO project

Prior to Peninsula ECO, SEW met its 80 per cent connection rate target for all townships sewered for 10 years or more.

SEW's 2015 Peninsula ECO is an innovative $357 million project. It aims to provide sewer for 16 900 unsewered lots in four townships between Rye and Portsea. It has saved over $100 million through technological innovation and competitive procurement strategies compared to a traditional backlog roll out. For example, properties in Sorrento and Portsea can connect up to 13 years earlier than originally planned. A post-implementation review of the Peninsula ECO project noted that SEW delivered the project under budget and ahead of schedule.

Due to Peninsula ECO, SEW has now provided a sewer service to all properties on its current backlog program. SEW exceeded its target of 2 160 early connections by 2019. As at July 2018, 2 396 properties had connected. In the five years of Peninsula ECO being available, 16 per cent of all properties have connected early. However, SEW capped its targets for early connection to allow for the upgrade of the local treatment plant. SEW advises that the upgrade will commence in early 2019.

The extra cost of early connections through the Peninsula ECO project—between $3 317 and $9 260 for an early connection compared to $2 500 for the traditional backlog program—may deter some property owners. Within the Peninsula ECO area, 569 property owners who had applied to connect early cancelled their application, with one-third of these identifying cost as their reason.

While it is too early to see any impact on groundwater from the properties connected through Peninsula ECO, SEW plans further monitoring in three years when more properties have connected.

Overall, through both SEW's traditional backlog program from 2006 and the Peninsula ECO project, 6 401 properties—32 per cent of the total high-risk unsewered properties—have connected to sewer across the Mornington Peninsula.

YVW Community Sewerage Program

YVW reviewed its traditional backlog program in 2008. This indicated that providing blanket sewer to all 17 200 remaining unsewered properties was not likely to be delivered until 2045 due to the remoteness of townships, pushback from the community and difficult terrain.

YVW replaced its traditional backlog program with the Community Sewerage Program (CSP) to achieve environmental and health benefits sooner and more cost-effectively for both its customers and itself.

By January 2016, YVW had provided 3 863 properties with the opportunity to connect to sewer in the CSP's first 10 years. As of 2016, 2 945 of these properties—76 per cent—have now connected. YVW provided 140 properties in the Yarra Ranges with sewer, of which 77 per cent connected. To date, this means 19 per cent of YVW's total CSP properties, across all the municipalities it serves, have connected to sewer.

YVW currently has 10 900 high-risk unsewered properties still on its CSP, 7 482 of which are in the Yarra Ranges.

In contrast to SEW, YVW does not yet have an evaluation framework to measure the success of its CSP. It also does not have an ongoing water quality monitoring program.

Overall, due to the infancy of CSP, it is difficult to assess its success in providing properties with connection to sewer and delivering the intended environmental and public health benefits.

Alternative wastewater services

Water authorities are evaluating innovative approaches to manage domestic wastewater through alternative service options that will deliver equivalent environmental and health benefits to sewer more cost-effectively and efficiently and with the community's support.

South East Water

To date, SEW has found that sewer is the most cost-effective option for most of the townships in its backlog program. As SEW begins to investigate more remote, less densely populated townships—identified as high risk by MPSC—it plans to evaluate alternative service options. It has found that at least one township—Guys Hill—will need an alternative to sewer due to the prohibitive connection cost of providing sewer, at $50 000 for each customer. This is much higher than SEW's current benchmark of $6 500 to $9 500 per customer.

MPSC has also identified four high-risk unsewered townships—Arthurs Seat, Cape Schanck, Red Hill and Red Hill South—for SEW to consider including in its backlog program. SEW, with MPSC, will continue to monitor these townships until it can determine an appropriate and cost-effective servicing strategy.

Yarra Valley Water

YVW has undertaken significant technical, cost-evaluation and performance investigations for alternative service options for remote and challenging terrain within the Yarra Ranges.

These investigations have shown that the cost per property will be between $30 000 to $50 000 for sewer, which is shared between YVW and its customers. In some high-risk unsewered townships, the provision of sewer has been shown to have no extra environmental or human health benefits compared to upgrading or improving the management of onsite systems, which is quicker and costs less.

YVW's Park Orchards trial, undertaken with Manningham Council and the local community, explores alternative service options for 100 properties with poorly performing onsite systems. The trial is investigating a range of innovative approaches. Unanswered questions about who owns and maintains the ongoing performance of these systems should be answered during the trial.

The regulatory framework and its tools

Longstanding issues with the regulatory framework for domestic wastewater management continue to hinder effective management of poorly performing onsite systems by councils and water authorities. As a result, the framework does not adequately drive councils' and property owners' compliance with legislative obligations.

EPA and DELWP are responsible for the regulatory framework—DELWP for developing environmental policy, and EPA for overseeing its effectiveness and implementation, as stated in the 2010 signed agreement between these agencies. However, poor collaboration and central leadership by these agencies means longstanding issues with the framework and its tools, a number of which we identified in our audit in 2006, remain unaddressed including issues with land capability assessments (LCA), DWMPs and standard risk assessments.

For example, our 2006 audit recommended that EPA establish a suitable mechanism for assuring the quality of LCAs. EPA has not effectively addressed this—we reviewed 10 permit applications for onsite systems and found significant variance in the quality and accuracy of LCAs. An LCA is important as councils use it to decide if a property can properly contain treated wastewater on site. EPA's CoP recommends that a suitably qualified person complete the LCA, but this is not mandatory.

Councils told us that they have limited faith in the LCA process and, as such, YRC has developed its own tool—a water balance spreadsheet—to check the accuracy of LCA assessments but at an extra cost and effort to council.

EPA has also not acted to ensure, where relevant, that councils comply with the SEPP (WoV) requirement to develop a DWMP and that these plans are effective and implemented. A council's DWMP identifies risks from unsewered townships and, where applicable, councils refer high-risk areas to water authorities for potential inclusion in their backlog programs. The current 2005 proforma model for DWMPs, developed by MAV with advice from EPA, is outdated and should be reviewed to meet current risk management standards.

Of most importance is the gap in the regulatory framework and powers that hinder the audited agencies from addressing noncomplying legacy systems. These systems make up a significant proportion of the onsite systems in the two audited municipalities.

While elements of the regulatory framework have been reviewed, they considered the elements in isolation and did not improve its fragmentation, duplication or complexity. As a result, there is still a lack of clarity around roles, responsibilities, enforcement powers and processes which impedes the effective implementation of the framework by councils and water authorities.

The regulatory framework also complicates water authorities' investigation of alternative service options. Issues include:

- the regulatory framework's focus on sewer as the preferred servicing option
- lack of clarity around governance responsibilities for alternative approaches
- the lengthy and unwarranted approval processes that water authorities must undertake when implementing alternative approaches
- lack of clarity around water authorities' and councils' ability to charge fees for alternative approaches, if water authorities install and manage onsite systems, rather than property owners, as in the Park Orchards trial.

Enforcing connection to sewer

Section 147 of the *Water Act 1989* allows water authorities to force property owners to connect to sewer. However, difficulties in attributing environmental or health impacts to a specific onsite system, a lack of clarity around the use of the power, and perceived social equity issues associated with its use mean that both audited water authorities have been reluctant to use this power and do so rarely.

The Environment Protection Amendment Bill 2018 (2018 EP Amendment Bill), which passed in August 2018, includes a general duty of care provision that requires an individual or a business to take all reasonable measures to prevent an impact or harm from happening, rather than requiring proof of an impact. EPA advises that this will allow regulators to take action if property owners are not adequately managing their onsite systems.

The 2018 EP Amendment Bill removes some but not all of the barriers around the use of water authorities' enforcement powers. Regulators need to do further work to improve the use of this provision.

Reporting and accountability

Councils must plan effectively and report their results to ensure that their activities are transparent and that they are accountable to the community and other levels of government.

Councils do not report to EPA on their monitoring and compliance activities for onsite systems, as legislated under the EP Act. The required annual reports should document the number of onsite systems in use, the number inspected, and the number disconnected.

In 2002, EPA assessed this requirement as offering limited value for its oversight of councils' performance. Reporting is critical, however, to ensuring accountability, as is government's oversight of this reporting.

The 2005 model DWMP requires councils to report to council management and the community on their actions to assess and manage risks from onsite systems listed in their DWMP. EPA and DELWP have limited oversight of whether relevant councils—those with a large number of onsite systems or whose systems pose a significant risk to the environment and public health—complete a DWMP, review it periodically, or report annually on its implementation report. YRC, which received funding for the completion of its DWMP, did not finalise it. The new draft SEPP (Waters) proposes to address a number of these issues.

Similarly, property owners' reporting of maintenance activities to councils, as required by their permit conditions, is critical for demonstrating the performance of onsite systems. Councils need to oversee this reporting to hold property owners to account. MPSC's oversight of maintenance reporting is improving, but YRC does not require property owners to report on their onsite systems.

Water authorities need to report to councils the number of properties that connect to sewer in a timely way, so that councils can inspect high-risk unsewered properties systematically. Currently, YVW does not report sewer connections to YRC, while SEW reports connection numbers to MPSC every six months. Both councils advised that real-time reporting is required to ensure they can target their compliance inspections appropriately.

Integrated water cycle management

Government's 2016 plan *Water for Victoria*, administered by DELWP, and the 2017 urban water strategies developed by SEW and YVW identify integrated water cycle management (IWCM) as an important element for creating sustainable towns and cities. IWCM requires the consideration of how an integrated approach to stormwater, sewerage and alternative water services can benefit the community and the environment, rather than planning and managing different water and wastewater streams in isolation.

SEW and YVW are currently evaluating new place-based IWCM opportunities that deliver benefits for the community through collaboration with state government departments, local governments, and other water authorities.

Recommendations

We recommend that Mornington Peninsula Shire Council and Yarra Ranges Council:

1. consult with water authorities, the Environment Protection Authority, the Department of Environment, Land, Water and Planning, and other key stakeholders in undertaking integrated water cycle management planning processes for their municipalities so that the management of domestic wastewater risks is not planned in isolation of the management of stormwater, floods, alternative water supplies and drinking water supplies (see Section 5.8)
2. implement a rolling annual program of compliance inspections in high-risk properties and townships to bring onsite systems in line with permit and/or policy requirements and follow-up noncompliance (see Section 3.3)
3. develop and implement a data management plan to collect accurate information on the number, location and performance of onsite systems—data collection should be prioritised using a risk-based approach to identify areas for collection based on highest to lowest risk (see Section 2.2)
4. develop an education plan to inform property owners of their responsibilities and requirements to maintain and upgrade their onsite systems as required, which must include an evaluation framework to assess its effectiveness (see Section 3.5).

We recommend that Yarra Ranges Council:

5. finalise its domestic wastewater management plan by 2019 identifying high-risk unsewered townships for servicing in collaboration with Yarra Valley Water, the community and other key stakeholders (see Section 2.2).

We recommend that the Department of Environment, Land, Water and Planning and the Environment Protection Authority:

6. in consultation with councils, water authorities and other key stakeholders work together to review the regulatory framework, tools and guidance for domestic wastewater management to address issues and gaps including:
    - lack of clarity around roles and responsibilities, particularly for enforcement and power to force connection
    - systems approved prior to 1988 that allowed discharge of treated and/or untreated wastewater offsite or systems approved without a permit
    - the overlapping, onerous and duplicative approval system
    - governance and approval processes for alternative service options, including onsite installation and servicing
    - issuing ongoing permits for the use of onsite systems (see Section 4.2).

We recommend that the Department of Environment, Land, Water and Planning and the Environment Protection Authority work with councils to:

7. develop a standard risk assessment framework based on relevant Australian standards that includes comprehensive measures to assess both land capability, environmental factors and the ongoing performance of a system (see Section 2.3)
8. implement an accredited third-party approval system for undertaking land capability assessments and inspections for the installation, use and ongoing maintenance of onsite domestic systems, or introduce a mandatory requirement that a suitably qualified assessor undertakes these assessments (see Section 4.4)
9. review the model domestic wastewater management plan and ensure it is based on better practice risk assessment methodology outlined in the relevant Australian standards (see Section 2.2)
10. evaluate and implement a better practice model for the ongoing maintenance of onsite systems including examining:
    - risk-based maintenance models
    - use of levies to support third-party maintenance options
    - the requirement for property owners to gain an onsite system compliance certificate prior to sale of the property (see Section 3.3).

We recommend that the Department of Environment, Land, Water and Planning and the Environment Protection Authority work together to:

11. improve centralised leadership arrangements to effectively oversight the performance and implementation of the regulatory framework to manage the risks posed by poorly performing onsite systems (see Section 4.2)
12. oversee the development and ongoing operation of a steering committee to review issues and recommend solutions to improve the management of domestic wastewater (see Section 4.3)
13. explore legislative opportunities to ensure properties connect to sewer at the point of sale or have an onsite system compliant with legislative requirements (see Section 4.3).

We recommend that water authorities:

14. investigate and implement a process to report to councils on the number and locations of properties connecting to sewer within agreed time frames (see Section 4.2)
15. work together to share information around alternative approaches to service unsewered remote townships and those in difficult terrain (see Section 5.5)
16. together with councils, educate their customers and ratepayers about the life cycle costs of installing, operating and maintaining onsite systems, alternative service options and sewer as part of the decision-making process to determine the most cost-effective fit-for-purpose servicing option (see Section 5.6).

We recommend that Yarra Valley Water:

17. implement an ongoing monitoring program, in consultation with YRC and other relevant catchment agencies, to confirm areas prioritised by councils for servicing and to confirm that the servicing option implemented has reduced environmental and public health risks (see Section 2.4)
18. oversee the formation of a steering committee comprising key stakeholders to review the outcomes of the Park Orchards alternative service options trial to inform any future review of regulatory issues and the implementation of any proven alternatives (see Section 5.7).

Responses to recommendations

We have consulted with DELWP, EPA, MPSC, YRC, SEW and YVW, and we considered their views when reaching our audit conclusions. As required by section 16(3) of the *Audit Act 1994*, we gave a draft copy of this report to those agencies and asked for their submissions or comments. We also provided a copy of the report to the Department of Premier and Cabinet.

The following is a summary of those responses. The full responses are included in Appendix A.

The agencies welcomed the report's findings, accepted all recommendations to improve the management of domestic wastewater and developed detailed action plans to address the recommendations relevant to them.

SEW and YVW commented that the successful implementation of recommendations will result in continuous improvements in managing the risks associated with poorly managed domestic wastewater.

MPSC and YRC stated that the audit findings and recommendations will significantly assist them in addressing the long-term issues surrounding the management of onsite systems to safely treat domestic wastewater.

In response to the report's recommendations, DELWP and EPA have agreed to work together to oversee the improvement of domestic wastewater management in Victoria.

1 Audit context

Domestic wastewater is derived from bathrooms, kitchens, laundries and toilets. It includes human waste (containing pathogens), paper, soap, detergent residues and food scraps.

Effective treatment and management of this wastewater is necessary to protect public health and the environment. Wastewater is treated either through discharge to sewer or to an individual onsite system—most commonly a septic tank.

In the 1950s, metropolitan Melbourne grew rapidly, particularly in the eastern and southern suburbs, but the provision of sewerage infrastructure did not keep up. To overcome this, councils approved the use of onsite systems to manage wastewater and allow development to proceed. In areas where the density of development does not justify the cost of sewer—such as in regional and rural areas where properties are remote—wastewater is traditionally treated through onsite systems.

1.1 Risks from domestic wastewater

Risks from poorly treated and managed domestic wastewater fall into three categories:

- public health—drinking water and recreational water bodies contaminated with human pathogens from mismanaged wastewater
- environmental—polluted surface waters and groundwater which can cause significant harm to aquatic fauna and indigenous vegetation
- amenity—smell, unsightly discharges and seepage leading to reduced amenity and reduction in property values.

These risks arise where onsite systems:

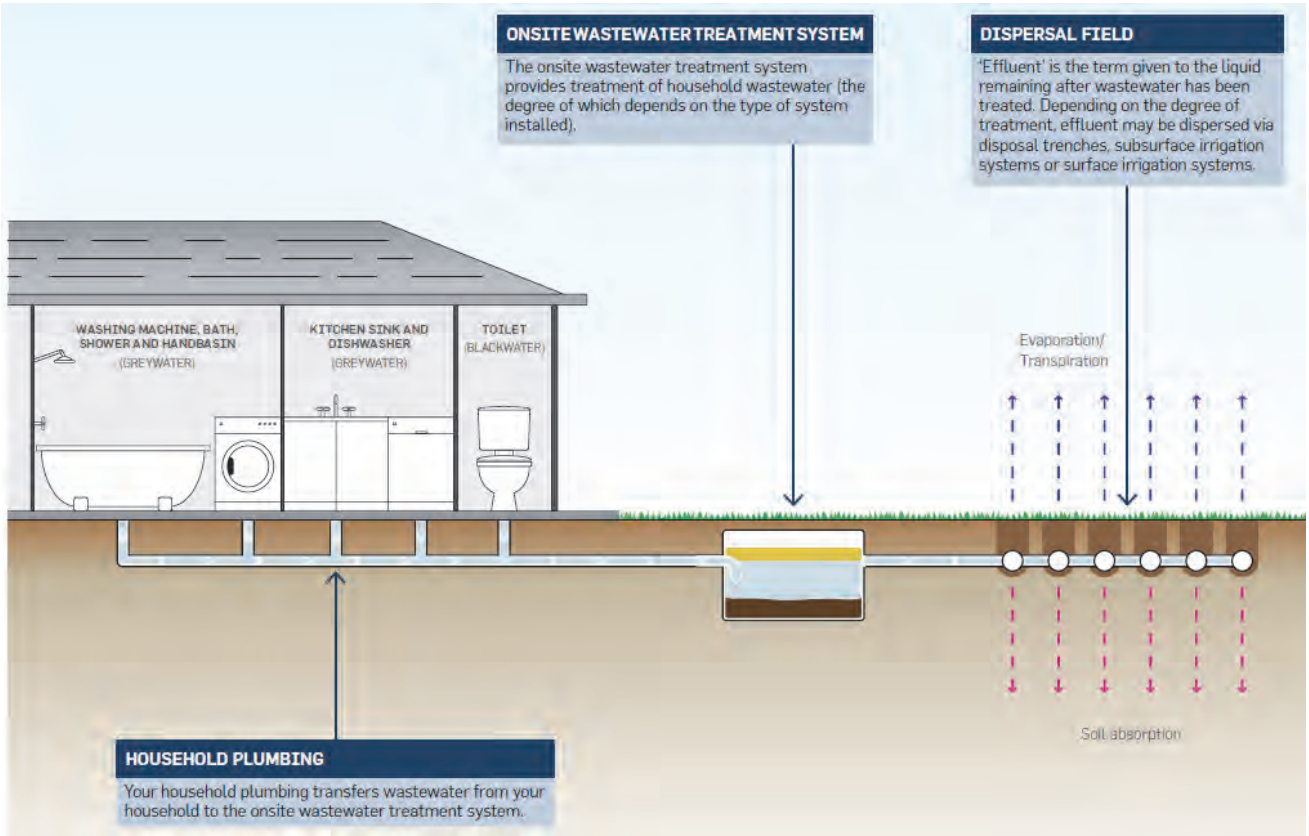
- were historically permitted to, and therefore still do, discharge to the stormwater system
- are used beyond their intended life span
- are not well maintained due to either a lack of knowledge and education about the system's requirements, or a property owner or tenant being unwilling to manage the systems
- were permitted on small subdivided allotments that could not contain wastewater within their boundaries because the area was prioritised for sewer that was never installed.

1.2 Managing risks from domestic wastewater

Onsite systems

Onsite systems, including septic tanks, receive all wastewater that flows from household use. Heavier solids sink to the bottom of the tank, which gradually accumulate as a sludge, while oils and grease float to the top and form a scum layer. The wastewater left in between is known as effluent and flows into drainage pipes to soak into the surrounding soil (known as the dispersal field), where it undergoes natural treatment processes—see Figure 1A.

Figure 1A
Diagram of an onsite system



Source: YVW.

Onsite systems can be an effective wastewater management option in areas where land allotments are large, soil types are suitable for wastewater disposal and treatment, and the topography is not overly steep. Owners must regularly maintain and de-sludge systems to ensure they treat wastewater effectively.

Sewer

Victoria's water authorities manage the sewer system—the network of pipes that conveys domestic wastewater from a property to an offsite centralised treatment plant.

Backlog sewer programs and their implementation

Since the 1970s, successive governments have established backlog programs to reduce the environmental impacts from poorly managed onsite systems by progressively increasing the number of properties connected to sewer. However, the programs that have been implemented have had varying success due to the unpredictable number of household properties that connect to the sewer once it is available and the time it takes for them to do this.

Today, two main backlog programs are in place across Victoria—one for metropolitan Melbourne and the other for regional Victoria. SEW and YVW manage the metropolitan program. Approximately 22 000 properties in the Yarra Ranges and in 30 000 properties across the Mornington Peninsula use onsite systems. Many of these systems are at high risk of failure due to their age or poor maintenance.

Government initially set a target date of 2045 for sewering metropolitan backlog areas. In 2005, the then Minister for Water asked water authorities to accelerate their backlog programs for completion by 2024–25. In response, SEW and YVW reviewed their backlog programs, to accelerate sewerage services to high-risk unsewered townships , reduce costs and provide better customer outcomes.

Backlog programs are a significant investment for water authorities—they will cost YVW and SEW almost $1 billion collectively by the time they are completed. Water authorities' customers fund most of this expenditure.

Our 2006 audit looked at the implementation of the sewer backlog program across the state. That audit found that it was not possible to conclude how effectively the metropolitan backlog programs had reduced the environmental, public health and amenity risks caused by failing septic tanks due to:

- poor information about the number of failing systems, which made it impossible to know whether, over time, backlog numbers (and therefore risks) are decreasing or increasing
- the lack of statewide or water authority targets and measures to assess the success of backlog programs
- poor connection rates.

Water authorities have made changes to their approaches to backlog programs and to servicing unsewered areas since our 2006 audit. However, as backlog programs progress, it is becoming more difficult to deliver cost-effective services supported by the community in high-risk unsewered townships.

Over the past decade, both YVW and SEW have explored a range of options for servicing remaining backlog areas, including providing access to sewer systems. In some areas, sewer is not the preferred solution of either the water authority or the community mainly due to cost.

In 2017, government policy adopted an IWCM approach, in which planning and management for domestic wastewater is considered in conjunction with stormwater management, flood management, and the provision of drinking and alternative water supplies.

Yarra Valley Water's backlog program review and implementation

In 2008, YVW, through its water plan planning processes, determined that, using its current approach, it would not be able to deliver its backlog program in the Yarra Ranges by 2025, as required by government. YVW faced increasing costs to deliver sewer to remote high-risk unsewered townships with undulating topography, and also encountered poor connection numbers and growing community pushback.

In response, YVW reviewed its approach and renamed its Backlog Sewerage Program as CSP. CSP is a $400 million program aimed at bringing cost-effective, fit-for-purpose sewerage services to 14 000 high-risk unsewered properties in the Yarra Ranges by 2030.

South East Water's backlog program review and implementation

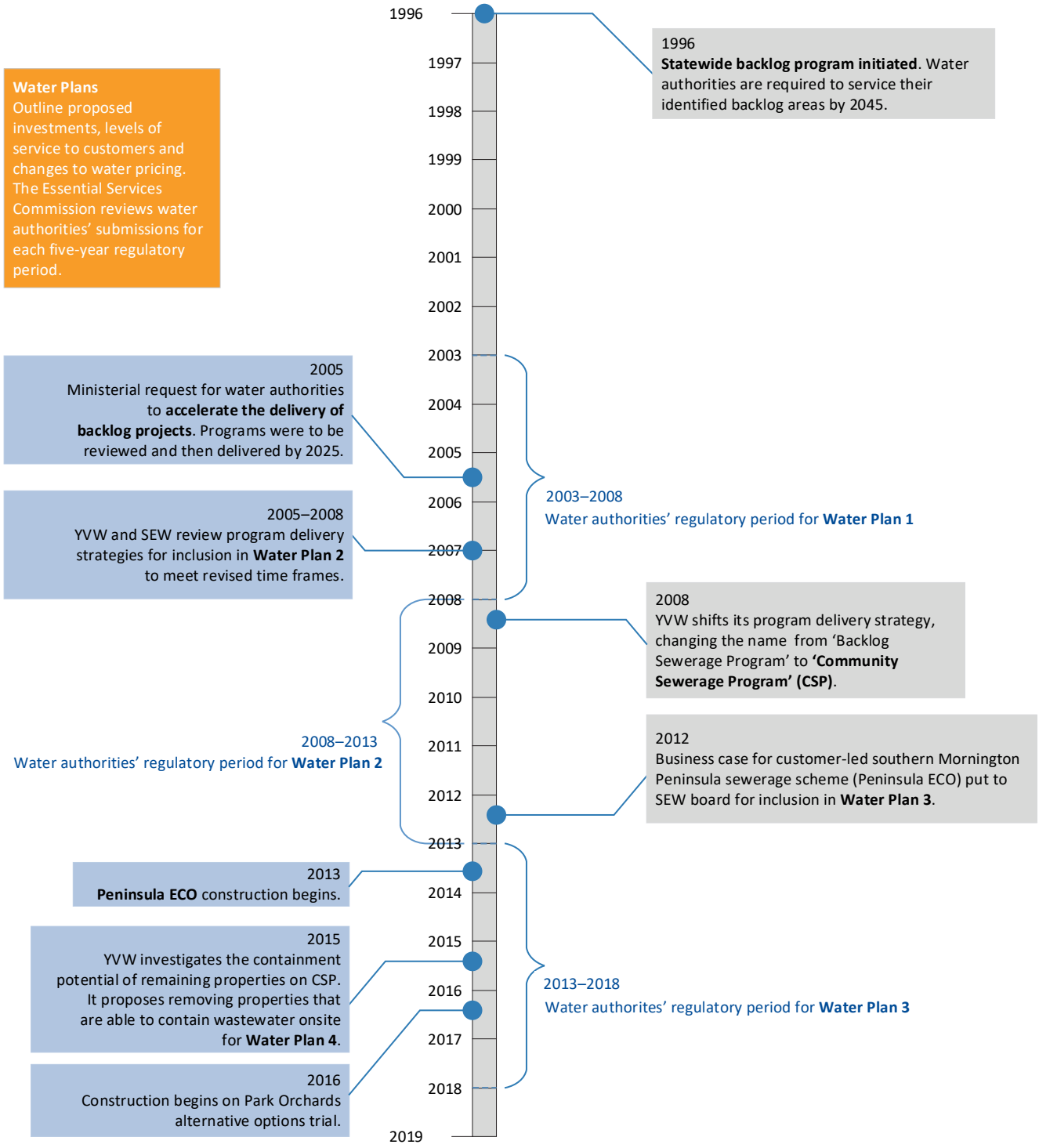
In 2008, SEW identified an opportunity to accelerate sewer services to approximately 16 900 properties in the high-risk unsewered townships on the southern Mornington Peninsula, which represented a large portion of its remaining backlog commitment.

In 2013, it started its three-year Early Connection Option (ECO) sewer backlog project in the southern part of the Mornington Peninsula, alongside its traditional backlog program rollout. This meant SEW provided sewer services to high-risk unsewered townships in this area significantly earlier than previously planned—in some cases, up to 13 years earlier—and offered customers voluntary early connections to the system with a customised fee to cover the associated costs. There is no obligation, however, for customers to connect through this program.

SEW is currently in the planning phase to determine how to service more dispersed and less populated high-risk unsewered townships outside of the Mornington Peninsula ECO area that have been identified by MPSC.

Figure 1B outlines the time line of sewer backlog programs in Victoria.

Figure 1B
Time line of the backlog program in Victoria



Source: VAGO.

1.3 Roles and responsibilities

Department of Environment, Land, Water and Planning

The Minister for Water, through DELWP, is responsible for the legislative framework for the water industry and the services it provides. Specifically, DELWP administers the *Water Act 1989* and the *Water Industry Act 1994* and water authorities' compliance with provisions in each Act.

DELWP is also responsible for developing state environment protection policies (SEPP) and administering the government's 2016 water plan, *Water for Victoria,* to protect and improve waterway and catchment health.

Environment Protection Authority Victoria

EPA administers the EP Act which regulates the installation and use of onsite systems. It has developed a CoP and guidelines to ensure that onsite systems meet the relevant Australian standards and that councils meet their responsibilities for administering the use and installation of onsite systems.

Councils

Councils are responsible for overseeing the installation, use and management of onsite systems. They must manage any public health and environmental risks from these systems.

Councils have several responsibilities under the EP Act and SEPP (WoV) to ensure the effective management of domestic wastewater. These include:

- identifying and addressing potentially polluting onsite systems discharging offsite
- approving the installation and use of onsite systems by issuing planning and septic permits that comply with policy and regulations
- ensuring that property owners comply with relevant permit conditions
- developing and implementing DWMPs to manage the risks associated with unsewered areas
- providing recommendations to the water authority on high-risk unsewered areas that require servicing.

Water authorities

The *Water Act 1989* establishes water authorities such as SEW and YVW.

SEW provides water, sewerage and recycled water services to more than 1.7 million residential, commercial and industrial customers from Port Melbourne to Portsea. YVW provides water and sewerage services to most of Melbourne's northern and eastern suburbs, from Wallan in the north to Warburton in the east.

Water authorities must develop a pricing submission (previously known as a water plan) every five years, which outlines their key corporate priorities, projects and service pricing. Pricing submissions must align with water authorities' SoOs, which requires them to develop cost-effective, fit-for-purpose sewerage servicing solutions for high-risk unsewered areas. The Essential Services Commission approves their submissions.

Property owners

Property owners are responsible for the performance of their onsite systems. They must ensure it complies with permit conditions issued by council and EPA's CoP for onsite systems. This involves undertaking regular maintenance and de-sludging their system.

1.4 Regulatory framework

Environment Protection Act 1970

The EP Act is the key Act within the regulatory framework that governs the treatment of domestic wastewater. It provides EPA with the authority and mandate to implement policies, tools and guidelines that regulate the use of onsite systems and documents the roles and responsibilities involved in implementing them.

The EP Act sets out a two-tiered approval process that covers installation and use of onsite systems. For systems that process up to 5 000 litres a day, the EP Act allows:

- EPA to approve onsite system types that meet the relevant Australian standards
- councils to issue permits to property owners for the installation, use, maintenance and monitoring of these systems.

Furthermore, the EP Act provides councils with the power to enforce compliance with council permit conditions. Councils can fine property owners for not maintaining their onsite systems, but they are not able to require property owners to maintain or upgrade their system, or force them to connect to sewer.

Parliament passed the EP Amendment Bill in August 2018. The Bill reforms the EP Act by modernising its provisions for onsite systems and introducing the general environmental duty of care. This is a preventative duty and puts a positive obligation on duty holders to proactively minimise risks of harm to human health and the environment from pollution and waste, rather than regulators having to wait for pollution to occur before they can intervene.

Planning and Environment Act 1987

The P&E Act requires councils to consider environmental issues when assessing land development applications to install onsite systems in unsewered areas. This includes assessing:

- any significant effects that the use or development may have on the environment, or that the environment may have on the use or development
- any strategic plan, policy statement, code or guideline that has been adopted by a minister, government department, public authority or municipal council.

The P&E Act states the objectives for wastewater management for all land use applications is to provide a wastewater system that is adequate for the maintenance of public health and the management of domestic wastewater in an environmentally friendly manner.

It also states that wastewater systems must be:

- designed, constructed and managed in accordance with the requirements and to the satisfaction of the relevant water authority and EPA
- consistent with any relevant approved DWMP.

Water Act 1989

The *Water Act 1989* identifies a broad range of roles and responsibilities that water authorities hold in ensuring the efficient and effective running of Victoria's water and sewerage systems. It states that water authorities must identify and plan for current and future community sewerage needs.

The *Water Act 1989* also gives water authorities powers in relation to onsite systems that include:

- the authority to enter land to inspect and measure any system
- requiring connection to sewerage if consultation with the EPA has occurred and the authority is confident that the environmental and/or public health risks will be remedied
- requiring property owners to carry out repairs or maintenance on a system if a written notice is served by a water authority.

Public Health and Wellbeing Act 2008

The *Public Health and Wellbeing Act 2008* (PH&W Act) imposes specific responsibilities on councils to protect public and environmental health. This includes requiring them to remedy, as far as is reasonably practical, all nuisances in council boundaries related to wastewater. Currently, councils use the nuisance provisions to require property owners to upgrade their onsite systems which requires a new permit application. If the council does not approve the application, the only option is for the property owner to connect to sewer, where it is available.

1.5 Policy framework and guidelines

State environment protection policy (Waters of Victoria)

State environment protection policies are statutory policies that identify beneficial uses of the environment that need to be protected. They also identify objectives for the protection of those uses, and plans and programs to achieve them.

Clause 32 of the SEPP (WoV) relates to onsite domestic wastewater management and details the roles and responsibilities of property owners and local councils in protecting Victoria's waters and groundwater from wastewater.

SEPP (WoV) requires all households that have access to sewer to be connected to it, unless wastewater can be retained on site in accordance with guidance provided by the EPA.

SEPP (WoV) and State environment protection policy (Groundwaters of Victoria) are currently under review and are expected to be combined in the new State environment protection policy (Waters). This combined SEPP is expected to strengthen existing provisions by requiring councils to:

- develop DWMPs if they have onsite systems within their municipality
- consult with water authorities when developing DWMPs
- review and update DWMPs every five years or more often
- audit the progress of DWMP implementation every three years and publish the report on its website.

These proposed amendments align with the recommendations of our 2006 audit.

EPA's code of practice for onsite wastewater management

EPA's 2016 CoP includes standards and guidelines that ensure that the management of onsite wastewater protects the environment and public health and uses resources efficiently.

The CoP defines the standards—informed by relevant Australian standards—that onsite systems and their treatment of wastewater must comply with, and provides guidance on the types of systems that can be installed.

The CoP outlines the powers and responsibilities of councils. These include:

- assessing the suitability of land for onsite wastewater management and ensuring that permits are consistent with CoP guidance
- refusing to issue a permit if the site is unsuitable for containing wastewater onsite or if the type of onsite system is not approved by EPA.

The CoP also outlines the legal obligations of property owners. They must:

- manage their onsite system in accordance with council permit conditions
- demonstrate to council that the proposed onsite system will operate sustainably on the property
- obtain a permit from council before installing, altering or using an onsite system.

The implementation plan for the draft SEPP (Waters) proposes a review of the CoP.

Statement of Obligations

The Minister for Water may make and issue a SoO to a water authority under the *Water Industry Act 1994.* The SoO sets out a broad range of obligations and guiding principles and potentially specific obligations for individual water authorities.

The minister approved the most recent SoOs in 2015. They state that water authorities must ensure their sewerage services are cost-effective and fit for purpose and that customers' circumstances and views must be central to water authority considerations. In doing this, the service water authorities provide must effectively protect the environment, amenity and public health.

Domestic wastewater management plans

A council must develop a DWMP, in accordance with SEPP (WoV), if it has a large number of onsite systems or where onsite systems pose a significant risk to the environment and public health. The DWMP must include the development, prioritisation, implementation and review of programs needed to protect public health, the environment and local amenity from domestic wastewater. SEPP (WoV) recommends that councils consult with water authorities, EPA and the local community during the development of these plans.

In 2005, MAV developed a model in conjunction with EPA to guide councils in developing DWMPs. The model requires that councils gather relevant information around onsite systems for each unsewered area or town and undertake a public health and environmental risk assessment for each area.

1.6 Why this audit is important

We last examined the management of domestic wastewater in 2006. Our audit report *Protecting our environment and community from failing septic tanks* identified a clear need to improve the:

- backlog programs' planning and prioritisation processes
- legislation regulating onsite system management
- reporting and accountability mechanisms.

Our recent discussions with key stakeholders raised concerns about the lack of progress in implementing the audit's recommendations. Water authorities also raised concerns about the success of sewer backlog programs, their cost and property owners' inconsistent rate of connection to sewer.

It is now timely to re-examine whether councils and water authorities have improved their management of domestic wastewater, particularly given the significant revenue spent and new initiatives designed to better manage domestic wastewater.

1.7 What this audit examined and how

Our objective for this audit was to determine whether onsite domestic wastewater is effectively managed to prevent environmental impacts.

We examined the management of domestic wastewater in the Yarra Ranges and the Mornington Peninsula—two areas of metropolitan Melbourne with high-risk unsewered townships. The audit focused on the performance of the two relevant councils, YRC and MPSC, and the responsible water authorities, YVW and SEW, in managing the risks from poorly performing onsite systems.

We examined councils' oversight of onsite systems in their municipalities and water authorities' effectiveness in servicing high-risk unsewered areas in line with their obligations. We also looked at the regulatory and oversight roles at EPA and DELWP in identifying and managing risks from onsite systems, including their progress in implementing the recommendations from our 2006 audit.

We conducted our audit in accordance with section 15 of the *Audit Act 1994* and ASAE 3500 *Performance Engagements*. We complied with the independence and other relevant ethical requirements related to assurance engagements. The cost of this audit was $450 000.

1.8 Report structure

The remainder of this report is structured as follows:

- Part 2 examines the identification and assessment of risks in unsewered areas
- Part 3 looks at monitoring the compliance of onsite systems with permit and regulatory requirements
- Part 4 examines the effectiveness of the regulatory framework in managing risks from onsite systems
- Part 5 looks at water authorities' programs for servicing high-risk unsewered townships.

2 Identification and assessment of risks in unsewered areas

The key risks from poorly treated and managed domestic wastewater fall into two categories—public health and environmental.

SEPP (WoV) states that councils should use a DWMP to identify and refer high-risk unsewered townships to water authorities for inclusion in their backlog programs. To effectively identify and assess risks to public health and the environment from poorly performing onsite systems, councils need to:

- collect and analyse comprehensive information on the number, location and performance of onsite systems and the impacts of poorly performing systems
- have an effective risk assessment framework.

Councils' identification and assessment of risks should follow the principles outlined in the risk management standard ISO 31000.

2.1 Conclusion

Both councils, particularly MPSC, have made advances in assessing public health and environmental risks from onsite systems in unsewered areas since our 2006 audit. MPSC continues to work well with SEW to reduce gaps in its information about high-risk unsewered townships and to improve its assessment and inspection processes for poorly performing onsite systems.

However, both councils are still unable to accurately and comprehensively assess the risks from high-risk unsewered townships. Gaps remain in the information they hold about the performance, location and age of systems and their impacts on public health and the environment. This means the councils cannot provide assurance that they are effectively identifying and managing poorly performing systems and that domestic wastewater is not posing an unacceptable risk to the environment and public health.

2.2 Councils' information for identifying and assessing risk

Gaps in information and data

Recent council documents—MPSC's 2007 and 2014 DWMP background papers and YRC's draft 2010 DWMP—found that the information councils use to assess risks from onsite systems was incomplete. As a result, the councils could not accurately identify and prioritise high-risk unsewered townships. Through their DWMP processes, both councils stated that there was an immediate need for the systematic collection, analysis and verification of information about domestic wastewater systems.

Legacy systems

There are significant gaps in the information collected by both councils around the performance of onsite systems installed before 1996, which are a significant percentage of all systems in each municipality:

- In 2010, YRC estimated 77 per cent of its systems were installed before 1996—many of which are legally allowed to discharge treated and, in some instances, untreated wastewater offsite.
- MPSC identified that, in the 11 townships where it knows the age of onsite systems, between 12 and 60 per cent of them are more than 25 years old, and that the total number of onsite systems discharging offsite or to groundwater is unknown.

Neither council has a good understanding of the performance of these older systems, and YRC is also unclear about the location of them within the municipality.

Offsite domestic wastewater discharge. Photo: South East Water.

Current systems

The maintenance of onsite systems is critical to ensure they are treating domestic wastewater effectively. By containing waste within the property boundaries, the risk of offsite discharges is reduced.

MPSC has focused on collecting more comprehensive information about current onsite systems and their maintenance. YRC has made limited progress in improving its information about current onsite systems.

The two councils approved the installation of approximately 770 onsite systems between 2013 and 2018. YRC has no information recorded about the maintenance requirements of these systems or whether property owners are maintaining them.

MPSC collects maintenance information through reports on onsite systems installed after 2007. However, this only occurs when property owners engage a contractor to maintain their systems in compliance with their permit conditions. Figure 2A describes the innovative approach MPSC uses, in conjunction with SEW, to capture information about the maintenance and condition of onsite systems.

Figure 2A
MPSC and SEW's Septic Track IT application

Memorandum of understanding (MoU) between MPSC and SEW

Since the mid-2000s, MPSC has developed a collaborative and productive relationship with SEW. Together, they recognised the importance of monitoring the performance of onsite systems across the shire.

In 2018, MPSC and SEW signed an MoU to continue funding a wastewater management officer until 2020, to monitor the compliance of onsite systems with permit conditions and undertake compliance audits of systems in high-risk areas. This position is funded by an additional treatment charge that property owners pay for the servicing of their systems by an approved contractor.

Septic Track IT application

The development of the Septic Track IT application is a better practice model for collecting data about the maintenance of onsite systems.

Since 2007 MPSC's permits have required property owners to engage a contractor to service and maintain their systems and submit a report. Initially these reports were paper-based and not recorded in any IT system.

MPSC and SEW implemented Septic Track in late 2016 to electronically collect and record the information previously submitted through paper reports. Since October 2016, contractors using Septic Track have captured information on 4 946 onsite systems. The system provides MPSC with daily activity summaries for ongoing tracking and associated follow-up for systems rated as unsatisfactory.

MPSC still receives more than half the reports from contractors in paper format. It recently started entering the information from these paper reports into Septic Track for processing. If MPSC continues with this process, available compliance data will increase over time.

MPSC advises that it intends to use the Septic Track system to capture data on all unsewered properties in the future.

Source: VAGO.

MPSC has an annual compliance audit program to inspect and monitor the performance of onsite systems. To date, it has audited approximately 1 381 of its total systems (just over 3 per cent). Since 2015, it has conducted audits of 205 properties in three high-risk unsewered townships, but MPSC officers could only access 129 of these (63 per cent). MPSC also undertook 694 onsite compliance inspections and 4 946 Septic Track inspections between July 2017 and June 2018, which overall covers approximately 23 per cent of their total onsite systems.

In contrast, YRC only inspects the performance of an onsite system if it receives a third-party complaint or an application by the property owner to develop the property.

While there are considerable improvements evident at MPSC, both councils still have significant gaps in the information they hold about current onsite systems and require a systematic approach to address this.

Data management processes

Both MPSC and YRC have improved their processes for managing the information they collect about onsite systems. However, these data management systems do not currently record all information, which limits the councils' ability to accurately identify gaps, inform management actions and improve occasional and periodic reporting.

MPSC has used data management systems to collate information on the location, type, and permit conditions of onsite systems since 2000, and has collected information on their maintenance through its Septic Track system since 2016. MPSC has recorded 9 691 of its permits (40 per cent) and it uses this data in its geographic information system (GIS). MPSC has decided not to digitise the remaining 14 765 permits (60 per cent of its total), some of which are archived paper files, while others are non-existent.

YRC has recorded permit information in its data management system for 3 300 properties of its permits (15 per cent) and maps this data using its GIS system. YRC is currently digitising the remaining 18 700 permits stored in archived paper files, however these contain limited information.

Data management strategies

MPSC is aware of the limitations of its information and the resources needed to address these gaps. It has documented these in its DWMPs. In 2007, MPSC developed a data management strategy to improve the collection and management of its data. Actions identified include:

- upgrading or modifying existing IT systems to store and report additional data—this was delayed to allow alignment with future council-wide IT system upgrades
- merging existing onsite system databases—reported complete in 2014
- implementing a system for collecting and recording permit compliance and audit information—MPSC implemented the Septic Track IT system in late 2016
- developing direct links with other IT systems including wastewater agencies, SEW and treatment plant manufacturers—partially completed.

YRC does not have a data management strategy. It is aware of the limitations of its information about onsite systems, although these are not comprehensively documented. It has not developed an approved DWMP due, in part, to the absence of this information. YRC is employing a waste management officer whose role will be to document known data gaps, identify what data the council needs to identify and assess risks posed by onsite systems in unsewered areas, and finalise its DWMP.

2.3 Assessing domestic wastewater risks

Domestic wastewater management plans

In 2005, both councils received funding to develop a DWMP from the Country Towns Water and Sewerage Supply Program, part of the state government's *Our Water Our Future* action plan.

YRC developed a background paper for its DWMP in 2006 and a draft plan in 2010. Councillors did not approve the plan due to the lack of resources to implement the identified management actions. YRC plans to finalise its plan in 2019. Without an approved DWMP, the process for identifying and assessing high-risk unsewered townships for referral to YVW lacks rigour.

MPSC's DWMP was approved in 2007 and is currently under review for the second time since then. In addition, MPSC has developed an implementation plan and regularly reviews and reports on the progress of this plan to both council and the public.

Risk assessment processes to inform DWMPs

Since our 2006 audit, both MPSC and YRC have developed more comprehensive risk assessment processes. However, these do not address all the elements of a better practice process as outlined in ISO 31000 and VMIA's 2016 *Victorian Government Risk Management Framework Practice Guide*—see Figure 2B.

Figure 2B
Councils' application of key risk assessment steps from ISO 31000 and VMIA's *Victorian Government Risk Management Framework Practice Guide*

Risk assessment step	MPSC	YRC
Risk context	✓	✗
Data sources	~(a)	~(a)
Assumptions	✓	✓
Uncertainty	✓	✓
Risk description	✓	✓
Risk analysis	~(b)	~(b)
Used risk tolerance	✗	✗
Risks prioritised for treatment	✓	✓
Treatment options evaluated	✗	✗

(a) Partly, because the councils' data sources are not comprehensive.
(b) Partly, because the councils' measures for analysing risk are not comprehensive.
Source: VAGO.

MPSC documented its risk assessment methodology in its 2007 and 2014 DWMP background papers. This methodology provides an overall risk rating for the potential impacts from domestic wastewater to each stormwater catchment and their townships, in accordance with MAV's 2005 model DWMP. In conjunction with SEW, MPSC uses groundwater, local waterways and drain sampling programs to identify and prioritise high-risk unsewered townships for inclusion in SEW's backlog program.

YRC used its 2011 Reprioritisation Report, informed by its 2010 draft DWMP, to document its risk assessment process and ratings, before referring the high-risk unsewered sub-catchments to YVW for review and prioritisation. YRC does not specifically identify and refer high-risk unsewered townships as per MAV's 2005 model DWMP. It does not collaborate with YVW on this process, which means YVW must duplicate YRC's work to confirm the accuracy of its referral and to prioritise townships for servicing. This duplication consumes significant resources and YVW indicated its preference to work with YRC to jointly undertake these processes.

Risk assessment issues

The accuracy and comprehensiveness of both councils' risk assessment processes are hindered by:

- gaps in information about onsite systems in high-risk unsewered townships
- gaps in the risk assessment measures used to assess the ongoing performance of systems and the willingness or ability of property owners to maintain their systems
- the lack of an assessment of the performance of the controls councils use to manage identified risks.

Councils do not accurately assess individual and cumulative risks from properties and high-risk unsewered townships due to gaps in their information around the number, location and performance of onsite systems.

Both councils have not regularly assessed whether the controls they put in place to mitigate the identified risks from all onsite systems are effective. For example, they do not:

- assess whether property owners meet the maintenance conditions of their permits, except for the onsite systems that MPSC assesses through its Septic Track reports
- regularly evaluate the effectiveness of their programs to educate property owners about the ongoing maintenance and performance requirements of their onsite systems.

Without this, councils cannot have an accurate understanding of the residual risks.

Councils' risk assessments broadly identify high-risk unsewered townships or sub-catchments based on whether properties can contain wastewater on site and, if they cannot, potential impact on the surrounding environment. However, councils' risk assessments do not assess:

- property owners' understanding of their onsite system and their willingness and ability to maintain systems in accordance with the system and permit requirements
- the effectiveness of councils' oversight of the performance of onsite systems
- the risks posed by properties outside of high-risk unsewered townships or sub-catchments in their municipalities.

Both councils and water authorities use property size as a measure to assess a property's ability to contain wastewater on site. SEW requires a property to be under 4 000 square metres for it to be included in its backlog program. The planning controls for low-density residential zones indicate properties under 4 000 square metres should be connected to sewer as they generally cannot treat and contain waste on site. As a result, councils initially deem any property larger than 4 000 square metres as low risk and unsewered properties less than 4 000 square metres as high-risk, but this rating may vary based on surrounding environmental sensitivities.

However, using this measure on its own can be misleading. In 2015 and 2017, YVW assessed individual properties in high-risk unsewered sub-catchments identified by YRC. These assessments showed that approximately 50 per cent of properties deemed to be low risk (greater than 4 000 square metres) were discharging wastewater offsite and 40 per cent of properties less than 4 000 square metres were containing wastewater on site. Risk assessments that heavily weight this measure are therefore questionable, particularly when the assessment process does not evaluate the willingness and ability of property owners to regularly maintain their systems.

Councils may be over- or under-referring unsewered properties for servicing by water authorities as the risk assessments they rely on are based on area rather than individual properties and are not comprehensive.

Actions to improve assessments of high-risk townships

MPSC's DWMP identifies a range of management strategies to improve its understanding and accurate assessment of risk from onsite systems. MPSC has implemented a range of these actions, however its 2014 DWMP found that limitations in its risk assessments were generally the same as those identified in 2007—see Figure 2C. This indicates that the implementation of these actions has not been fully effective in addressing the issues.

Figure 2C
Actions from MPSC's background papers for its 2014 DWMP and our assessment of their status

Actions	Status
Develop an accurate and complete onsite system profile.	Partially addressed
Review and expand existing policies to improve the management of domestic wastewater.	Partially addressed
Develop activities to ensure compliance with permit conditions, particularly in identified high-risk areas.	Partially addressed
Ongoing education of land owners with onsite systems.	Addressed
Investigate, with other agencies, the overall impact that systems have collectively on the receiving environment, including groundwater.	Addressed
Review DWMP management actions within 12 months as the development of a complete onsite profile will need to be analysed.	Not addressed within 12 months, although being reviewed in 2018

Source: VAGO based on data provided by MPSC.

YRC also identified a range of management actions in its draft 2010 DWMP to better assess and manage risks associated with its onsite systems. It did not implement these actions because council never approved the plan. As a result, most of the issues in its 2010 risk assessment and 2011 Prioritisation Report remain unaddressed—see Figure 2D.

Figure 2D
Key findings from YRC's background papers for its draft 2010 and 2014 DWMPs and our assessment of their status

Key issues identified	Status
Council's preliminary onsite system profile—numbers, location and types of systems—is incomplete and does not enable a quantification of potential threats.	Not addressed
The performance of onsite systems and compliance with permit conditions by owners across the municipality is unknown. There is a need for improved community knowledge of the effective management of onsite systems.	Limited improvement in education of property owners at time of system installation, but compliance with permit conditions still not known
Poorly managed and maintained onsite systems installed prior to 1988 are identified as a priority.	Not addressed
Address the potential threat posed by onsite systems installed prior to 1988 (legal offsite discharge of greywater).	Not addressed
Continued residential growth in unsewered areas requires the development of policies and procedures to ensure that sites can retain and treat waste on site.	Partially addressed
Council issues permits for system installation but currently has no information on the performance of these systems. It also does not have the management resources to ensure owners meet permit conditions.	Not addressed

Source: VAGO based on data provided by YRC.

Stakeholder collaboration in assessing risks

MPSC's DWMP is prepared in collaboration with the community and its key stakeholders for domestic wastewater management. Steering committee members involved in the development of MPSC's 2007, 2015 and 2018 plans included the Department of Health and Human Services and its predecessors, EPA, SEW, YRC, MW and Southern Rural Water. In 2018, DELWP is an invited member of the committee but has not attended meetings.

YRC did not collaborate with the community, YVW or other stakeholders in developing its draft DWMP or its 2011 Reprioritisation Report. Active involvement of YVW and the community would improve YRC's risk assessment processes.

2.4 Water quality monitoring programs

Our 2006 audit found that it was unclear how poorly performing onsite systems would impact the environment and public health in most areas.

Since then, both the audited councils and water authorities have implemented localised water quality monitoring programs for both the Mornington Peninsula and the Yarra Ranges. These programs collect data to assess the environmental and health impacts associated with offsite discharges from onsite systems.

Water quality monitoring

Ongoing sampling programs provide comprehensive data on pollution trends. Pre- and post-monitoring of the quality of water and groundwater in areas serviced by water authorities provide data on the effectiveness of servicing options, and also confirm the identification of high-risk unsewered townships referred by councils.

SEW and MPSC have made significant advances in the coverage and comprehensiveness of their surface water and groundwater monitoring programs. They have correlated the monitoring results with townships to determine the impact of failing onsite systems. This has been used to prioritise, and determine the effectiveness of sewering, high-risk unsewered townships.

MPSC and SEW have undertaken several targeted and ongoing sampling programs of groundwater, waterways, bays and other receiving environments since 2006. SEW and MPSC use the data obtained to identify and prioritise high-risk unsewered townships in the sewer backlog program and DWMP respectively. The data is useful for identifying townships that pose a high-risk, but it cannot be used to attribute risks to individual properties with failing onsite systems—see Figure 2E.

Figure 2E
MPSC and SEW water quality sampling programs since 1995

Area and year	Sampling activities	Program results
SEW		
Southern Mornington Peninsula Program, 1995 to date	Waterway monitoring of high-risk areas identified in MPSC DWMP	Results show potential impacts of failing onsite systems and the positive impact of sewering on water quality in local waterways.
Nepean Aquifer, 2004 to date	Groundwater monitoring	Confirmed ongoing contamination from 1996 and the positive impacts of sewering areas on the southern Peninsula on groundwater quality.
MPSC		
Merricks Beach, 2006–07	39 samples of drains and onsite systems	Human sewage found in 69 per cent of samples.
Westernport, 2008–10[(a)]	Sampling at all swimming beaches and recreation waterways from Somers to Flinders	Results show provision of sewers has had a significant positive impact on the water quality of local waterways.
Merricks Beach, 2006–12	Stormwater drains after rainfall events	Demonstrated no change over the sampling period.
Shoreham, Point Leo, Balnarring, Red Hill, Arthurs Seat, 2015–16	Stormwater drains and waterway sampling—part of compliance audits	Raw data provided for 23 samples taken in Arthurs Seat, Point Leo and Red Hill, with no determination made.
Portsea Lagoon, 2016	Inspection programs targeting 25 septic systems—sampling activities not provided	Sampling confirmed contamination of the lagoon from nearby septic systems.
Rye coastal area, 2016–17	Ongoing monthly E. coli sampling at the beach and drains near Rye Yacht Club	Sampling confirmed offsite discharges from septics in the area. Inspections are proposed for onsite systems in this area.
Tyabb, Boes Road, 2017–18	Sampling stormwater drains for E. coli	E. coli contamination detected in open drains. An inspection and compliance program targeted around 80 septic systems, resulting in several systems being upgraded. Inspection and compliance activities at over 10 major commercial sites with onsite systems, resulting in four system upgrades.
Watsons Creek, Somerville, 2016 to date	Sampling for nutrients and E. coli in Watsons Creek	March 2017 sampling of the creek confirmed high levels of E. coli and nutrients likely to be from septic tank systems in the vicinity. Inspection and education program implemented. Of 49 systems inspected so far, 33 per cent found to be failing.

(a) Beach sampling conducted by EPA during the 2005–06 and 2006–07 summer periods; sampling at beaches and waterways assessed by SEW over the 2001–02 summer period.

Source: VAGO based on data provided by MPSC.

The water and groundwater quality programs undertaken by MPSC and SEW have greater coverage, take more samples, monitor more locations and run for a longer period than those of YVW.

Neither YRC or YVW confirm identification of high-risk unsewered townships through adequate water quality sampling programs.

YVW has undertaken limited one-off localised water quality monitoring in four areas in the Yarra Ranges municipality—Mernda, Templestowe, Wonga Park and Healesville. Due to the short duration of the monitoring programs, YVW found it difficult to attribute any before and after changes from sewering these areas.

YVW is, however, conducting a comprehensive water quality monitoring program of its alternative service options trial in Park Orchards, to help it understand the effectiveness of different onsite and decentralised models in mitigating risks from offsite discharges of domestic wastewater. YVW advised us that it intends to use these results to inform its future work in high-risk unsewered townships.

Both councils also rely on the sampling of drains and waterways conducted by other agencies—including MW and EPA—for evidence of large-scale risks and impacts of offsite discharges from failing onsite systems. However, due to the lack of specificity of these programs, it is difficult to isolate the impacts of poorly performing onsite systems. Drain monitoring data from MW is more useful for pinpointing specific properties, but agencies provided little evidence to show how this data is adequately used to inform risk assessments.

Health impact monitoring

There is less data on the impacts of failing onsite systems on health than there is on water quality.

SEW started using a source-tracking technique in 2017 to detect and differentiate human strains of bacteria from animal strains across a number of sites in two unsewered catchments.

YRC is attempting to understand and monitor the specific human pathogen loads entering water from poorly performing onsite systems. This type of monitoring has typically been cost-prohibitive and, until recently, the necessary technology was not available. In conjunction with MW and Monash University, YRC studied the contribution of domestic wastewater to human pathogen loads in waterways in Warburton.

This research is a significant advance over previous studies as it allows the human pathogen loads from wastewater to be quantified separately from other sources, thereby determining the potential health risks to humans from domestic wastewater discharges.

YRC has recently applied for more funding from MW to broaden the study area in its municipality. This methodology has significant potential to demonstrate the human health risks from offsite discharges.

3

Monitoring compliance of onsite systems

Today, property owners must apply to their council for a permit to install, use or alter an onsite system. The permit process ensures that property owners only install EPA-approved systems. These systems, if installed and used properly, meet the relevant Australian standards, comply with SEPP (WoV) requirements and EPA's CoP to ensure they effectively treat and maintain wastewater on site.

Councils administer the permit process, ensuring that property owners and tenants comply with permit conditions and, where this is not happening, undertake enforcement action.

3.1 Conclusion

Since our 2006 audit, EPA, YRC and MPSC have improved their processes for approving the installation of new onsite systems. However, the two councils are still unable to provide assurance that property owners service and maintain systems effectively once they have been installed. This is because there is no systematic compliance inspection program and limited enforcement activities.

The absence of clear legislative triggers and the failure of councils to undertake comprehensive, systematic audits for systems installed prior to 1988 means the effectiveness of these systems is also unknown. As a result, the audited councils cannot show that they adequately oversee the ongoing performance of onsite systems.

3.2 Permits for the installation and use of onsite systems

Both councils effectively issue permits to install and use onsite systems to ensure wastewater is safely treated and contained on site, but they do not effectively monitor the ongoing performance of systems to ensure compliance with this requirement—see Figure 3A.

Figure 3A
Councils' oversight of the performance of onsite systems

Responsibility		MPSC	YRC
1	**Assessing land development proposals**		
	Considers any significant effects that a development may have on the environment or that the environment may have on a development	✓	✓
	Ensures new residential subdivisions are provided with sewer at the time of subdivisions or that the allotments can treat and retain wastewater within their boundaries	✓	✓
2	**Assessing onsite wastewater management permit applications**		
	Assesses applications for permits to install and operate onsite systems under section 53 of the EP Act	✓	✓
	Ensures that any proposed onsite system and associated disposal/recycling system is suitable for the property based on its size, generally shown through an LCA prepared for the property owner	✓ for high-risk sites	✓ water balance assessment for each site
	Satisfies itself that persons undertaking LCAs are suitably qualified	✗	✗
	Issues permits for both the installation and operation of onsite systems	✓	✓
	Issues permits with conditions that comply with SEPP (WoV) and the EPA CoP	✓	✓
	Refuses to issue a permit if the proposed onsite system and associated disposal/recycling system is contrary to SEPP (WoV) or EPA CoP	✓	✓
3	**Compliance with permit conditions**		
	Once systems are installed and operating, assesses the annual reports submitted by system owners to ensure that inspections, maintenance and effluent quality testing results of each installed system accord with the EPA CoP and relevant EPA certificate of approval	partially	✗
	Monitors compliance of onsite system performance with council permit conditions through inspections and compliance audits	partially	✗
	Assesses the results of its inspection, monitoring, and reporting programs and, if applicable, acts on them	partially	✗
4	**DWMP**		
	Identifies management actions to assess compliance of onsite systems with permit conditions	partially	✗
5	**Reporting**		
	Submits an annual return to EPA stating the number of onsite systems that have been permitted, disconnected, inspected and used as required under the EP Act	✗ *(a)*	✗ *(a)*
	Reports progress against DWMP actions to management, councillors and the community	✓	✗

(a) EPA has not enforced this since 2002.
Source: VAGO.

Approval and installation of onsite systems

We reviewed councils' processes for approving permit applications for onsite systems and found that both MPSC and YRC comply with the requirements of the P&E Act, the EP Act, SEPP (WoV) and EPA's CoP.

Our examination showed that permits from both councils since 2014 have standard conditions. MPSC advised that it has been applying standard conditions to permits since 2002, representing 9 691 permits (40 per cent of its total).

MPSC has also been applying specific maintenance conditions to its permits since 2007. This requires property owners to understand their systems' maintenance needs. In contrast, YRC permits refer the owner to the EPA certificate of approval to understand the maintenance requirements for their system.

Legacy systems

Sixty per cent of MPSC properties and 77 per cent of YRC properties with onsite systems approved prior to 2000 do not have permits or have permits that do not include conditions that comply with SEPP (WoV) and the CoP.

Councils identify several reasons for the large number of noncompliant onsite systems and permits:

- Systems installed prior to 1988 were allowed to discharge wastewater offsite under certain circumstances as neither the SEPP (WoV) or EPA's CoP were in place.
- Systems installed prior to 1996 either have no permit or have a permit with conditions that do not include maintenance and performance standards that would comply with today's policy and CoP standards.
- EPA's CoP was published in 1996 with the aim to improve the standard of installation, operation and maintenance of onsite systems and was updated in 2003 and 2015 to reflect better practices. However, councils' cannot retrospectively amend permits to reflect current requirements, and reissue or amend permits unless there is proof of pollution from the system.
- YRC cannot make a comprehensive assessment of systems installed between 1988 and 1995 because many records from this time were lost during council amalgamations.

3.3 Compliance and inspection programs

SEPP (WoV) and MAV's 2005 model DWMP state that a council should develop a compliance and inspection program for all onsite systems within townships to determine whether they comply with permit conditions and relevant legislation.

Neither council has a systematic and rigorous monitoring and compliance program for all its onsite systems, although MPSC is taking significant steps to improve this. During our audit, both councils spoke about the enormity of this task given the number of systems in use as well as the unknown 'legacy' systems compared with the limited resources they have available to conduct such a program.

YRC has not developed a monitoring and compliance program, which was identified as an action in its 2010 draft DWMP. It has no process to provide assurance that property owners are complying with permit conditions, nor does it specifically inspect or audit legacy systems. YRC is reluctant to inspect or audit these systems because of its lack of legislative powers to address any compliance issues.

MPSC has improved its processes for monitoring that onsite systems comply with both permit and policy requirements, particularly since 2016. In 2007 and again in 2014, MPSC identified that it had no organised compliance program to ensure that property owners complied with permit conditions, and that the performance of onsite systems and compliance with permit conditions was generally unknown.

In response, MPSC has implemented a range of initiatives to improve its monitoring and inspection of onsite systems since 2007. It:

- uses a waste management officer to implement an improved compliance inspection program to:
    - monitor onsite system performance against permit conditions through more regular compliance inspections—1 381 to date
    - undertake an improved program of audits for high-risk unsewered townships—audits of three townships or 3 per cent of the total number of onsite systems have been done to date
- reviews and follows up potential noncompliance issues reported in Septic Track by contractors who have serviced 4 946 systems installed since 2007
- follows up on potential noncompliance with permit conditions found during compliance inspections and audits and through Septic Track servicing and maintenance inspections—however, there is no evidence of systematic follow up and whether compliance actions are undertaken in a timely and effective manner.

Figure 3B summarises the areas and results from MPSC's compliance monitoring activities since 2006.

Figure 3B
Compliance activities undertaken by MPSC since 2006

Year	Area	Onsite systems	Results
2006	Portsea, Ibis Way	36	Included 4 water samples
			Results not provided
2006–07	Merricks Beach	150	26 per cent offsite wastewater discharges
			58 per cent not maintained correctly
2007–08	Merricks Beach	221	28 per cent offsite wastewater discharges
			43 per cent not maintained correctly
2008	Nepean Peninsula	73	Onsite systems used without a permit
			Results not recorded
2008	Portsea Lagoon	40	Over half of systems not complying with permit conditions
			Less than half systems accessible for maintenance
2009	Various	144	Sewage treatment plants not serviced
			Results not provided
2015	Arthurs Seat	131	Included nine water samples
			129 properties targeted—76 assessed, 71 per cent of systems with offsite discharges and 13 per cent showing evidence of servicing
2015	Merricks Beach	19	19 properties targeted—13 assessed, 38 per cent with an offsite discharge and 23 per cent showed evidence of servicing
2015	Point Leo	57	Included 30 water samples
			57 properties targeted—40 assessed, 25 per cent with an offsite discharge and 15 per cent showing evidence of servicing
2015	Red Hill	309	Included three water samples
			Desktop assessment of 309 properties, mail out to 140 properties and inspections just commenced
2016–17	Portsea Lagoon	25	Water sampling confirmed contamination from onsite systems
			25 systems targeted and several connected to sewer
			Further water sampling identified improvements to waterway health
2016–17	Rye Coastal	47	Previous water sampling detected contamination
			Property owners with offsite discharges encouraged to connect to sewer
			Ongoing maintenance program and monthly water sampling
2016–17	Somerville, Watsons Creek	240—49 inspected to date	Water sampling detected offsite discharges from onsite systems as the likely source of contamination
			240 systems with 49 systems inspected to date—at least 50 per cent have no permits and 33 per cent are failing
			Education, monitoring and compliance program anticipated to reduce contamination over 3 years
2016–17	Tyabb, Boes Road	80	Water sampling detected onsite systems likely source of contamination
			80 systems targeted resulting in several systems being upgraded
			Four major commercial onsite systems upgraded and coordinated with EPA
Total		**1 381**	

Source: VAGO from MPSC data.

MPSC and YRC do not have a rigorous program to inspect the performance of onsite systems in areas where there is sewer but property owners choose not to connect. This is a significant gap in identifying risks and impacts from poorly performing onsite systems.

Councils—not water authorities—are responsible for ensuring that these onsite systems continue to comply or are upgraded. This relies on councils:

- knowing who has or has not connected to sewer
- regularly inspecting these properties for noncompliance
- encouraging property owners to connect to sewer in a timely way or to upgrade their onsite systems where necessary.

YRC indicated it did not receive this information from YVW.

Complaints about noncompliance

Both MPSC and YRC use third-party complaints to identify breaches of permit conditions or noncompliance with policy.

We could not determine how many specific complaints YRC receives in relation to onsite systems as they are recorded as drainage complaints and, therefore, include stormwater and flooding issues. MPSC records the number of third-party complaints for onsite systems. It provided complaint numbers from 2001 to 2005, showing it received 126 complaints. MPSC indicated it had more up-to-date complaint records but did not provide these. MPSC records how it addresses and monitors these complaints in its customer IT system.

MPSC indicated it spends more on addressing complaints compared to monitoring compliance of onsite systems. An assessment undertaken by MPSC in 2006–07 found that 6.5 per cent of the council's wastewater management expenditure was spent on managing complaints and only 1.8 per cent on monitoring compliance.

3.4 Enforcing compliance with permit conditions

Both councils indicated they undertake limited enforcement around noncompliant systems. They advised that enforcing compliance with current permit conditions or taking enforcement action is hampered by a range of issues, including:

- the resource-intensive nature of enforcement processes and the limited resources council has available for these activities
- the high level of evidence required to prove noncompliance with the EP Act
- the resources required and difficulty and cost of detecting noncompliance and demonstrating its impact
- the lack of clear demarcation of enforcement responsibilities between EPA and council—the 2018 EP Amendment Bill does not clarify these roles and responsibilities

- a legislative complication that makes tenants responsible for onsite systems at rental properties, rather than the property owner, even though the tenant is not typically involved with the system
- councils' limited ability to address noncompliance and enforcement for legacy systems given the regulatory issues associated with the permit system.

As a result of these issues, councils could only provide limited assurance that they are managing risks from failing onsite systems and preventing environmental and public health impacts.

Since 2013, YRC has issued 16 notices under the PH&W Act, one notice under the EP Act and one letter to comply with the EP Act. This is a very small number of notices given YRC indicated in its 2010 draft DWMP that approximately 17 000 systems do not meet policy requirements.

MPSC has been collecting data on enforcement actions since 2017. Of the 75 cases of potential noncompliance, it took enforcement action in 13 cases—11 improvement notices and two EPA pollution notices. Enforcement actions at nine sites related to commercial onsite systems. MPSC advised that it plans to update its 2013 *Wastewater Management Policy* this year, to provide a transparent and consistent process for noncompliance with permit conditions.

The 2018 EP Amendment Bill includes a general duty-of-care provision which requires an individual or a business to take all reasonable measures to prevent harm. This allows regulators to act if property owners are not meeting permit or legal requirements rather than having to wait for, or to prove, that harm or pollution has occurred. EPA advises that this provision should reduce the onerous process required to prove pollution before councils and water authorities can take action.

3.5 Educating property owners

Our 2006 audit recommended that councils ensure property owners understand that there are specific maintenance responsibilities for onsite systems that they must follow to ensure they comply with permit conditions and relevant legislation.

Background papers that MPSC and YRC developed for their DWMPs identify a need for effective education of property owners. They noted that this was particularly important in the absence of regular inspection programs and tools to upgrade legacy systems.

Both councils have improved their efforts to educate property owners—particularly MPSC—through a wide range of education activities. However, neither has an overarching community information and education strategy for onsite system health, maintenance and management, nor a formal evaluation mechanism to ensure that the community education program is effective and regularly reviewed.

YRC efforts are typically targeted at property owners installing new systems or property owners who seek information, whereas MPSC targets all property owners through a range of media and activities.

MPSC identified the need for education visits by council officers in high-risk unsewered areas. It reported in its 2018 DWMP report card that it had implemented this recommendation and a range of other educational activities including:

- providing substantial material on its website around the health and maintenance of systems
- including brochures such as 'Septic Health—The Facts' in mailouts
- publishing seasonal articles in local papers and its newsletter
- developing publications on septic tank maintenance and connecting to sewer, along with warnings not to drink bore water
- sending wastewater information to owners with each permit issued
- conducting community education programs for key stakeholder groups.

YRC's draft 2010 DWMP recommended that, by 2014, council should implement a community information and education strategy for onsite system maintenance and management and develop a formal evaluation mechanism to ensure that the community education program remains targeted and effective. YRC has not done this.

YRC indicated that environmental health officers educate property owners about the ongoing performance and maintenance of their systems during inspections undertaken as part of the permit process. It also produces a standard flyer that it gives to property owners, and its website has information about effectively managing onsite systems.

MPSC has undertaken a number of one-off evaluations of its education activities, but neither council has systematically evaluated all their education activities to determine their effectiveness in improving poorly performing systems and minimising noncompliance with permit conditions.

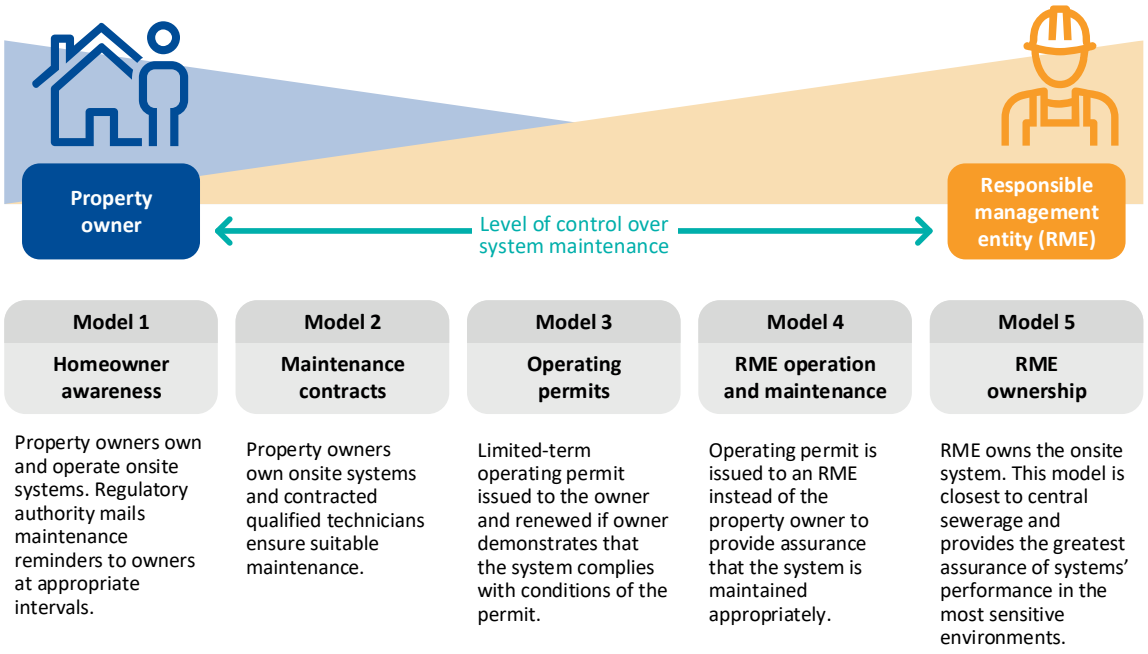
3.6 Better practice models for maintaining onsite systems

National and international regulators use better practice risk-based models to better manage the risks associated with poor maintenance of onsite systems.

Under New South Wales and Western Australian legislation, it is an offence for property owners to not maintain an onsite system in accordance with the system's requirements. There is no similar provision in Victorian legislation.

The United States' Environmental Protection Agency uses five models to govern the management of onsite systems—see Figure 3C. Across the five models, the level of control of the system by third-party experienced contractors increases in parallel with risks associated with a system failing due to the sensitivity of the environment and/or the complexity of the treatment system.

Figure 3C
United States Environmental Protection Agency's five models for governing the management of onsite systems



Source: VAGO based on Environmental Protection Agency (United States).

In 2008, YVW reviewed this approach as part of its early works for the Park Orchards trial—see Figure 3D. When the trial is complete, YVW will recommend an appropriate model for future maintenance and management of onsite systems.

Figure 3D
YVW 2008 evaluation of costs associated with the five management models

	Management models				
Cost	**1 Homeowner awareness**	**2 Maintenance contracts**	**3 Operating permits**	**4 RME operation and maintenance**	**5 RME ownership**
RME costs					
Annual total	$141 552	$3 034 070	$3 378 903	$3 608 792	$6 091 592
Models for allocating costs					
Cost spread over entire customer base					
• Annual addition to water bill for all customers	$0.24	$5.06	$5.63	$6.01	$10.15
Cost spread over backlog customers only					
• Annual fee (irrespective of system type)	$8.55	$183.31	$204.14	$218.03	$368.03
Cost spread based on system type					
• Annual fee for complex systems	$8.55	$307.55	$328.29	$342.27	$492.27
• Annual fee for simple systems	$8.55	$105.25	$126.08	$139.97	$289.97

Source: VAGO from YVW.

If water authorities determine that decentralised servicing options are an appropriate strategy for onsite systems, EPA will need to further investigate risk-based maintenance management models. This is particularly important given the historical and current problems associated with property owners managing and maintaining onsite systems.

4

Effectiveness of the regulatory framework in managing risks from onsite systems

An effective regulatory framework and strong oversight of its performance and implementation is essential for responsible agencies to manage the environmental and health risks posed by the poor management of domestic wastewater.

In this part of the report, we examine how effectively the regulatory framework for onsite systems manages these risks.

4.1 Conclusion

The regulatory framework is overly complex and has gaps that hinder the effective management of risks from poorly performing onsite systems. Its complexity has led to a lack of clarity around agencies' roles and responsibilities. There is a lack of incentives and triggers to drive councils to address the issues with poorly performing onsite systems and their maintenance or upgrades where required. This is exacerbated in the case of systems installed prior to 1988 which either have no permits or have permits that approve offsite discharges. The ongoing unchecked performance of these systems poses the greatest risks to the environment and public health.

There is a lack of collaboration between EPA and DELWP in their central leadership role and their oversight of the different elements of the domestic wastewater regulatory framework. As a result, longstanding issues associated with the regulatory framework, its implementation and available compliance tools still exist. These issues continue to hinder effective management of risks posed by poorly performing onsite systems by councils and water authorities.

4.2 Oversight of the regulatory framework

The regulatory framework for managing the risks associated with poorly performing onsite systems is complex and made up of a number of elements.

Government, DELWP, water authorities and councils have all identified that collaboration and coordination is required across all responsible agencies to effectively address the risks posed by poorly performing onsite systems. This was also identified in:

- DELWP and EPA's 2010 signed Forward Legislative Agreement
- YRC's draft 2010 and MPSC's 2015 DWMPs
- Victoria's 2016 *Water for Victoria*
- the government's 2016 and 2017 SoO for water authorities
- 2017 YRC and SEW *Urban Water Strategies*
- 2017 YRC Integrated Wastewater Management Plan
- SEPP (WoV) and the draft 2017 SEPP (Waters).

Despite this, there is limited collaboration between DELWP and EPA in their management of poorly performing onsite systems. DELWP and EPA do not provide leadership to councils and water authorities who are responsible for implementing the regulatory framework and its tools. As a result, issues raised by councils and water authorities about the adequacy of the framework and its tools have largely been unaddressed.

Between 2005 and 2010, MPSC wrote to EPA on 17 occasions raising concerns or seeking clarification on aspects of the regulatory framework covering areas such as policy gaps, definitions and interpretations, and roles and responsibilities. YRC provided the audit team with formal evidence of letters and submissions made to EPA between 2011 and 2014 identifying issues with SEPP (WoV), EPA's CoP, the lack of central leadership and the lack of clarity around roles and responsibilities.

Both councils indicated EPA's responses did not effectively clarify many of the issues they were seeking advice about. In response, water authorities and councils sought independent specialist legal advice to clarify a range of regulatory issues and to understand their roles and responsibilities under the framework. Unfortunately, this has meant that any of the knowledge gained by individual agencies is generally not shared and, as a result, there continues to be a lack of consistent understanding among agencies.

Councils and water authorities are still unclear about:

- how to require the upgrade of legacy onsite systems discharging offsite with an approved permit
- the mechanism to require the upgrade of old systems that do not have a permit
- their enforcement powers for failing onsite systems
- forcing property owners to connect to sewer—there is a lack of a shared and agreed approach between the responsible agencies and a reluctance by water authorities to force connection where the power exists
- whether there is a need to collect information on legacy systems
- water authorities' responsibility to service properties that have a low to medium risk of discharging wastewater offsite or that are capable of containing wastewater on site
- ongoing governance responsibilities for alternative wastewater treatment systems installed by water authorities.

As a result:

- we cannot be assured that the responsible agencies are adequately identifying and assessing the risks from onsite systems in unsewered areas across metropolitan municipalities
- property owners and councils take limited accountability for the ongoing performance and management of onsite systems
- EPA and DELWP do not monitor and report on the performance of the regulatory framework and its tools for identifying, assessing and managing risks
- the gaps and issues identified in the regulatory framework by our 2006 audit, internal reviews and councils have yet to be effectively addressed.

The EP Act requires councils to submit an annual report to EPA outlining the number of permits issued for onsite systems, how many systems have been decommissioned and inspected, and the number that have been in use within the municipality during the financial year.

EPA has not enforced this requirement since 2002. In our 2006 audit, EPA justified its decision not to enforce annual reporting because it found that this requirement offered limited value in helping it oversee councils' management of domestic wastewater systems. Government has not pursued amendments proposed by the EPA to address issues effecting its oversight of councils' performance.

The audited councils advised us that they believed DWMPs and associated recommended reporting as outlined in SEPP (WoV) replace this requirement. A DWMP is the key tool under the regulatory framework used to identify and manage risks from unsewered areas. However, neither EPA nor DELWP know which councils have approved DWMPs, if approved DWMPs meet SEPP (WoV) requirements and which councils implement and regularly review their DWMPs.

4.3 Issues with the effectiveness of the regulatory framework

Longstanding issues and gaps

Our 2006 audit of septic tanks directed eight recommendations to DELWP's predecessor, the Department of Sustainability and Environment (DSE), three to EPA and one joint recommendation to both agencies—see Appendix B. DELWP has fully addressed one and partially addressed one of its eight recommendations. DSE did not accept one recommendation, so we did not assess DELWP's progress against it. EPA has addressed one and partially addressed another of its four recommendations.

In the absence of centralised leadership and collaboration by DELWP and EPA to address our recommendations, water authorities and councils have implemented their own strategies and actions to address gaps and issues. A statewide, coordinated approach would be more effective in addressing these issues. Legislative gaps continue to hinder councils' effective management of poorly performing onsite systems. Figure 4A describes issues with the regulatory framework identified by YRC in 2010 and their ongoing impact.

Figure 4A
Issues with the regulatory framework identified by YRC in 2010 and their impact

Regulatory framework issue	Impact
All septic tank systems installed prior to 1988 had a legal right to discharge treated wastewater offsite. The SEPP (WoV) was published in 1988 requiring all wastewater to be kept within property boundaries.	It is estimated that there are 17 000 septic tanks (77 per cent of all onsite systems) in the Yarra Ranges that have a legal right to continue to discharge wastewater offsite. Under the current regulatory framework, council does not have any power to require property owners to upgrade these systems so that they meet current standards.
There are properties with a septic tank for which no permit exists or that have a permit that does not have conditions for maintenance and performance standards.	In the absence of permits and permit conditions, council does not have any legal capacity to enforce maintenance standards on these properties. It is estimated that there are 16 000 onsite systems in the Yarra Ranges (73 per cent of all systems in the municipality) that do not have septic tank permits that require the property owner to adequately maintain their system to current standards. Further, council cannot retrospectively reissue permits with present-day conditions. Without a permit condition on which to enforce compliance, councils have few, and largely ineffective, tools at their disposal to order property owners to improve the condition and performance of such systems.
Outdated permit conditions can exist in perpetuity, and some systems have no conditions on use.	Once a property has a septic tank system installed, the parameters on its use exist in perpetuity—this includes systems installed without a permit, systems with permits that do not require a certain level of maintenance and performance, or systems with a legal right to discharge wastewater offsite. Unless a property owner seeks to either upgrade or replace an old wastewater system or requires a planning or building permit for other works on the site (which can act as a trigger for reassessment of the suitability of the wastewater system), council has no mechanism to review the permit and its conditions. This limits councils' ability to require property owners to upgrade or relocate a wastewater systems or to maintain the system and meet performance requirements.

Figure 4A
Issues identified by YRC with the regulatory framework in 2010—*continued*

Regulatory framework issue	Impact
There is a lack of definition around monitoring and inspection.	While the current regulatory framework infers that council should be monitoring system performance through compliance audits of septic tank system permit conditions, it does not provide clarity about what level of monitoring are appropriate and would constitute discharge of these responsibilities. There are approximately 23 000 septic tank systems located throughout the Yarra Ranges, many of which are in unknown locations and in unknown condition. Council only receives income from the processing of new permit applications, which is insufficient to resource any substantial proactive inspection and monitoring program.
Councils are unable to force property owners to connect to mains sewerage.	The current mechanism used to force property owners to connect to sewer if it is accessible is overly complex. It involves councils, water authorities and EPA, but ultimately relies on the water authority to enforce connection. In 2010, YRC had 1 600 domestic properties that had a sewer point (to connect to the mains sewer system) but had not yet connected. This represents approximately 7 per cent of all properties with a septic tank system.

Source: VAGO based on YRC data.

Our review of legislation in other jurisdictions indicates that Victoria's regulatory framework does not reflect better practice:

- Legislation in the Northern Territory and South Australia allows for permit conditions to be retrospectively amended so systems do not cause environmental and health impacts.
- New South Wales and Western Australian legislation contains a general offence for systems that are not maintained in accordance with their permit conditions.
- Queensland and South Australian legislation makes it an offence not to comply with the relevant onsite system code of practice.
- New South Wales legislation only approves onsite systems for three to five years, after which the property owners must submit a compliance report before a further permit is issued.

Where mechanisms such as roadworthy certificates exist for the transfer or sale of vehicles, no such provisions exist for the sale or transfer of properties that have onsite systems. When a property is sold or transferred, no states or territories require a compliance certificate, a system upgrade or a connection to sewer if the onsite system does not comply with legislative requirements. Victoria's *Sale of Land Act 1952* and title laws only require that the property owner advise whether the property is connected to sewer when selling the property.

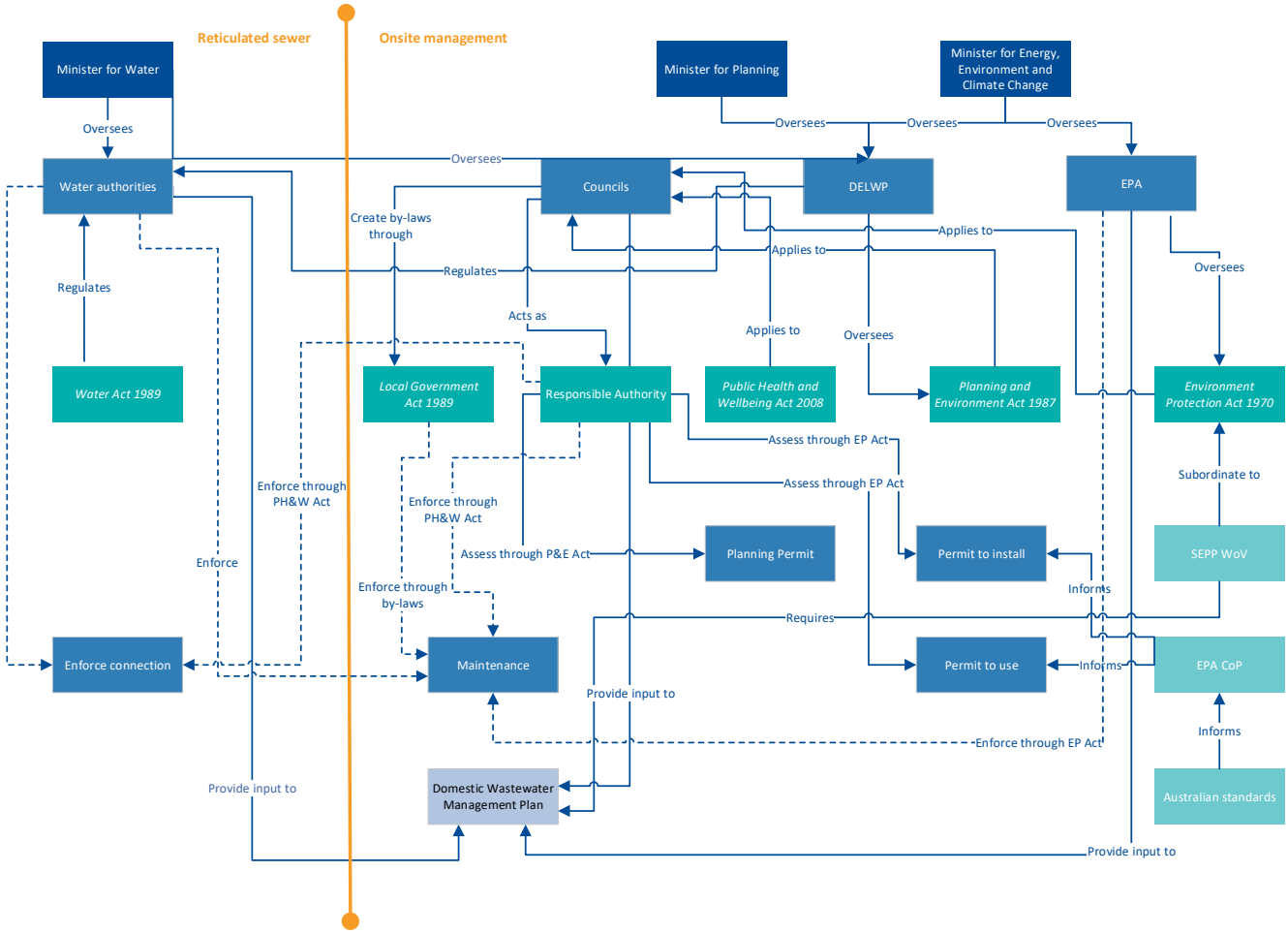
Councils and purchasers of residential properties therefore have no real way of knowing or collecting information on the compliance of an onsite system with legislation unless they proactively seek a specific property assessment.

The 2018 EP Amendment Bill recently passed in Parliament requires that onsite system permits only be issued for a maximum of five years and includes general offence provisions for noncompliance with a permit condition.

Complexity of the regulatory framework

There have been reviews of individual core elements of the framework since 2006. However, these have been undertaken in isolation and have not resolved issues arising from the complexity of the framework, which continues to create uncertainty and confusion around roles and responsibilities. Figure 4B illustrates this complexity.

Figure 4B
The current regulatory framework for onsite systems



Source: VAGO.

The overlapping and complex nature of the approval processes for onsite systems requires approvals under three different Acts—the EP Act, P&E Act and the *Building Act 1993*. For councils, administering this process is resource intensive and complex. The bulk of council effort and resources focus on approving new systems rather than ensuring compliance with permit conditions, addressing legacy system issues, or taking enforcement action where needed.

YRC estimate that a substantial amount of its environmental health officers' time—35 per cent—is spent on approvals to install systems, leaving little time to ensure ongoing regulatory compliance alongside their other work.

MPSC experiences a similar issue and estimated that 75 per cent of its domestic wastewater management costs are for administering permits for onsite systems. MPSC charges an application fee of $663.50 for onsite system applications. In 2006–07, it determined the average cost of processing a permit was $730, with 527 permits processed in this period at a total cost of $384 170. This meant it lost around $51 000 over this 12-month period.

The review of the EP Act, as reflected in the 2018 EP Amendment Bill, streamlines and improves the regulatory framework. EPA expects to achieve this through flexible and effective regulation-making powers for the issue and monitoring of onsite system permits and improved powers to delegate environment protection powers to local government.

Regulatory barriers to alternative service options

An alternative approach for managing onsite systems treats water authorities as a proxy property owner, responsible for the installation and servicing of onsite systems, rather than the property owners themselves. However, YVW has identified significant barriers with the regulatory framework, which requires water authorities to go through a rigorous and, at times, protracted approval process with council.

This lengthy approval process is required even though water authorities are responsible under the *Water Industry Act* 1994 for providing sewerage service options. This adds to the cost, time and resources required to service unsewered areas and ultimately results in continued risks to the environment and public health from poorly performing onsite systems because it hinders water authorities' ability to service high-risk unsewered areas.

In conjunction with Manningham Council, YVW has nearly completed a three-year trial of alternative service options in an unsewered area of Park Orchards. It has assumed responsibility for the design, installation, maintenance and monitoring of these systems. YVW and Manningham Council are using this trial to identify further regulatory barriers and issues associated with the ongoing management and maintenance of these alternatives. YVW has signed an MoU with Manningham Council, EPA, DELWP and the Department of Health and Human Services to clarify the governance arrangements, roles and responsibilities for this trial in the absence of clear regulatory provisions.

Roles and responsibilities

The current regulatory framework overlaps, duplicates and lacks clarity around roles and responsibilities, impeding accountability for managing risks from poorly performing systems—see Figure 4C. This is particularly the case for enforcement of noncompliant onsite systems, which means breaches or offsite discharges of wastewater continue, potentially resulting in environmental or health impacts.

Figure 4C
Roles and responsibility for enforcement

Prior to 1988, septic tanks were permitted to discharge offsite under less stringent regulatory conditions. Under the current legislation these systems do not comply. Many of these permits allow piped offsite discharge to stormwater, regardless of the size of the property. Councils lack the power to revoke or update the permits under the EP Act or P&E Act, and there are no relevant provisions in the EP Act. The EP Act provides the EPA with the power to require rectification of works through a Pollution Abatement Notice to ensure compliance with SEPP (WoV). However, EPA stated it would be reluctant to issue a Pollution Abatement Notice to domestic properties as council is responsible for overseeing the performance of these systems and managing local pollution risks.

Water authorities have the power to enter a property and inspect the system under the *Water Act 1989*, as do councils under general provisions of the *Local Government Act 1989*, and can issue a notice compelling an owner to undertake repairs or maintenance in relation to an onsite system. However, compliance with a notice to repair is currently only enforceable by way of prosecution under the *Water Act 1989*.

Both councils and water authorities can make by-laws requiring regular maintenance of an onsite system and, in the case of water authorities, payment of fees for maintenance. Previous attempts by councils to impose a levy on ratepayers for the maintenance of onsite systems by councils were not supported by government. The water authorities have not passed any by-laws, nor has MPSC or YRC. In contrast, Manningham Council has created a local by-law to ensure property owners inspect, maintain and report on the performance of their septic tanks, and these records must be made available to council if requested. There are penalties for noncompliance.

Lack of clarity of enforcement roles under the regulatory framework makes enforcing the upgrade of failing systems convoluted, complex and fragmented. This impedes councils' accountability under the EP Act for the oversight of the performance of onsite systems.

Source: VAGO.

4.4 Land capability assessments as a regulatory tool

The regulatory framework uses LCAs to help property owners and councils determine whether a property can safely contain wastewater on site as required by legislation. We identified issues with the implementation of this requirement in our 2006 audit, and EPA has not fully addressed them since then.

EPA amended its CoP in 2016 to require that an LCA should only be undertaken by a suitability qualified, experienced and independent soil scientist or hydrogeologist. Councils advised that there is no requirement for the third party providing these assessments to be accredited or what suitably qualified and experienced means in this context. New South Wales legislation identifies the requirements that an assessor must meet to undertake an LCA.

We reviewed 10 permit applications and found that the impact of unclear accreditation requirements for LCA assessors was clear. The quality of these LCAs varied significantly, in their comprehensiveness, rigour and detail. YRC indicated that it does not regularly request LCAs due to this inconsistency and will only consider undertaking an LCA for applications in high-risk areas. Councils' environmental health officers make this decision at their discretion.

To address this issue, YRC developed a panel of appropriately qualified LCA assessors and recommended its use to applicants. However, this resulted in these assessors charging considerably higher fees than others, which led to most applicants not using the recommended assessors on the panel.

The lack of a mechanism to ensure LCA assessors are suitably qualified and capable has led YRC to develop its own water balance assessment tool to replace LCAs. While this is to be commended, DELWP and EPA should be ensuring that consistent accredited and approved tools are being used to assess whether a property can contain wastewater on site.

4.5 Improving the regulatory framework

Consultation to improve the regulatory framework

DELWP and EPA consultation with councils to resolve issues with the regulatory framework is ad hoc rather than systematic:

- MPSC attempted to coordinate with and obtain input from DELWP and EPA during the development of its DWMPs. DELWP has not provided input to the 2018 process to date.
- EPA and DELWP have had limited interaction and engagement with YRC. This is mainly due to the absence of an approved DWMP. EPA and DELWP have not enforced the requirement for YRC to develop an approved DWMP, even though in 2005 the then Minister for Water provided funding—administered by the then DSE—to YRC for the development of a plan.

Both MPSC and YRC have contributed to several working groups, either run by or involving EPA, the then DSE and later DELWP. Councils have used these forums over the years to provide informal feedback on the weaknesses in the regulatory framework, particularly the permit system.

In 2017, DELWP undertook a coordinated engagement process with councils and water authorities to review SEPP (WoV) including the domestic wastewater management clauses. Both MPSC and YRC provided written submissions to this process identifying a range of issues.

Reviews of the regulatory framework

DELWP and EPA actions to address gaps and issues in the regulatory framework have been slow and have only partially addressed those identified by councils, water authorities and past reviews. Reviews by EPA and DELWP include:

- 2015—administrative review of EPA's CoP
- 2016—review of SEPP (WoV)
- 2016—review of the Victorian Planning Provisions.

After our 2006 audit, EPA and DELWP formed a steering group to address issues identified by the audit and subsequent reviews and working groups. The steering group developed a detailed draft discussion and background paper for consultation but never released it due to the lack of clarity about which agency was to drive and implement the changes.

In 2016, DELWP commenced a review of SEPP (WoV). This review used the information collected by the steering group to develop the draft SEPP (Waters) for consultation. This draft contains clauses that aim to address a range of issues associated with DWMPs and to clarify that the use of alternative service options, if approved by water authorities, is a feasible option where properties in unsewered areas can safely treat and contain wastewater on site.

In 2018, the Parliament passed the EP Amendment Bill. MPSC advised it had had limited engagement with this process of developing the provisions in the 2018 EP Amendment Bill for onsite systems.

While the reviews were a positive step to improve the management of onsite systems, they have occurred in isolation from one another and each involved an individual element of the framework. As such the ongoing issues surrounding the overly complex framework, the overlapping approval system and its gaps in addressing legacy systems, and the lack of clarity around powers, roles and responsibilities remain. A review of the entire regulatory framework—including all Acts, policies and tools and how these elements work together to manage both legacy, current and future risks from onsite systems—requires a coordinated, holistic approach.

5

Water authority programs to sewer high-risk unsewered areas

Backlog programs implemented by water authorities do not aim to provide services to all unsewered properties; rather, they are responsive programs that target high-risk unsewered areas. Councils identify these areas and refer them to water authorities for prioritisation through the development of sewerage management plans, which now form part of a water authority's five-year water plan.

SEW and YVW continually review how they provide and prioritise services to backlog areas during each five-year planning cycle. During these periods, water authorities must consider changing drivers and challenges to ensure they provide backlog areas with timely, cost effective and fit-for-purpose sewerage services as required by their respective SoOs.

Challenges include evolving policies, changes in community attitudes, shortened delivery time frames and increasing costs of delivery and connection. Increasing costs are generally due to servicing challenging locations that may be remote, have low population densities, or have difficult topography or soil conditions.

SEW implemented its Peninsula ECO project in 2012 to accelerate connections to sewer in high-risk unsewered townships to complement its traditional backlog program, and YVW replaced its traditional backlog program with its CSP in 2008—see Figure 5A.

Figure 5A
SEW and YVW programs for servicing high-risk unsewered areas

Note: CSP is YVW's current backlog program, whereas SEW's Peninsula ECO project is an accelerated service delivery component of its program.
Source: VAGO.

5.1 Conclusion

Since 2005–06, SEW and YVW have generally met their backlog program targets to provide services to high-risk unsewered townships as outlined in their five-year water plans.

However, the environmental and health benefits of servicing unsewered areas are not yet being fully realised. Connection rates to sewer are improving but are not yet optimal. While water authorities and councils have implemented a range of incentives to encourage households to connect, further work is needed to reduce legislative issues around forced connections, address customer barriers around cost, and educate property owners about the environmental and public health benefits of connection.

YVW and, to a lesser extent, SEW face significant challenges in servicing most of the remaining high-risk unsewered townships in their catchments. The two water authorities have or are evaluating a range of alternative servicing approaches to deliver cost-effective, fit-for-purpose outcomes for equivalent these areas.

Better centralised leadership and collaboration by DELWP and EPA is required to improve legislative clarity around roles and responsibilities and develop a less onerous approvals process for alternative systems to achieve the intended environmental and health benefits.

5.2 Programs to service high-risk unsewered areas since 2006

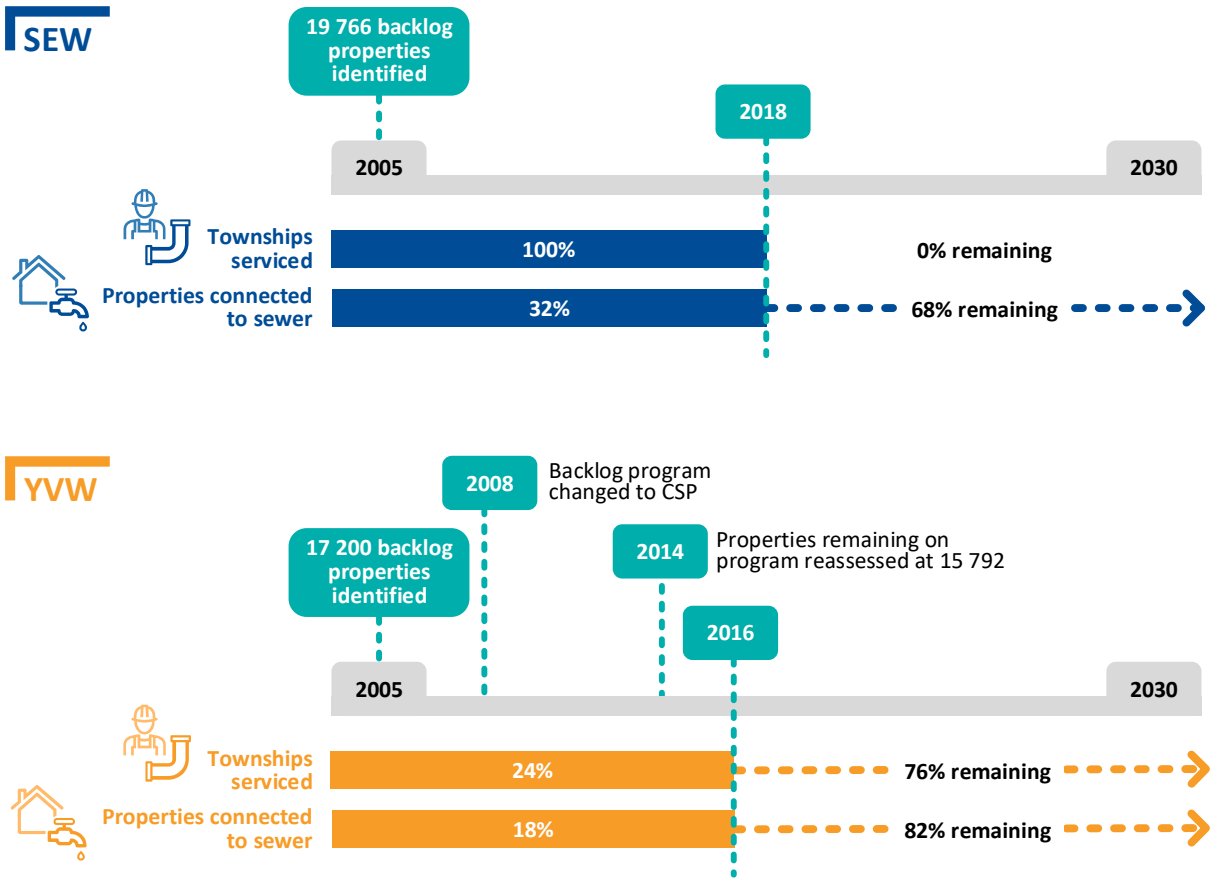
SEPP (WoV) and water authorities' SoOs require SEW and YVW to develop a sewerage management plan as part of their five-yearly water plans. This plan sets target dates to service high-risk priority townships identified in councils' DWMPs (or in the case of YRC its 2011 reprioritisation report). Both water authorities have effectively done this in each of their plans since 2006.

The key objectives of backlog programs are:

- to minimise the impact to the environment and human health from poorly performing onsite systems
- to ensure that all servicing options are considered and evaluated for towns that are deemed to have a detrimental impact on the environment or impact to human health.

Figure 5B identifies the water authorities' progress to date in both providing sewer services to high-risk unsewered properties and the connection rates to sewer.

Figure 5B
Water authorities' sewer servicing and connection rates



Note: Most up-to-date connection figures from YVW were from 2016.
Note: Water authorities' benchmark for connection is 80 per cent within 10 years.
Source: VAGO from SEW and YVW data.

South East Water

Discussions with MPSC and updates of its DWMP help SEW to determine which unsewered townships it should include in its backlog program. SEW assesses backlog areas on a case-by-case basis to identify the preferred servicing solution, considering:

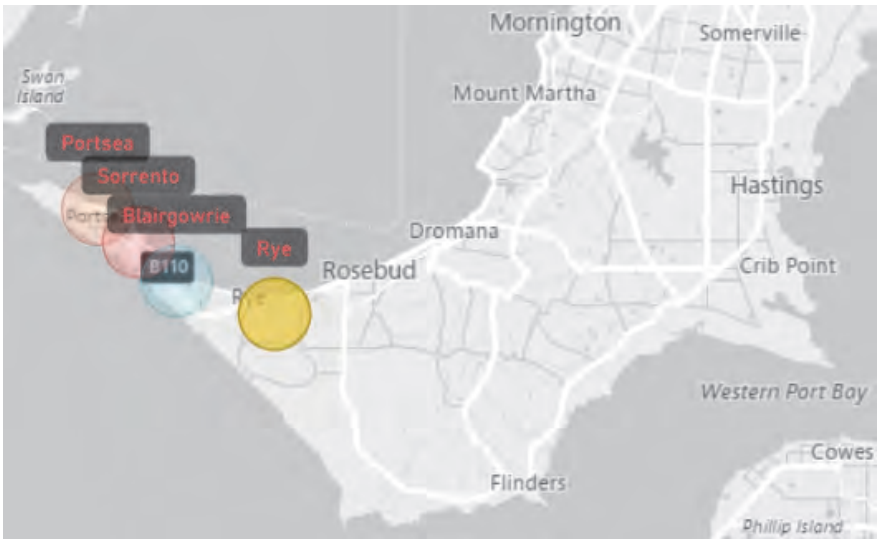
- capital and operating costs
- terrain and ground conditions suitable for construction
- impact on the community from construction
- impact on and access to properties for the proposed works
- proximity to sewer network and type of service provided in neighbouring areas.

From 2005–06 until the commencement of the Peninsula ECO project in 2012, SEW provided 5 573 properties with the ability to connect to sewer. Of these, 4 005 have connected.

Customer-led Peninsula ECO project

In 2012, SEW saw an opportunity on the southern Mornington Peninsula to deliver an innovative pressurised sewer system and connections to approximately 16 900 unsewered properties across four townships much sooner than previously identified in Water Plan 2 (2008–13) and its backlog program—see Figure 5C.

Figure 5C
Map of the southern Peninsula ECO project



Source: VAGO.

SEW articulated its rationale for the Peninsula ECO project in its 2013–18 Water Plan, along with the intended benefits. The business case for this project outlined the environmental and economic drivers and identified potential social inequities which SEW resolved through community consultation.

SEW conducted a survey of 400 residents across the southern Mornington Peninsula in 2011 to understand community perception and awareness of the then proposed sewer backlog program for the area, the community interest in connecting to sewer, as well as their willingness to pay higher costs for early connection. The results justified the progression of the Peninsula ECO project.

The four townships serviced through the Peninsula ECO project—Portsea, Blairgowrie, Sorrento and Rye—were identified as townships posing a high-risk in MPSC's 2007 DWMP. These were the most densely populated townships with the highest number of onsite systems and surrounding environmental sensitivities compared to other remote and less densely populated backlog townships. The sandy soils and relatively flat topography made the provision of sewer a cost-effective servicing option.

To confirm council's assessment, SEW investigated groundwater quality in the area in 2012. SEW has had a relatively comprehensive annual groundwater monitoring program in this area since 1995 and noted that, based on a review of the 2012 results, onsite system discharges were entering the groundwater system.

The early connection option provides residents in Portsea and Sorrento with the opportunity to connect to sewer up to 13 years sooner than the traditional backlog rollout—see Figure 5D.

Figure 5D
SEW backlog and Peninsula ECO servicing dates and connection numbers from 2014 to July 2018

Area	Proposed sewering date		Connection numbers	Total properties	Connection rate (%)	Target rate in 2012 business case (%)
	Backlog program	Peninsula ECO project				
Blairgowrie A	July 2022	February 2016	462	2 676	17	5
Blairgowrie B	July 2025	February 2016	188	1 179	16	5
Portsea	July 2030	October 2014	241	1 488	16	25
Rye area A[(a)]	July 2020	July 2015	256	1 734	15	No target
Rye area C	July 2016	October 2015	722	3 197	23	
Sorrento area A[(b)]	July 2026	November 2014	465	3 171	15	25
Sorrento area B	July 2030	February 2015				
Sorrento area C	July 2028	February 2015				
St Andrews Beach	July 2030	August 2015	62	748	8	No target
Total			**2 396**	**14 193**	**16**	

(a) Rye area B is not included in this table as it is not part of Peninsula ECO and was completed as part of the backlog program.
(b) Sorrento areas A, B and C combined.
Source: VAGO based on SEW data.

The Peninsula ECO project still works within SEW's conventional backlog program allowing connections to occur in a staged manner in accordance with its original backlog program schedule. Currently, not all properties can take up the early connection option as SEW must complete the upgrade of its local Boneo sewage treatment plant to cope with the extra load.

Overall the total number of properties connected to sewer each year is greater than predicted under SEW's original backlog program schedule due to the early connection option provided by Peninsula ECO.

Yarra Valley Water

In 2005–06, YVW began to plan for and deliver its current obligations under its backlog program. Its aim was to service the then 17 200 remaining properties by 2025 at a cost of $400 million through connection to its sewer system. Figure 5E shows the number of properties YVW serviced between 2005 and 2016.

Figure 5E
YVW servicing numbers across all its municipalities, 2005–06 to 2015–16

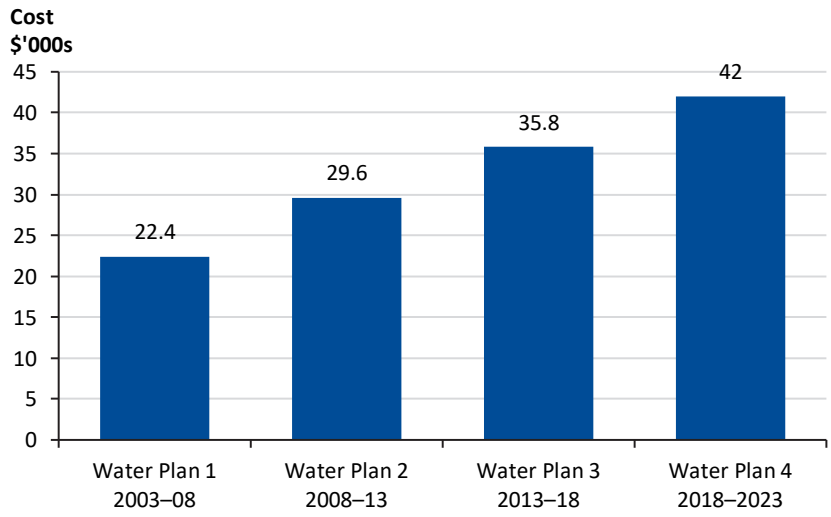
Year	Properties serviced
2005–06 to 2007–08	890
2008–09 to 2013–14	2 692
2014–15 to 2015–16	281
Total	**3 863**[(a)]

(a) Figures are as at January 2016.
Source: VAGO from YVW data.

From 2018 until 2033, YVW aims to provide a service to 10 900 properties, of which 7 482 are in the Yarra Ranges.

As YVW moved through its servicing obligations, it began to encounter areas where soil types and topography made the provision of sewer prohibitively expensive. The average cost to provide a property with sewer is currently more than $35 000 per property. This does not represent a cost-effective servicing solution—see Figure 5F.

Figure 5F
Average cost to provide sewer to YVW backlog properties



Source: VAGO from YVW data.

Subsequent reviews identified barriers to the cost-effectiveness of the backlog program. More than just cost, the reviews found that communities were not receptive to the provision of sewer because:

- owners wanted proof that their current system was impacting public health or the environment, which could generally not be provided
- certain areas had previously had negative experiences with water authorities
- some communities saw sewerage as an invitation to developers
- some owners wanted a choice in the type of service provided.

YVW advised that lower-than-expected connection rates led it to review its servicing approach. Low connection rates make it difficult for YVW to recoup costs and, importantly, mean that intended environmental and public health benefits are not being realised in a timely manner.

YVW estimates that 54 to 60 per cent of properties connected to its sewer system within 12 months of services being provided. Prior to 2010, the connection rate was approximately 37 per cent.

Community Sewerage Program

Following its reviews, YVW replaced its backlog program with its CSP in 2008. CSP is an ongoing $400 million program aimed at minimising the environmental and health risks caused by approximately 10 900 properties across a range of municipalities and townships with poorly maintained onsite systems yet to be serviced.

YVW identified it could deliver services to the 24 townships involved by 2033 under its CSP approach, whereas the blanket sewering of all remaining unsewered properties through its traditional backlog program was not likely to be delivered until 2045, extending the risk of environment and health impacts from existing failing onsite systems.

In 2014, YVW identified that, in several high-risk unsewered townships, the cost of delivering sewer services to all CSP properties was prohibitive and the benefits were unclear compared to improving onsite system management or investigating alternative services.

CSP uses a place-based servicing approach to reduce costs for YVW customers. This has meant properties that can contain wastewater safely on site are removed from CSP and those not capable of containing waste on site are provided with a subsidised rate to connect to sewer services. Properties removed from CSP can connect to sewer, but the costs are not subsidised by YVW—see Figure 5G.

Figure 5G
YVW reassessment of properties within high-risk unsewered areas, 2014

Containment potential	Properties (on remaining program)	Remove from CSP
Able to safely contain wastewater on site to EPA CoP standards and SEPP (WoV) requirements	32	Yes
May be able to contain wasterwater on site to EPA CoP standards and SEPP (WoV) requirements	2 722	Yes
Partially able to contain wasterwater on site, to some EPA CoP standards and SEPP (WoV) requirements	1 621	Maybe
Not likely to contain wasterwater on site to EPA CoP standards and SEPP (WoV) requirements	5 147	No

Note: Not all properties on YVW's remaining program were assessed.
Source: VAGO from YVW.

Based on its 2014 reprioritisation assessment, YVW proposed properties capable of safely treating and containing their wastewater on site be removed from its CSP. As a result, YVW revised the total number of properties on its CSP to 15 742 in Water Plan 4 (2018–23). YVW determined that the properties removed could achieve very high levels of wastewater management through council management without the need for a YVW service.

However, the on/off approach presents equity issues for YVW. Properties unable to contain waste on site are subsidised to connect to sewer. Those that can contain waste on site but still want to connect to sewer are not subsidised. YVW indicated it has received several phone calls from customers questioning why they are no longer on CSP and why their costs are higher if they want to connect. YVW acknowledged that this is a potential issue, but it is attempting to manage this by undertaking a detailed LCA of the property at YVW's cost to review or confirm its initial decision.

5.3 Prioritising high-risk unsewered townships

Both water authorities use a risk-based reprioritisation framework to prioritise the high-risk unsewered townships referred by council for servicing under their backlog programs every five years.

SEW developed its framework in consultation with MPSC. It takes into consideration the following factors:

- public health
- environment
- potential residential development
- potential commercial development
- LCA considering the ability to treat wastewater on site
- average lot size or development density
- number of vacant lots
- the average age of the onsite systems
- the cost of installing sewer.

YVW developed the measures for its reprioritisation framework in consultation with YRC and the community. It is similar to SEW's framework in that it is based on an LCA and considers environmental, social and economic measures. However, it differs in the use of social measures—it puts significant weighting on customers' interest in and willingness to connect to sewer, and councils' knowledge of onsite systems and ability to oversee their performance. This results in a more comprehensive assessment approach.

Both water authorities then assign a weighting value to the measures to comprise a total risk score for an area. YVW determines its weightings in consultation with the community and YRC. SEW determines its weightings in consultation with MPSC.

Both SEW and YVW completed a reprioritisation process for both Water Plan 3 (2013–18) and Water Plan 4 (2018–23).

Property size

Under Victoria's planning provisions, 4 000 square metres is considered the smallest property size capable of safely containing wastewater on site.

YVW identified that the average lot size of properties it serviced through its backlog program in 2003 to 2008 was 4 800 square metres and, in 2008 to 2013, it was 3 295 square metres, with the average size property remaining on its backlog program identified at 4 300 square metres. In contrast, SEW removes any property over 4 000 square metres from its backlog program in line with the planning controls, however, it has not completed any independent testing to provide justification for this process.

5.4 Program outcomes

South East Water's Peninsula ECO project

SEW's Peninsula ECO business case states that the intended outcomes for the project are to:

- provide sewer to the southern Mornington Peninsula and to meet the demand for early connection
- reduce environmental risks associated with failing onsite systems
- deliver significant cost savings for SEW's customers.

SEW monitors its achievement of the intended benefits in a timely manner, including the number of early connections, the cost benefits of the program and the environmental benefits.

It also conducted a post-implementation review for the project to analyse and determine lessons that could inform future SEW projects. The review noted that the project was delivered under budget and within two years instead of three. SEW attributed this to the successful implementation of its procurement and contractual approach.

Yarra Valley Water's Community Sewerage Program

YVW documented the intended outcomes from the CSP process. CSP reflects a greater focus on customer input, while still delivering intended environmental and public health benefits. By reprioritising properties on CSP, YVW aims to better achieve the program's intended cost benefits and outcomes.

As CSP is still in its early stages, it is difficult to determine the success of this shift. The results of the Park Orchards trial will determine whether connection numbers and environmental and public health outcomes improve as a result of this alternative approach and whether it can be replicated across current and future servicing areas.

However, YVW does not yet have an evaluation framework to measure the success of all the intended outcomes of its CSP—see Figure 5H.

Figure 5H
Measurement of CSP outcomes

Outcome	Measured
Improved quality of local waterways	Limited
Health outcomes	No
Quality of planning/design	Yes
Pressure sewer reliability/failure rates	Yes
Connection rates and timing of connections	Yes
Customer trust in YVW and customer feedback	Yes
Number and basis of formal customer complaints	Yes
Service offering uptake	Unable to determine[(a)]
Community cost	Yes

(a) YVW is assessing preferred alternative servicing offerings through its Park Orchards trial.
Source: VAGO from YVW data.

Common program outcomes

Number of connections

Provision of sewer is a key step in realising environmental and public health benefits from sewerage programs. It is important that property owners connect in a timely manner or continue to manage onsite systems until their property is connected.

SEW's Sewerage Backlog Management Plan 2006/07 stated SEW had an active community education program in place which led to a 50 per cent connection rate in the first two years of providing sewer to backlog areas and a connection rate greater than 80 per cent after 10 years. SEW did, however, identify further opportunities to improve the timeliness of connections.

As part of its Peninsula ECO program, SEW set a target of connecting 2 160 properties to its sewer system through its early connection option by 2019 and has exceeded this target, with 2 396 properties connected by July 2018. This represents a significant number of properties that are connected earlier than they would have under SEW's traditional backlog program.

Of the 19 766 properties serviced on the Mornington Peninsula, only 6 401 (32 per cent) have connected to sewer since 2005–06—see Figure 5I. SEW has achieved its target connection of 80 per cent within 10 years of a connection becoming available for Flinders, Shoreham and Merricks and parts of the Rye coastal area. For the remaining areas, including Peninsula ECO, services have only been available for one to seven years.

Figure 5I
Total number of properties connected by SEW from 2005–06 to 2017–18, as at 29 May 2018

Township	Connection available	Properties connected (number)	Available properties connected (%)	Properties identified in Water Plan (number)
Pre-Peninsula ECO backlog projects				
Flinders	2006–07	739	87	850
Shoreham	2007–08	401	103[(a)]	390
Merricks	2009–10	210	84	249
Rye coastal	2005–06 to 2010–11	1 657	86	1 935
Rye	2014–15 to 2015–16	975	47	2 072
Pt Leo	2016–17	23	30	77
Peninsula ECO				
Rye	2015–16	978	20	4 931
Blairgowrie	2015–16	650	17	3 855
Sorrento	2014–15	465	15	3 171
St Andrews Beach	2014–15	62	8	748
Portsea	2014–15	241	16	1 488
Total		**6 401**	**32**	**19 766**

(a) Actual numbers vary as property details change over time.
Source: VAGO based on SEW data.

YVW advised connection rates are lower than expected but they are improving. In 2016, it had an overall connection rate of approximately 76 per cent, up from 46 per cent in 2008 and 40 per cent in 2007. However, only 19 per cent of properties overall have connected to sewer. The less than optimal connection rates were a catalyst for YVW's change to the CSP.

Programs to improve connection rates

Section 147 of the *Water Act 1989* allows water authorities to force property owners to connect to sewer. However, both audited water authorities have been reluctant to use this power. They highlighted the difficulty of proving offsite impacts and attributing them to individual properties and the threat of onerous court proceedings if they force properties to connect.

Instead, YVW and SEW have implemented measures to improve connection rates, including:

- increased communication with and education of customers
- coordinated community engagement
- subsidising connection fees and waiving connection fees for timely connections
- SEW's Peninsula ECO project.

In 2010, YVW monitored the effectiveness of a targeted 12-month connection program across two townships. Across the two towns, the connection rates were 47 and 71 per cent, which is still not optimal.

While SEW has not formally evaluated the effectiveness of its educational activities, Peninsula ECO is ahead of predicted targets to date.

Environmental improvements

SEW has a comprehensive program for monitoring the environmental condition of groundwater quality before and after the implementation of the Peninsula ECO project. Sampling programs in 2016 and 2018 show a number of indicators that suggest wastewater is still seeping into the groundwater due to potential onsite system failure, with considerably high levels of nutrients at some sites. Given these findings, SEW recommended that further sampling investigations be undertaken in approximately three years' time to gather more information when more properties in the area have connected to sewer.

Currently, YVW does not have an ongoing water quality sampling program to measure outcomes and evaluate the success of its program. YVW stated that a sampling program would be a valuable tool in providing evidence to increase connection numbers, as demonstrable impacts of the program can be used as a motivator for customers to connect.

Cost savings

SEW argued in its 2012 business case that Peninsula ECO represented cost savings for both SEW and its customers. This was a strong driver for the implementation of the program. SEW stated that it saved $60 million through innovation in technology and a further $41.9 million through a competitive procurement process and its accelerated approach to civil works, which resulted in savings for customers.

The shift in YVW's program delivery to an on/off approach—where it assesses individual properties rather than townships for inclusion in CSP—is intended to deliver cost savings for its customers, by ensuring that CSP funds are only used to target properties that cannot contain wastewater on site. Other properties can connect to sewer, but are not subsidised by YVW.

For the remainder of CSP, YVW estimates that:

- excluding properties based on size—those over 4 000 square metres—would save between $54 million and $108 million
- excluding properties based on their LCA—of which property size is one factor—would save between $85 and $171 million.

These savings would be passed onto its customers.

5.5 Collaboration between water authorities and councils

SEW has developed a close, collaborative and productive relationship with MPSC, which benefits the delivery of sewerage services to the community. The collaboration covers:

- the development of MPSC's DWMP
- identification and prioritisation of areas for inclusion in the backlog program
- sharing of sampling and monitoring results
- the appointment of an SEW resource within MPSC to monitor existing onsite systems and ensure they are managed and maintained appropriately.

In the past, YRC and YVW have had limited collaboration, but this has improved more recently. YVW raised concerns internally over the validity and reliability of YRC's 2011 risk prioritisation and identification process used to refer high-risk unsewered areas to YVW's CSP. Its main concern was that YRC may have been using CSP to overcome limitations with legislation that constrain YRC's ability to address poorly performing onsite systems that, if managed properly, could feasibly contain wastewater on the property.

As a result, YVW spends significant resources undertaking further assessment of the areas and properties referred by YRC. This could be avoided if the two agencies worked together to assess risks and prioritise high-risk unsewered townships for the delivery of treatment services.

YVW did, however, consult with YRC during its reprioritisation process, facilitated by the secondment of a YRC staff member to YVW for six months. Both YRC and YVW have indicated support for continuing to strengthen their working relationship, particularly through the creation of YRC's 2019 DWMP.

5.6 Improved documentation of costs

The ongoing life cycle costs of installing and maintaining an onsite system compared with providing and connecting to sewer services are not well documented or publicised. Making this information available would better inform property owners' decisions about servicing options.

YVW has undertaken several projects and evaluations to understand and compare the life cycle assessment costs of connection to sewer against onsite system treatment. Figure 5J shows the average cost to the customer at each stage of this life cycle.

Figure 5J
Average cost of sewage treatment to the customer

		Sewer	
Stage	**Onsite system**	**YVW**	**SEW**
Installation	$9 000 to $25 000[(a)]	$1 650[(b)]	$2 500
Connection	$4 000	$5 000 to $15 000	$3 000 to $7 000
Operation	$300 to $500 annually	$457 annually	$370 to $420 annually
Decommissioning	$2 000	Not applicable	Included in connection

(a) Covers a range of wastewater systems, such as septic tanks and trenches, sewage treatment plants, and sand filters and trenches.
(b) Waived if property is connected in first 12 months of access becoming available.
Source: VAGO based on YVW data.

Many property owners only consider installation costs when considering an onsite system, not the ongoing life cycle costs, including maintenance. YRC indicated many property owners typically install the cheapest approved onsite systems, however, these systems have higher ongoing costs due to more regular maintenance requirements. The more expensive aerated onsite systems typically have lower ongoing operational costs.

5.7 Alternative servicing options

Both YVW and SEW have historically provided sewer effectively. However, several factors impact the viability of sewer, including:

- soil characteristics
- topography
- remoteness of properties from central infrastructure
- community needs
- cost-effectiveness.

Alternative approaches to the management and oversight of poorly performing onsite systems are particularly important in areas where sewer has been provided by a water authority and properties have not connected, as these properties are often neglected by councils.

South East Water

SEW first reviewed alternative wastewater management systems for its 2007 backlog program. It found that:

- properties less than 4 000 square metres are not suitable for onsite systems because they do not have sufficient area to dispose of treated water
- alternative local treatment and collection systems are feasible for townships that are small and remote from a centralised treatment plant.

Through its 2018 water price review process, SEW will test its community's willingness to invest in alternatives to sewer. Its application of a consistent investment evaluation framework will help it to assess the benefits and costs of different servicing options, and guide future decisions to achieve the best outcomes for the community.

Outside of the Peninsula ECO area, MPSC have identified a further four high-risk unsewered townships with 728 unsewered properties that it will consider for inclusion in SEW's backlog program. SEW intends to monitor these areas until it determines an appropriate cost-effective option for managing the risks from onsite systems in consultation with MPSC. It is considering a range of alternative servicing options to sewer.

SEW has already identified that one these townships—Guys Hill—will require an alternative servicing strategy due to the prohibitive connection costs of $50 000 for each customer. This is much higher than SEW's current benchmark, which is $10 000 per customer for Peninsula ECO.

SEW has also strongly advocated to council that high-risk properties within its backlog program that it does not service currently must be monitored and maintained by council prior to a service option being determined.

Yarra Valley Water

As part of its CSP, YVW has thoroughly investigated whether onsite and decentralised alternative services can provide viable options for high-risk unsewered properties capable of containing wastewater on site. It has established that alternatives approaches, such as water authority installation and servicing of onsite systems, offer a lower-cost, fit-for-purpose solution that can deliver equivalent but more timely environmental benefits compared to sewer.

YVW evaluations have shown that in some areas, the significant capital cost of providing sewer to a property—$30 000 to $50 000—delivered no extra environmental and human health benefits compared to upgrading or improving the management of onsite systems. As such, upgrading existing onsite systems and exploring alternative management approaches is likely to be more cost effective and faster.

As a result, YVW has invested considerable resources into:

- improving its understanding of the performance and impacts of existing onsite systems in high-risk unsewered areas
- developing a robust, transparent risk-based definition of onsite containment
- ascertaining the cost and performance of upgraded onsite systems that meet EPA's CoP
- identifying opportunities to adopt decentralised servicing approaches at the cluster or community level
- identifying the costs, benefits and trade-offs of adopting alternative and decentralised approaches
- understanding current legislative and governance barriers to successful implementation of alternative systems.

YVW has identified the importance of alternative governance models for areas within its CSP program where sewer is not the preferred servicing strategy, or where property owners have chosen not to connect to sewer.

It is currently exploring alternative service options in consultation with the council, the community and other key stakeholders in a trial of 100 unsewered houses in Park Orchards, in Manningham. There have been ongoing issues in this area with poorly performing onsite systems but the community is reluctant to have the area connected to sewer. The Park Orchards trial, described in Figure 5K, highlights YVW's willingness to explore alternative service options.

Figure 5K
Case study: Park Orchards alternative service options trial

In 2013, YVW began trialling alternative service solutions in Park Orchards, in conjunction with Manningham Council, DELWP and EPA. Manningham recommended Park Orchards for sewering in its DWMP following poor results from its onsite system inspections.

YVW consulted residents in Park Orchards and Ringwood North and found that almost half of the residents were against the connection to sewer. Feedback from the research indicated that Park Orchards residents did not see sewer as an appropriate servicing option due to the low-density housing in the area. As a result, YVW decided to explore the option of servicing the area with an alternative solution, to protect the amenity of the area and alleviate development concerns.

The trial has involved:

- environmental monitoring and assessments to better understand the problem (potentially leveraging other investments in environmental monitoring)
- planning to identify suitable alternatives to sewer
- trials of upgrades to onsite systems to test their effectiveness from an economic, environmental and customer perspective
- a regulatory, institutional and policy review to determine the most effective means of funding, delivering and managing the range of alernative solutions.

YVW investigated 100 properties in the Park Orchards area and found that 87 could fully contain wastewater on site. Of these, 61 agreed to participate in the trial. Of the remaining properties, five had a partial ability to contain wastewater on site, and the rest would be connected to sewer.

For properties that could contain on site, YVW upgraded their onsite systems with a range of alternatives and agreed to monitor and maintain these systems for the duration of the trial, to verify that the properties could treat domestic wastewater on site without posing a risk to the environment.

For properties that could only partially contain wastewater on site, YVW installed an onsite system that it had developed. These properties lack adequate space for wastewater irrigation, but have had their irrigation expanded as much as possible. Remaining wastewater was pumped offsite to the sewer system.

When the trial finishes in 2019, the lessons, monitoring and cost data produced will be used to inform YVW's approach to alternative service options in the future, in consultation with the other agencies.

Source: VAGO from YVW data.

The Park Orchards trial is a good example of how water authorities can work with communities and local government to devise appropriate alternatives to sewer. This trial is also highlighting a range of governance and approval issues associated with the regulatory framework that councils and water authorities must address so they can deliver timely and cost-effective wastewater services.

Under the current regulatory framework, water authorities become proxy property owners when they install and service onsite systems instead of sewer. They must go through the planning and permit systems and gain approval from council just as property owners do, even though they are experienced wastewater treatment providers. As part of the Park Orchards trial, YVW is investigating these barriers and they hope this information will inform any review of the current regulatory framework.

As recently as 2015, EPA wrote letters to YVW and communities to support councils' push to provide sewer in areas where onsite systems are failing. This approach takes little account of local community needs, and whether the properties can feasibly contain wastewater on site if property owners maintain their systems properly.

Alternative servicing options—Roles and responsibilities

For sewer, the roles and responsibilities for the installation, maintenance and monitoring are clearly laid out in a binding agreement with the water authority and property owner. For alternative services, the roles and responsibilities are not as clear.

YVW has identified that some alternative services will require an increased level of oversight and maintenance—see Figure 3C—compared to current typical practice provided by property owners and councils.

One of the major issues being explored by the Park Orchards trial is who will be responsible for maintenance of onsite systems after the trial is completed in 2019. To provide clarity of roles and responsibilities during the trial, YVW created an MoU between Manningham, EPA, DELWP and itself. At the end of the trial, all signatories will jointly evaluate the trial and agree on the preferred onsite management model for the remaining 1 100 lots in Park Orchards. Ultimately, the final servicing decision remains with YVW.

More broadly, this highlights an issue with the use of alternative servicing strategies. The Park Orchards trial, with the water authority installing and maintaining onsite systems represents something of a first. Unanswered questions about the ownership and future maintenance of the systems will hopefully be answered during the trial.

5.8 Integrated water cycle management

Government's 2016 water plan *Water for Victoria*, administered by DELWP, and SEW and YVW's 2017 urban water strategies, identify IWCM as an important element of sustainable towns and cities.

It requires agencies to consider different ways of providing stormwater, sewerage and alternative water services, and their combined benefit to the community and the environment, rather than looking at sewer servicing options in isolation. This approach generally requires collaboration across a range of organisations.

In *Water for Victoria*, the government sets out a new IWCM planning framework that will guide the development of place-based IWCM plans. Through broadscale IWCM forums that will include representatives from various agencies, these plans aim to link urban planning with water planning and management—including domestic wastewater—to deliver community and environmental benefits.

Rather than a one-size-fits-all approach, such as sewer, IWCM adopts a place-based philosophy that gives responsible agencies more choice to create sustainable, efficient and livable communities.

South East Water

SEW is currently evaluating new place-based IWCM opportunities—including wastewater management—that benefit the community through collaboration with state government departments, local governments and other water authorities.

SEW used IWCM for a development at Lyndhurst in 2017—see Figure 5L.

Figure 5L
Case study: SEW's Aquarevo collaboration

Aquarevo is a unique collaboration between SEW and a private residential land developer, to develop a 460-property water-sensitive residential development in Lyndhurst. Each Aquarevo home is connected to a OneBox device that controls its water technology, including a pressure sewer system that pumps wastewater to a local water recycling plant. The plant treats the water to 'Class A' standard and then sends it back for use in the garden, toilet or washing machine, closing the loop.

Source: VAGO based on SEW.

Yarra Valley Water

YVW is also evaluating IWCM options within its service area, and it applied this approach in the Monbulk Community Sewerage Project.

YVW's cost–benefit analysis of sewer compared to IWCM servicing strategies for Monbulk identified that sewer provided limited additional environmental or human health benefits but at significantly higher cost. The preferred servicing option for Monbulk ended up being sewer, which the community preferred despite its higher cost because it would allow future growth.

YVW's planning processes for Monbulk demonstrate its openness to alternative service options and its local focus—see Figure 5M.

Figure 5M
Case study: Alternative service options for Monbulk

The Monbulk area contains approximately 900 unsewered properties. YRC identified it as an area requiring new sewerage services because current onsite systems were not containing the waste according to SEPP (WoV).

In 2015, YVW used an IWCM approach to determined its preferred servicing option and that of the local community. Stakeholders were asked to comment on a range of measures and to identify what they could contribute towards achieving them. This allowed stakeholders to understand the options and the needs of other stakeholders to help them shortlist the preferred IWCM scenarios.

Stage 1 of the plan involved:

- upgrading 190 properties that cannot contain waste on site and servicing them with an effluent sewer
- upgrading the Monbulk Sewerage Treatment Plant and designing an irrigation system at Monbulk Reserve to reuse wastewater.

Stage 2 did not proceed, but was intended to service properties that contain waste on site but not to SEPP (WoV) or EPA CoP standards by:

- considering alternative wastewater management approaches in light of the results of the Park Orchards trial
- upgrading 519 high- and medium-risk properties to secondary treatment and centrally managing their systems.

Monbulk revised plan

After receiving confirmation that YVW planned to sewer Monbulk, YRC commenced work on a township structure plan, aimed at increasing the potential for housing development in the town. This focused on increasing housing diversity, allowing people to downsize—for example, to move off a family farm but still stay within the community. The housing development identified in the plan relied on the township being sewered with enough capacity to deal with future development.

As a result of these discussions with council and the community, YVW revised its servicing approach for Monbulk, deciding instead to provide sewer.

Under this new strategy, the Monbulk Sewerage Treatment Plant would be decommissioned. Consistent with YVW's on/off approach, it would also see 162 properties that can contain waste on site removed from CSP, saving $3.2 million on the original capital costs.

Source: VAGO.

Appendix A
Audit Act 1994 section 16—submissions and comments

We have consulted with DELWP, EPA, MPSC, YRC, SEW and YVW, and we considered their views when reaching our audit conclusions. As required by section 16(3) of the *Audit Act 1994*, we gave a draft copy of this report, or relevant extracts, to those agencies and asked for their submissions and comments. We also provided a copy of the report to the Department of Premier and Cabinet.

Responsibility for the accuracy, fairness and balance of those comments rests solely with the agency head.

Responses were received as follows:

RESPONSE provided by the Secretary, DELWP

Department of Environment, Land, Water and Planning

PO Box 500, East Melbourne, Victoria 8002 Australia
delwp.vic.gov.au

Mr Andrew Greaves
Auditor-General
Victorian Auditor-General's Office
Level 31 / 35 Collins Street
MELBOURNE VIC 3000

Ref: SEC013760

Dear Mr Greaves

PROPOSED PERFORMANCE AUDIT REPORT MANAGING THE ENVIRONMENTAL IMPACTS OF DOMESTIC WASTEWATER

Thank you for your letter dated 28 August 2018 providing the Department of Environment, Land, Water and Planning (DELWP) with the proposed performance audit report *Managing the environmental impacts of domestic wastewater*.

DELWP supports, or supports in-principle the audit's recommendations directed jointly to DELWP and the Environment Protection Authority (EPA), pending finalisation of the current review of the State Environment Protection Policy (Waters) and its Implementation Plan. This review has canvassed many of the issues raised in your audit.

The timing and output from these actions to address domestic wastewater actions will also be informed by the implementation of the *Environment Protection Amendment Act 2018*. This will require the development of a new set of regulations, supporting instruments and guidance documents. As such the capacity to deliver comprehensive reforms of the domestic wastewater framework will be informed by the broader EPA reform context.

In response to the report's recommendations, DELWP and the EPA have agreed to work together to oversee the development and ongoing operation of a steering committee to review issues and recommend solutions to improve the management of domestic wastewater in Victoria.

Should you have any questions on this matter, please contact Heidi Matkovich, Acting Executive Director Partnerships and Sector Performance on 9637 8250 or heidi.matkovich@delwp.vic.gov.au.

Thank you again for writing.

Yours sincerely

John Bradley
Secretary

7/9/18

VICTORIA State Government

RESPONSE provided by the Secretary, DELWP—continued

Managing the environmental impacts of domestic wastewater

DELWP's Management Action Plan

Recommendations	Agreed Action	Completion Date
Recommendation 6 We recommend that the Department of Environment, Land, Water and Planning (DELWP) and the Environment Protection Authority (EPA) in consultation with councils, water authorities and other key stakeholders work together to review the regulatory framework, tools and guidance for domestic wastewater management to address issues and gaps including: • lack of clarity around roles and responsibilities, particularly for enforcement and power to enforce connection • systems approved prior to 1988 that allowed discharge of treated and/or untreated wastewater offsite or systems approved without a permit • overlapping, onerous and duplicative approval system • governance and approval processes for alternative onsite installation and servicing approaches • issuing ongoing permits for the use of onsite systems (Part 4).	**Support:** Subject to finalisation of State Environment Protection Policy (Waters) and its Implementation Plan, DELWP proposes to work with EPA, MAV, councils and water corporations to review key issues with the regulatory framework. As a first step, Action 5.1 of the Implementation Plan for the draft SEPP (Waters) recommends developing a working group to scope up a work program that will address how these recommendations can be managed and progressed – for example type and scope of implementation actions required and associated responsibilities/accountabilities. Actions 5.2 to 5.7 and B1.4 of the Implementation Plan for the draft SEPP (Waters) will support implementation of this recommendation.	1 July 2020
Recommendation 7 We recommend that DELWP and the EPA work with councils to develop a standard risk assessment framework based on relevant Australian standards that includes comprehensive measures to assess both land capability, environmental factors and the ongoing performance of a system (Part 2).	**Support:** Subject to finalisation of SEPP (Waters) and its Implementation Plan, DELWP proposes to work with EPA, MAV and councils to develop a standard risk assessment framework. This recommendation will be actioned as per Action 5.1 of the draft SEPP (Waters) Implementation Plan. This action will need to follow the review referred to in Recommendation 6.	1 July 2020, dependent upon action from Recommendation 6.
Recommendation 8 We recommend that DELWP and the EPA work with councils to implement an accredited third-party approval system/s for undertaking land capability assessments and inspections for the installation, use and ongoing maintenance of onsite domestic systems or introduce a mandatory requirement that a suitably qualified assessor undertakes these assessments (Part 2).	**Support in Principle:** Subject to finalisation of SEPP (Waters) and its Implementation Plan, DELWP proposes to work with EPA, MAV and councils to scope up the feasibility of developing an accredited third-party approval system/s (consistent with Action 5.4 of the draft SEPP (Waters) Implementation Plan). Timing of this action is dependent on the EPA reform process priority, given EPA has the power to introduce a mandatory system.	1 July 2021

VICTORIA State Government | Environment, Land, Water and Planning

RESPONSE provided by the Secretary, DELWP—continued

Managing the environmental impacts of domestic wastewater

Recommendations	Agreed Action	Completion Date
Recommendation 9 We recommend that DELWP and the EPA work with councils to review the model domestic wastewater management plan and ensure it is based on better practice risk assessment methodology outlined in the relevant Australian standards (Part 2).	**Support:** Subject to finalisation of SEPP (Waters) and its Implementation Plan, DELWP proposes to work with EPA, MAV and councils to review the model domestic wastewater management plan and ensure a risk assessment process is included. This recommendation will be incorporated into the delivery of scoping work under Action 5.1 of the draft SEPP (Waters) Implementation Plan.	1 July 2020, dependent upon action from Recommendation 6.
Recommendation 10 We recommend that DELWP and the EPA work with councils to evaluate and implement a better practice model for the ongoing maintenance of onsite systems including examining: • risk-based maintenance models • use of levies to support third-party maintenance options • the requirement for property owners to gain an onsite system compliance certificate prior to sale of the property (Part 3).	**Support:** Subject to finalisation of SEPP (Waters) and its implementation Plan, this recommendation will be incorporated into the delivery of scoping work under Action 5.1 of the draft SEPP (Waters) Implementation Plan and informed by the implementation and operationalisation of the *Environment Protection Amendment Act 2018.*	Post 2020, dependent upon action from Recommendation 6.
Recommendation 11 We recommend that DELWP and the EPA work together to improve centralised leadership arrangements to effectively oversight the performance and implementation of the regulatory framework to manage the risks posed by poorly performing onsite systems (Part 4).	**Support:** DELWP will support EPA, to implement any required changes to the regulatory framework which are anticipated to be considered as part of the EPA reform program framework in relation to domestic wastewater management. This recommendation will be actioned as an output from the working group Action 5.1 of the draft SEPP (Waters) Implementation Plan.	1 July 2020
Recommendation 12 We recommend that DELWP and the EPA work together to oversee the development and ongoing operation of a steering committee to review issues and recommend solutions to improve the management of domestic wastewater (Part 4).	**Support:** Action 5.1 of the draft SEPP (Waters) Implementation Plan identifies the need to establish a working group to support the EPA reform Agenda.	1 July 2019
Recommendation 13 We recommend that DELWP and the EPA work together to explore legislative opportunities to ensure properties connect to sewer at the point of sale or have an onsite system compliant with legislative requirements (Part 4).	**Support:** DELWP will work with EPA and water corporations to consider the range of opportunities, including legislative opportunities, for appropriate domestic waste water arrangements at point of sale.	Post 1 July 2023

2

RESPONSE provided by the Chief Executive Officer, EPA

Our Ref: MA007645

Mr Andrew Greaves
Auditor-General
Victorian Auditor-General's Office
L31, 35 Collins Street
MELBOURNE VIC 3000

Dear Mr Greaves

Proposed Performance Audit Report - Managing the Environmental Impacts of Domestic Wastewater

Thank you for your letter of 24 August 2018 enclosing the Final Draft Report – Managing the Environmental Impacts of Domestic Wastewater. EPA Victoria accepts the report's findings and EPA's response to the recommendations is attached (Attachment 1).

EPA is delivering on the biggest reform package in our 47-year history. The Victorian Government's Response to the Independent Inquiry into the EPA recognises that our health, quality of life and Victoria's economy and liveability are dependent on clean water, air and land. The government has committed over $180 million to deliver the EPA reforms, including a complete overhaul of the legislative framework.

The Environment Protection Amendment Act 2018 received royal assent on 28 August 2018 and the government has indicated its intention that it commence on 1 July 2020. The government is also reviewing the state environment protection policies (SEPP) for water, and the draft SEPP (Waters), if made by government, is supported by an implementation plan including actions to reform elements of the onsite domestic wastewater framework. These implementation actions will be integrated into broader EPA reforms.

For onsite domestic wastewater, the EPA reforms mean changes to the permits system, delegations to local government and the development of guidance material to support the introduction of a general environmental duty.

The broader EPA reforms are comprehensive, affecting all aspects of our operations. The delivery of these reforms to 1 July 2020 must prioritise critical elements and those that will provide the most benefits, while also maximising the opportunity for the new general environmental duty to address environmental risks. Accordingly, it is anticipated that some reforms of the domestic wastewater regulatory framework will continue beyond the 1 July 2020 commencement date.

Completion of EPA actions will be monitored under EPA's audit management framework.

Yours sincerely

DR CATHY WILKINSON
CHIEF EXECUTIVE OFFICER
ENVIRONMENT PROTECTION AUTHORITY VICTORIA

6/9/2018

EPA VICTORIA

Environment Protection Authority Victoria

200 Victoria Street
Carlton VIC 3053

GPO Box 4395
Melbourne VIC 3001

DX 210082

T 1300 372 842
1300 EPA VIC

W epa.vic.gov.au

VICTORIA State Government

Attachment 1

VAGO AUDIT – Managing the Environmental Impacts of Domestic Wastewater

Table 1 – EPA responses to final report recommendations

Recommendation	Response and proposed action	Proposed completion date
We recommend that the Department of Environment, Land, Water and Planning and the Environment Protection Authority:		
6. in consultation with councils, water authorities and other key stakeholders work together to review the regulatory framework, tools and guidance for domestic wastewater management to address issues and gaps including: • lack of clarity around roles and responsibilities, particularly for enforcement and power to force connection • systems approved prior to 1988 that allowed discharge of treated and/or untreated wastewater offsite or systems approved without a permit • overlapping, onerous and duplicative approval system • governance and approval processes for alternative onsite installation and servicing approaches • issuing ongoing permits for the use of onsite systems (part 4)	Support. EPA will work with DELWP to implement this recommendation. Implementation of the Environment Protection Amendment Act 2018 (the Act), including the introduction of a general environmental duty, coupled with the implementation of the (currently draft) SEPP (Waters) provides an opportunity for this review, and the implementation of priority reforms. The Act reforms are comprehensive – across all aspects of EPA's operations – and require a complete new set of regulations and other supporting instruments and guidance. This will by necessity require reform of the domestic wastewater regulatory framework, including the permits framework, delegations to local government and support through guidance. However, capacity to deliver comprehensive reforms of the domestic wastewater framework will be limited by the broader reform context. Matters that are critical for the operation of the new legislative framework or that offer demonstrable high value in managing environmental and human health risks or framework improvement will be prioritised. Remaining elements will need to be further considered as the regulatory framework evolves post 1 July 2020.	1 July 2020

We recommend that the Department of Environment, Land, Water and Planning and the Environment Protection Authority work with councils to:		
7. develop a standard risk assessment framework based on relevant Australian standards that includes comprehensive measures to assess both land capability, environmental factors and the ongoing performance of a system (Part 2)	Support. EPA will work with DELWP and councils to implement this recommendation, informed by the implementation of broader EPA reforms.	1 July 2020
8. implement an accredited third-party approval system/s for undertaking land capability assessments and inspections for the installation, use and ongoing maintenance of onsite domestic systems or introduce a mandatory requirement that a suitably qualified assessor undertakes these assessments (Part 2)	Support. EPA will work with DELWP and councils to implement this recommendation, informed by the implementation of broader EPA reforms.	1 July 2021
9. review the model domestic wastewater management plan and ensure it is based on better practice risk assessment methodology outlined in the relevant Australian standards (Part 2)	Support. EPA will work with DELWP and councils to implement this recommendation, informed by the implementation of broader EPA reforms.	1 July 2020
10. evaluate and implement a better practice model for the ongoing maintenance of onsite systems including examining: • risk-based maintenance models • use of levies to support third-party maintenance options • the requirement for property owners to gain an onsite system compliance certificate prior to sale of the property (Part 3)	Support. EPA will work with DELWP and councils to implement this recommendation, informed by the implementation of broader EPA reforms. Aspects of this recommendation will need to be considered in the context of the new legislative framework. EPA and DELWP will consider whether any elements of a better practice model can be adopted for the 1 July 2020 commencement of the Environment Protection Amendment Act 2018. Further elements will need to be further considered as the regulatory framework evolves post 1 July 2020.	1 July 2023

We recommend that the Department of Environment, Land, Water and Planning and the Environment Protection Authority work together to:		
11. improve centralised leadership arrangements to effectively oversight the performance and implementation of the regulatory framework to manage the risks posed by poorly performing onsite systems (Part 4)	Support. In implementing this recommendation, EPA will work with DELWP to ensure that centralised leadership of the regulatory framework and the management of risk reflects government and community's expectation of EPA's statutory independence and a spirit of collaboration with our portfolio partners.	1 July 2019
12. oversee the development and ongoing operation of a steering committee to review issues and recommend solutions to improve the management of domestic wastewater (Part 4)	Support. EPA will work with DELWP to implement this recommendation.	1 July 2019
13. explore legislative opportunities to ensure properties connect to sewer at the point of sale or have an onsite system compliant with legislative requirements (Part 4).	Support. EPA will work with DELWP to implement this recommendation, informed by the implementation of broader EPA reforms.	1 July 2023

RESPONSE provided by the Mayor, MPSC

MORNINGTON PENINSULA
Shire

Obj: A8316629

10 September 2018

Mr Andrew Greaves
Auditor General
Victorian Auditor General's Office
Level 31/35 Collins St
MELBOURNE VIC 3000

Dear Mr Greaves,

RE: PROPOSED PERFORMANCE AUDIT– MANAGING THE ENVIRONMENTAL IMPACTS OF DOMESTIC WASTEWATER

Thank you for your letter dated 24th August 2018 inviting the Shire to provide comments and submissions on the above performance audit under Section 16(3) of the Audit Act.

Mornington Peninsula Shire greatly appreciated the opportunity to contribute to the audit into domestic wastewater by your office. The audit and subsequent recommendations will significantly assist Councils and water authorities to address this important issue.

The Shire welcomes the proposed recommendations in the audit:

1. *Consult with water authorities, the Environment Protection Authority, the Department of Environment, Land, Water and Planning and other key stakeholders in undertaking integrated water cycle management planning processes for their municipalities so that the management of domestic wastewater risks is not planned in isolation of the management of stormwater, floods, alternative water supplies, and drinking water supplies*
2. *Implement a rolling annual program of compliance inspections in high risk properties and townships to bring onsite systems in line with permit and/or policy requirements and follow up non-compliance*
3. *Develop and implement a data management plan to collect accurate information on the number, location and performance of onsite wastewater systems. Data collection should be prioritised using a risk-based approach to identify areas for collection based on highest to lowest risk*
4. *Develop an education plan to inform property owners of their responsibilities and requirements to maintain and upgrade their onsite systems as required, which must include an evaluation framework to assess its effectiveness.*

The Shire nominated Mark Upton, Team Leader – Environmental Health as the contact officer for the audit. Mark and other officers have reviewed the proposed performance audit and provided the attached submission which indicates how the Shire will address the proposed recommendations.

If you have any queries please to contact Mark Upton, Team Leader – Environmental Health on phone 59 501 050.

Yours Sincerely,

Councillor Bryan A Payne
Mayor – Mornington Peninsula Shire

Private Bag 1000, 90 Besgrove St, Rosebud VIC 3939 • p: 1300 850 600 • e: customerservice@mornpen.vic.gov.au • w: mornpen.vic.gov.au • ABN 53 159 890 143

VAGO Recommendations & MPSC Response

VAGO Recommendation

1. Consult with water authorities, the Environment Protection Authority, the Department of Environment, Land, Water and Planning and other key stakeholders in undertaking integrated water cycle management planning processes for their municipalities so that the management of domestic wastewater risks is not planned in isolation of the management of stormwater, floods, alternative water supplies, and drinking water supplies.

MPS Response

MPSC is addressing this through it's Smart Water Plan (attached) and participation in regional Integrated Water Management Frameworks. This is outlined in the WMP 2018-2023 Background Paper:

The Integrated Water Management Framework for Victoria was released by the State Government in September 2017 and aims to help government, the water sector and the community work together to better plan, manage and deliver water in Victoria's towns and cities. The Framework outlines how greater community value can be delivered by consistent and strategic collaboration within the water sector – including water corporations, local governments and catchment management authorities – and through their links with organisations involved in land use planning.

This Framework utilises the knowledge and experience of water sector organisations in applying integrated approaches to water cycle planning. Affordable and effective wastewater systems is one of the five water-related outcomes in the framework.
Integrated water management (IWM) forums will identify, coordinate and prioritise IWM opportunities. MPSC is a member of the Dandenong and Western Port IWM Forums.

The Strategic Direction Statement from both the Dandenong and Western Port Forums are now prepared and ready for review and endorsement. The proposed Strategic Direction Statement (SDS) for the Western Port Forum includes:

- *Monitoring Septic Tank Systems (WP5);*
- *Recycled Water to Tyabb and Somerville (WP14); and*
- *Recycled Water to the Mornington Peninsula Hinterland (WP15)*

This recommendation will also be addressed in the Shire's Climate Change Community Engagement Strategy, specifically in Action 3 (draft attached)

VAGO Recommendation

2. Implement a rolling annual program of compliance inspections in high risk properties and townships to bring onsite systems in line with permit and/or policy requirements and follow up non-compliance

MPS Response

MPS acknowledge that ongoing compliance inspections of onsite wastewater systems will be effective in reducing environmental and health impacts. The draft WMP 18 addresses this recommendation as part of Strategy 4, and Strategy 10, as per below.

Strategy 4. Implement a comprehensive risk assessment and monitoring program			
4.2. Mail-out to all owners of properties with OWS requesting that OWS be serviced and pumped out (unless recent receipt provided). Will need to stagger letters to spread the load on contractors. Follow up in accordance with wastewater compliance policy.	MPS Environmental Health MPS IT		Refer to WWO MoU Action Plan
4.3. Undertake site inspections of OWS based on risk assessment, and with a priority on recently sewered areas, with compliance action in accordance with Wastewater Compliance Policy.	MPS Environmental Health		Refer to MoU Action Plan and Shire Wastewater Management Policy
4.4. Conduct sampling of OWS to assess compliance with EPA treatment standards	MPS Environmental Health	Medium	Number of samples Compliance rates

Strategy 10. Focus on High Risk Catchments			
10.1. Developed detailed action strategies to focus on high risk catchments	MPS Environmental Health MPSC WWO MPSC CCEW MPSC Natural Systems SEW	High	Ongoing Notify Council by December 2018

As part of the development of the draft WMP18, MPSC have identified the risks posed by each individual property from onsite wastewater systems, based on:

- Soil type, slope and area of property
- System type, age
- Distance to waterways, bores

The compliance inspections will prioritise higher risk properties and localities.
MPSC also notes that the effectiveness of compliance audits would be significantly increased with a change in legislation that would allow older style permits without conditions requiring maintenance to be revoked and replaced with permits with conditions consistent with the Code of Practice and the MPS wastewater policy. In the current situation, there is a high onus of proof on councils to demonstrate system failure despite there being no regular maintenance of a system (unless the permit has specific maintenance conditions).

With regard to inspections in recently sewered areas (backlog and ECO) MPSC regularly liaises with SEW regarding pro-active education, compliance and enforcement activities in these areas. These activities will continue to be programmed based on several factors including environmental and public health risks, previous water sampling results, type and age of septic systems, sewer connection rates, and the capacity of local sewerage infrastructure.

VAGO Recommendation

3. Develop and implement a data management plan to collect accurate information on the number, location and performance of onsite wastewater systems. Data collection should be prioritised using a risk based approach to identify areas for collection based on highest to lowest risk

MPS Response

MPSC acknowledge that there are gaps in the data available with regard to onsite wastewater systems. In particular, there are approximately 15,000 systems with a permit that is not electronically recorded on the council's databases. MPS believes that there are minimal benefits from including all available details of these older style permits on the electronic database, and do not currently have plans to upload each permit onto the database. MPS acknowledge that there are benefits to identifying the location of all properties with onsite wastewater systems, and including their service history. The draft WMP18 includes one over-arching strategy and several specific actions to address the data gaps and improve data management, as per table below:

Strategy 2. Further develop information management systems				
2.1.	Develop and implement an incentive strategy to promote the uptake of Septic Track (ST) e.g. a published list of "Approved Service Agents". Strategy to be implemented through the Shire's Wastewater Management Policy Continue to encourage, through education and incentives, wastewater contractors to adopt Septic Track	MPS Environmental Health MPS Risk Management MPS Legal SEW	High	Incentive strategy implemented by December 2018
2.2.	Modifications to MPS property and rating database (CI) to record inspections, service and pump-outs of OWS. Include data on building age in application to assist with risk assessment. (pending IT review)	MPS IT	Medium	Action by March 2020
2.3.	Use SEW data for tracking septage disposal compared with Septic Track	MPS Environmental Health SEW	High	Action by December 2018
2.4.	Obtain on-going funding for SepticTrack (current funding until 30/6/2020)	MPS Environmental Health	Low	Septic track funded to 2023
2.5.	Ensure SEW sewerage connection data is updated regularly on GIS and CI is revised to allow wastewater status to be recorded. SEW data to include properties with sewer available and any future sewer areas.	MPS IT/GIS SEW	On-going	Ongoing
2.6.	Groundwater bore data from SRW or VVG linked to GIS	MPS IT/GIS VVG Southern Rural Water	Low	Ongoing
2.7.	Amend Shire vendor statements to include wastewater status. Advocate to State Government for amendments to the Sale of Land Act (S.32)	MPS Rates & IT SEW	Medium	Action by 1 December 2019
2.8.	Include process for cancelling permits when sewer connected	MPS Environmental Health MPS legal	Low	
2.9.	Develop process for transferring OWS permits when property sub-divided (pending MPS IT review)	MPS IT MPS Environmental Health	Medium	Action by March 2020

2.10. Move to paperless application process for OWS. (pending MPS IT review)	MPS Environmental Health MPS IT	Low	Commenced/Ongoing

VAGO Recommendation

4. Develop an education plan to inform property owners of their responsibilities and requirements to maintain and upgrade their onsite systems as required, which must include an evaluation framework to assess its effectiveness.

MPS Response

It is recognised that awareness of the responsibilities associated with owning and operating an OWS will directly contribute to its effective functioning and reliability. Education and communication programs have been introduced over the past several years, through the Wastewater Officer Action Plan and the 2015-2018 DWMP. MPSC will be continuing and enhancing the education and communication actions that have been undertaken since 2015, and this is an identified Strategy of the draft WMP18, as documented below. MPSC have identified a need to enhance and expand it's wastewater communications plan as a key action of the WMP18. This plan will include an evaluation framework to assess it's effectiveness.

Strategy 1. Continue to educate community on the management of OWS			
1.1. Continue and enhance the wastewater communications plan to encourage OWS maintenance and connection to sewer where available, as well as on protection of groundwater and safe use of bore or recycled water	MPS Environmental Health MPS Communications SEW	High	Updated plan developed by Dec 2018
1.2. Include dedicated education of property agents and owners/managers of short term rentals regarding management of OWS in holiday rentals in communications plan	MPS Environmental Health and Community Safety MPS Communications	Medium	Action by Dec 2019
1.3. Measure the effectiveness of the wastewater communications plan	MPS Environmental Health MPS Communications	High	As per communications plan

1.4. Liaise with industry associations, SEW and State (EPA/DEWLP) to fund and develop materials (e.g. you tube video) for generic on-site wastewater education, annual newsletter, school education, fact sheets for wastewater industry	Community groups Industry stakeholders SEW MPS Environmental Health MPS Communications EPA/DELWP/SEW	Low	Action by December 2019
1.5. Annual updates (and training if required) for industry stakeholders	MPS Environmental Health MPS Economic Development Industry stakeholders	Medium	November annually
1.6. Share educational materials for wastewater management at regional forums and through professional organisations	MPSC Environmental Health EHPA	Medium	March 2019

RESPONSE provided by the Mayor, YRC

Yarra Ranges Council
PO Box 105
Lilydale Vic 3140
DX 34051
Call 1300 368 333
Fax 03 9735 4249
mail@yarraranges.vic.gov.au
www.yarraranges.vic.gov.au

Yarra Ranges Council

Mr Andrew Greaves
Auditor General
Victorian Auditor General's Office
Level 31, 35 Collins Street
Melbourne 3000

Proposed Report: Managing the Environmental Impacts of Domestic wastewater

Thank you for your letter of 24th August 2018 and for the opportunity to comment on the proposed report for the Managing the Environmental Impacts of Domestic Wastewater performance audit.

Yarra Ranges Council has accepted all recommendations outlined in the audit and is in agreement that the content of the audit captures issues and barriers in managing domestic wastewater across Yarra Ranges. It is a fair and balanced document.

In 2017 Yarra Ranges Council's Environmental Health team was involved in the development of a new structure at Council to focus on proactive preventive approaches to various issues. Wastewater management was identified as part of this in recognition of the reactive approach that is currently taken.

A business case for a dedicated resource was granted; we anticipate the position will be appointed in early October 2018. Yarra Ranges is committed to ensuring environmental impacts resulting from wastewater are managed appropriately due to the vast number of septic systems.

Yarra Ranges Council welcomes your recommendations and has already started to implement actions in the attached draft action plan.

Should you wish to discuss Yarra Ranges Council's response please contact Kym Murphy Acting Executive Officer Safer Communities on 03 92946464 or e-mail k.murphy@yarraranges.vic.gov.au

Yours Sincerely

Cr Len Cox
Mayor
Yarra Ranges Council

ABN 21 973 226 012
Yarra Ranges Shire Council

RESPONSE provided by the Mayor, YRC—continued

VAGO Recommendations	YRC response & acceptance	Proposed Action	Timeframe
1. Consult with water authorities, EPA, DELWP and other key stakeholders in undertaking IWCM planning processes for their municipalities so that the management of domestic wastewater risks is not planned in isolation of the management of stormwater, floods, alternative water supplies and drinking water supplies.	YRC agree with an integrated approach to IWCM planning.	Establish a Steering committee of key stakeholders who will oversee and contribute to the development of the DWMP. This will include a risk based approach and key priorities for implementation.	Discussions at council have begun Implementation date 2019
2. Implement a rolling annual program of risk-based area prioritised compliance inspections to bring on-sites systems in line with permit and/or policy requirements and follow up non-compliance.	A risk based area based inspection system will be included in the DWMP. Once high risk areas are prioritised a phased approach to inspections will be introduced. The recommendation for the EPA & DELWP to review the regulatory framework, tools and guidance for domestic wastewater management to address issues is paramount in the ability of councils being able to bring systems into compliance	Develop a staged approach to compliance inspections as per the DWMP.	Start 2020

3. Develop and implement a data management plan to collect accurate information on the number, location and performance of on-site systems. Data collection should be prioritised using a risk-based approach to identify areas for collection based on highest to lowest risk	YRC council agree that this is a high priority and will become part of the preparation for the DWMP. Council will use an industry recognised risk management strategy to identify areas of highest risk	Develop a data management plan. Collect and analyse data which will inform the risk based compliance inspections.	2019
4. Develop an education plan to inform properties owners of their responsibilities and requirements to maintain and up-grade their on-site systems as required, which must include an evaluation framework to assess its effectiveness.	This education plan must be designed in conjunction with water authorities and government bodies to ensure a consistent and effective message is provided to the community	Education plan will form part of the DWMP	Education plan will be contained and detailed in DWMP once finalised.
5. YRC finalise its DWMP by 2019 identifying high risk areas for servicing in collaboration with YVW, the community and other key stakeholders.	YRC has committed to finalising its DWMP by end 2019 in order to create a document that can effectively capture all required info and set up a risk based management approach. As YRC has identified this as a priority a Wastewater project EHO has been be appointed to complete the DWMP	Wastewater officer appointed. Develop a Discussion paper and Project Plan. Develop the YRC DWMP Please note that work has begun including project planning, research and liaising with stakeholders.	October 2018. 2018 December 2019

RESPONSE provided by the Managing Director, SEW

healthy water for life

WatersEdge
101 Wells Street
Frankston VIC 3199
PO Box 2268
Seaford VIC 3198 Australia
Telephone +61 3 9552 3000
southeastwater.com.au

4 September 2018

Mr Andrew Greaves
Auditor-General
Victorian Auditor-General's Office
Level 31, 35 Collins Street
Melbourne Vic 3000

Email: andrew.greaves@audit.vic.gov.au
dallas.mischkulnig@audit.vic.gov.au

Dear Mr Greaves

Managing the environmental impacts of domestic wastewater

Thank you for your letter dated 24 August 2018 enclosing the proposed report on managing the environment impacts of domestic wastewater.

The effective treatment and management of domestic wastewater is integral to managing public health and environmental risks posed by this waste and as such South East Water welcomes the performance audit report's findings and its recommendations to further improve the impact on the environment as a result of its management.

South East Water accepts all the recommendations contained in the report.

South East Water fully supports recommendation 2, that councils implement an annual program of compliance inspections in high-risk properties and townships to bring on-site systems in line with permits and/or policy requirements, as well as follow up on non-compliance.

This recommendation will provide valuable information on the state of the systems currently in place, which is as key data gap, as well as the impact they are having on the environment. It will also assist in educating home owners by providing them with the information required to appropriately manage these systems.

South East Water Corporation
ABN 89 066 902 547

Recommendation 6 requires the Department of Environment, Land, Water and Planning (DELWP) as well as the Environment Protection Authority (EPA) in consultation with councils and water authorities review the regulatory framework, tools and guidance for domestic wastewater management.

Clarifying roles and responsibilities is fundamental if we are to ensure we as a state and as an industry manage the impacts of domestic wastewater effectively. Providing avenues to ensure that all on-site wastewater system are compliant with current legislation would result in significant improvement to the environment as well as provide significant cost savings to our customers by reducing the extent of infrastructure required to be installed.

Recommendation 13 is also strongly supported by South East Water, which recommends that DELWP and EPA explore legislative opportunities to ensure properties connect to sewer at the point of sale.

This initiative would ensure that over time all properties are connected to the infrastructure provided and as a property sale generates revenue and releases capital, the cost impact to our customers to connect would be lessened.

South East Water is also supportive of recommendation 18, which requests that Yarra Valley Water oversee the formation of a steering committee to review the outcomes of the Park Orchards alternative system trial.

The learnings from this project will be very beneficial as we continue to investigate viable servicing options for some of the more remote areas on our program.

South East Water's actions in response to the three recommendations that directly relate to water authorities are attached. These will be monitored under South East Water's Audit Management Framework.

South East Water is committed to minimising the impact on both public health and the environment caused by on-site treatment systems will continue to collaborate with all agencies to ensure the best outcomes are achieved for both community and environment.

If you have any questions relating to these please contact Nick Aidonopoulos on 9552 3003.

Should you have any other questions or wish to discuss further please contact me on 9552 3697.

Regards

Terri Benson
Managing Director

cc: Mr Dallas Mischkulnig, Director, Performance Audit

VAGO Audit - Managing the environmental impacts of domestic wastewater

Table 1 – South East Water response to final report recommendations that directly relate to water authorities

Audit Rec. No.	Recommendation	Proposed Action	Completion Date
14	We recommend that water authorities investigate and implement a process to report to councils on the number and locations of properties connecting to sewer within agreed timeframes (Part 5)	South East Water will co-ordinate with Mornington Peninsula Shire Council to agree on specified timeframe, which could range from quarterly to bi-annually. South East Water is considering implementing online GIS data services to enable councils and other relevant authorities to consume selected GIS map layers for specific purposes. The intention is to discuss this opportunity internally to determine if providing GIS data as an online service is feasible, also ensuring the GIS data is fit for purpose, secured and used appropriately. Following this the specification of GIS data content, security and appropriate use of GIS data will need to be agreed between councils and South East Water prior to any implementation of services and data sharing arrangements.	31 December 2018 Ongoing
15	We recommend that water authorities work together to share information around alternative approaches to service unsewered remote townships and those in difficult terrain (Part 5)	South East Water is and has worked closely with a number of other water authorities to share information on alternative approaches and provide assistance in developing servicing options. These include: • Barwon Water – Wye river area. Assisted with concept design following the 2016 bushfires	

Audit Rec. No.	Recommendation	Proposed Action	Completion Date
		• South Gippsland Water – Poowong, Loch and Nyora scheme. Pressure Sewer Systems designed and installed in 2016 to cater for 450 existing properties as well as providing capacity for growth within the townships • Yarra Valley Water – Yarra Ranges Community Sewerage Scheme. Pressure sewer alternative concept designed and detailed design in 2017 to cater for 4,000 existing properties taking into consideration learning from the Belgrave backlog areas, Stage 1 currently being tendered • IOTA have continued to offer their services for backlog servicing solutions across Victoria, NSW and Queensland providing technology developed in-house South East Water will continue to work closely with fellow water authorities to provide some of our knowledge as well as learn from some of the work others are doing. South East Water is particularly interested in the outcomes of the Park Orchards trial that Yarra Valley Water is currently undertaking and as per Recommendation 18 (Yarra Valley Water responsibility) is very happy to be part of the steering committee.	Ongoing

Audit Rec. No.	Recommendation	Proposed Action	Completion Date
16	We recommend that water authorities together with councils, educate their customers and ratepayers about the life cycle costs of installing, operating and maintaining onsite systems, alternative onsite system approaches and reticulated sewer as part of the decision-making process to determine the most cost-effective fit for purpose servicing option (Part 5)	South East Water will continue to work closely with Mornington Peninsula Shire Council to explore avenues to educate our customers and ratepayers. One of the primary purposes of the wastewater officer that has been embedded in Mornington Peninsula Shire Council which South East Water is funding is to inform and educate our customers on the importance of appropriately maintaining their systems as well as identifying the limitations of their respective on-site systems. In addition to this South East Water will maintain its presence in region, currently a shop front in Rye, to ensure that our customers have the ability to easily access relevant and accurate information.	Ongoing

RESPONSE provided by the Managing Director, YVW

Yarra Valley Water

YARRA VALLEY WATER
ABN 93 066 902 501

Lucknow Street
Mitcham Victoria 3132

Private Bag 1
Mitcham Victoria 3132

DX 13204

F (03) 9872 1353

E enquiry@yvw.com.au
yvw.com.au

6 September 2018

Andrew Greaves
Auditor – General for Victoria
Level 31, 35 Collins Street
Melbourne VIC 3000

Dear Mr Greaves,

Thank you for your letter of Friday 24th August 2018 in which you provided the Final Draft Report – Managing Environmental Impacts of Domestic Wastewater. I am pleased to provide Yarra Valley Water's response to the report.

We welcome the Victoria Auditor General Office's review of the management of domestic wastewater systems and hope that this work will drive continued improvement in how these systems are managed into the future. We note the report's findings and accept the recommendations made. Our proposed actions in response to the five recommendations in the report that specifically relate to YVW, are provided in Appendix 1.

We strongly believe that by continuing to work in partnership with the State Government, Regulators, Local Councils, other Water Authorities and the Community, our Community Sewerage Program will continue to successfully deliver public amenity, waterway and public health benefits that will create a more sustainable and thriving Melbourne.

If you wish to discuss any of the details of our proposed actions in response to the report, please contact Marnie Ireland, Divisional Manager Sustainable Growth Planning on 9872 1527 or by email at marnie.ireland@yvw.com.au.

Yours sincerely,

Pat McCafferty
Managing Director

Appendix 1 – YVW Proposed Actions

Audit Rec No.	Audit Report Recommendation	Proposed Actions	Completion Date
14	**We recommend that water authorities:** Investigate and implement a process to report to councils on the number and locations of properties connecting to sewer within agreed timeframes	a) In consultation with all relevant councils, YVW will determine and implement a process of providing ongoing updates to councils relating to the location and number of property connections to new sewerage infrastructure.	Council engagement to be completed by December 2018 New processes to be implemented by June 2019.
15	**We recommend that water authorities:** Work together to share information around alternative approaches to service unsewered remote townships and those in difficult terrain	a) We will continue to work closely with other water authorities in relation to alternative servicing approaches and servicing areas with difficult terrain. We are currently working closely with South East Water on smart pressure sewer network design and have sought information in relation to areas they have previously serviced in difficult terrain. E.g. Belgrave Heights / Selby Backlog Projects. b) YVW will continue to share our key learnings with the water sector from trials of new technology and alternative servicing approaches including learnings from our Kinglake and Park Orchards trials.	Ongoing Ongoing
16	**We recommend that water authorities:** Together with councils, educate their customers and ratepayers about the life cycle costs of installing, operating and maintaining onsite systems, alternative onsite system approaches and reticulated sewer as part of the decision-making process to determine the most cost-effective fit for purpose servicing option	a) Community Sewerage Program and catchment based Integrated Water Cycle Management planning processes will involve Councils and local communities in decision making. This will include discussion of optimised servicing options and incorporate processes for deciding on funding options for fit-for-purpose solutions. These processes will include education of the community in relation to the various sewerage servicing options being considered for the specific area (including onsite systems where applicable). b) Septic system lifecycle costs and best practice maintenance information will be provided to residents participating in the Park Orchards trial upon completion of the trial. The extent of YVW involvement with these systems post-trial will be determined based on the outcome of the trial.	Additional community education information and materials will be developed by June 2019. To be applied and utilised ongoing from June 2019 December 2021
17	**We recommend that Yarra Valley Water:** Implement an ongoing monitoring program, in consultation with YRC and other relevant catchment agencies, to confirm areas priorities by councils for servicing and to confirm that the servicing option implemented has reduced environmental and public health risks	a) YVW is currently working with Melbourne Water, Monash University and YRC to gather baseline water quality data in targeted locations in the Dandenong Ranges. It is anticipated that the monitoring of the same waterways will continue once the new sewer network is completed and connections to the system are made. b) YVW will work collaboratively with Melbourne Water (and Port Phillip and Westernport CMA and others as appropriate) to develop a coordinated and ongoing monitoring program that provides an evidence base linking Community Sewerage Program investment to waterway and catchment health outcomes. c) Pending the initial outcomes of the Dandenong Ranges Monitoring Scheme and the development of a collaborative monitoring program with relevant catchment management authorities, further monitoring will be rolled out to other areas included in the Community Sewerage Area.	June 2019 December 2019 June 2020
18	**We recommend that Yarra Valley Water:** Oversee the formation of a steering committee comprising key stakeholders to review the outcomes of the Park Orchards alternative systems trial to inform any further review of regulatory issues and implementation of alternative onsite system approaches	a) YVW will facilitate a collaborative process at the conclusion of the trial to share and evaluate the trial's outcomes and to understand the relevance to regulatory frameworks. The trial's conclusion coincides with the completion and evaluation of the trial's environmental monitoring program. This workshop will include all relevant stakeholders.	December 2021

Appendix B
Progress against 2006 recommendations

Our 2006 report, *Protecting our environment and community from failing septic tanks,* made recommendations to improve the management of onsite systems. Table B1 identifies the recommendations and our assessment of agencies progress made in addressing these.

Figure B1
Progress on 2006 VAGO recommendations

Recommendation	Has the issue been addressed?	Comment
1 That DSE, EPA and local government use available technical data sets such as LCAs, environmental monitoring and cadastre (lot size) information to identify and monitor the impact of failing septic tanks across the state.	No	**DSE**—Did not accept this recommendation. **EPA**—Partially supported this recommendation. It stated LCA information is addressed in the Victorian Land Capability Assessment Framework produced by EPA. **YRC**—Informed us that as there are no binding conditions or uniform requirements in LCAs—whatever assessors decide to include relates to that assessors' opinion. Lack of uniformity means there is inconsistency in LCAs, and YRC has found that some LCAs differ significantly. Assessors are not subject to regulation. As such, reputable assessors are often priced out by under-qualified assessors.
	Partially	**MPSC**—Collects and uses data on the status of onsite system permits, soil types, geology and bore locations. MPSC is yet to include water sampling data. Where it does require an LCA for permit purposes, the reliability of this data is undetermined.
2 That DSE, in consultation with CMAs, EPA, the Department of Human Services (DHS), local government, water companies and water authorities, establishes a mechanism to allow all stakeholders ready access to technical information, such as land capability and environmental monitoring data, to improve risk identification and monitoring.	No	**DSE—**Did not accept this recommendation. **SEW**—Collects and shares data with MPSC on sewer and water connections, infrastructure and catchment boundaries. Has also shared water quality monitoring data with numerous councils—for example, data about Guys Hill with Cardinia Shire Council and data about Flinders with MPSC. SEW has assumed responsibility for monitoring water quality to provide necessary evidence and advises that accountability for scientific evidence collection be clearly defined. Numerous presentations have been made to the broader water industry, EPA and DELWP on the successful outcomes of the backlog sewerage program.
	Partially	**MPSC**—Collects and shares data with SEW on the status of onsite system permits, soil types, geology and bore locations. MPSC is yet to include water sampling data.

Figure B1
Progress on 2006 VAGO recommendations—*continued*

Recommendation		Has the issue been addressed?	Comment
3	That DSE, in consultation with EPA, local government, CMAs, water companies, water authorities and DHS, develop an agreed method (risk criteria, level of consultation, data sources) for prioritising backlog schemes consistently across the state.	No	This has not occurred. Each water authority uses different risk prioritisation frameworks.
4	That DSE, in conjunction with EPA and DHS, and in consultation with local government, review the current septic tank regulatory framework, including related legislation, policy and guidance, to clarify roles and responsibilities and enforcement powers for local government, water authorities and water companies.	Partially	**EPA**—A DELWP led recommendation. However, the government has committed $4.8 million to deliver a pilot program of Officers for the Protection of the Local Environment. This 15-month pilot, which commenced in September 2017, sees employment of 10 officers located in councils to respond to localised waste and pollution issues. EPA administratively updated the CoP in 2016. **DELWP**—SEPP Review and EP Act review are looking at changes to the framework. **SEW**—SEW supports the current regulatory framework being reviewed and consideration given to water authorities in assuming greater responsibility for onsite system management due to their technical and commercial capacity.
5	That the EPA, in consultation with local government and DSE, develop a standard set of septic tank permit conditions, ensure that they are applied consistently across the state and that enforcement powers exist to address non-compliance issues.	No—permit conditions are not uniform. Systems must be EPA approved but council discretion applies.	**EPA**—During 2015–16, EPA revised its approach to approving types of onsite systems. As part of this reform a set of model septic tank permit conditions were made available to MAV for possible distribution to local government. **DELWP**—EPA has developed a standard set of septic tank permit conditions in consultation with local government. **YRC and MPSC**—Onsite system permits include standard conditions that are uniform and are issued in line with EPA conditions.
6	That local governments ensure that property owners and/or tenants understand that they have an existing septic tank system and that the owner has specific maintenance responsibilities for this system.	Partially	**DELWP**—This is included in the SEPP (WoV) implementation plan. **YRC**—Is in the process of digitising its permits, but a time frame has not been given for this to be completed. In lieu of this, YRC does not know proactively what properties have an onsite system. YRC engages in some education but this is mostly reactive, not proactive. **MPSC**—Property owners of onsite systems installed from 2007 need to comply with maintenance permit conditions. Property owners of systems installed before 2007 are not proactively engaged by council, although general information on maintenance is online, brochures included in mailouts and regular articles published in local papers.

Figure B1
Progress on 2006 VAGO recommendations—*continued*

Recommendation		Has the issue been addressed?	Comment
7	That DSE, in consultation with the Department for Victorian Communities, seek a definitive interpretation of whether local government is empowered under the *Local Government Act 1989* (LG Act) to collect levies for septic tank management.	No—water authorities have engaged their own legal advice on similar issues.	**DELWP**—There was an 'attempt' to amend the LG Act to explicitly state that councils can collect levies for onsite system management, however, this was unsuccessful. **YVW**—Completed a legislative review of councils' powers in 2014. It found that councils could create and implement a local law under the LG Act to better regulate onsite systems installed before 1988. This would allow for a penalty (of up to 20 penalty units) to be placed on property owners who did not abide with the local law. The results of this have not been shared with YRC, however, Manningham City Council has recently implemented a local law requiring maintenance and management. The success of this could guide future council engagement with local laws. **MPSC**—MPSC identified in a 2007 report on 'options for cost recovery for permitting and compliance monitoring of onsite systems' that the legal basis for a service levy under the LG Act needed to be confirmed or prescribed by the minister. MPSC has taken no further action.
8	That the EPA, in consultation with local government, strengthens statutory requirements for local government to complete domestic wastewater management plans by including an approval mechanism, periodic reviews and penalties for noncompliance.	Yes—proposed through draft SEPP	**EPA**—The government's *Independent Inquiry into the EPA* in 2015–16 identified the need for a complete overhaul of EPA legislation. This was supported by the government. EPA is currently working with DELWP on a remake of the SEPP (WoV). A revised draft of the SEPP is currently open for comment. Development of legislation is led by DELWP. **DELWP**—This remains as a clause in SEPP (WoV) and has had mandatory review requirements added. However, the plans no longer require government approval and there are no penalties for noncompliance. **YRC—**Has not completed an approved DWMP. In 2005 it received funding to complete one, but only made it some way through the process of creating a background paper. There have been no penalties for the noncompliance with the SEPP requirement to create a DWMP. **MPSC—**Received state government funding in 2005 to develop a DWMP. MPSC completed and approved the plan in 2007, reviewed and updated it in 2015, and is currently reviewing it for a second time.
9	That local governments reassess the resourcing levels needed to fulfil their legislative responsibilities for septic tanks.	No	**EPA—**Through the government response into the inquiry into EPA, a 15-month pilot program establishing 10 officers for the protection of the local environment is underway. **YRC—**It is not known if YRC undertook a review. However, it continues to struggle with a lack of resourcing to provide proactive monitoring of onsite systems.
		Yes	**MPSC—**In a 2007 report MPSC identified the cost of providing onsite system permitting and compliance monitoring services. Options identified the resources required for additional levels of compliance monitoring and auditing. A full-time wastewater management officer was appointed from 2016.

Figure B1
Progress on 2006 VAGO recommendations—*continued*

Recommendation		Has the issue been addressed?	Comment
10	That DSE, in conjunction with all relevant stakeholders—including local government, catchment management authorities (CMA), water companies and water authorities—develop and implement a statewide backlog plan, which articulates with other relevant environmental planning processes.	No	**DELWP—**Has not happened and has not been considered.
11	That EPA seeks to establish a suitable mechanism to assure the quality of LCAs.	No	**EPA—**LCA information is addressed in the Victorian Land Capability Assessment Framework. However, councils have expressed that the issues identified in our 2006 audit still exist around the quality and consistency of LCAs. **YRC and MPSC**—See comments under Recommendation 1.
12	That DSE reviews *the Water Act 1989* and the *Water Industry Act 1994* to ensure that this legislation provides a consistent operating environment for backlog sewerage provision across metropolitan and regional areas.	No	**DELWP—**The SoO (General), issued in December 2015, provides guidance to all urban water authorities on the provision of sewerage services.
13	That water companies and water authorities ensure that in all but exceptional cases property owners are connected to new sewerage infrastructure as required by SEPP (WOV).	No, but recommendation thrust is no longer appropriate given changes in water authority approaches to servicing unsewered areas in line with their SoOs.	**YVW—**Drivers for servicing unsewered properties have changed where the outcome to be achieved is a fit-for-purpose cost-effective system, which means sewer is not always the preferred service option. Forcing connection is a last resort used by water authorities due to issues associated with this regulatory power. It is not known how frequently YVW uses its power to enforce connection. **SEW—**SEW advised that water authorities need stronger powers to compel customers to connect to sewer. Also, to enable cost recovery, sewer connection costs should be charged to the property not owner. SEW proactively engages with the local community prior to rolling out its backlog program. Historically it has undertaken community surveys, provided educational material and recently established a shop front in the local backlog area to ensure the community has easy access to information regarding the backlog program. This has led to high connection rates—for example, a 99 per cent connection rate in Flinders. Has brokered lower-cost connection services to encourage customers. Has provided discounts to customers as an incentive to connect early in the scheme.

Figure B1
Progress on 2006 VAGO recommendations—*continued*

Recommendation		Has the issue been addressed?	Comment
			SEW *(continued)*—Continued to review connection costs for those areas serviced in the Peninsula ECO scheme and reflected some of the savings in delivery to reduce brought-forward connection costs on lower-priority areas as an incentive to encourage connection.
14	That DSE, in consultation with the EPA, DHS, local government, water companies and water authorities, develop a statewide approach for the collection of information about septic tanks so that future backlog planning and monitoring is based on reliable information.	No	**DELWP—**Has not occurred.
15	That local government (in accordance with SEPP), the EPA, water companies and water authorities, undertake a comprehensive review of backlog across the state to enable DSE to accurately quantify backlog property numbers, identify locations and the agency responsible for completing backlog schemes.	No	**EPA—**DWMPs are the main instrument by which local governments identify and assess risks from unsewered areas. EPA has previously provided technical input into the development of these plans when requested by local government. **SEW—**Undertakes a comprehensive review of each backlog scheme. The review documents the number of connections and quantifies the environmental and health benefits. Historically SEW has observed a distinct correlation between the number of connections to sewer with improvements to environmental and health conditions. SEW works with DSE, EPA, DHS and local government to report on future programs and outcomes from completed works.
16	That DSE and the Essential Services Commission establish backlog reporting requirements for water companies and water authorities and periodically monitor results, including outcomes, to ensure that these agencies are meeting their backlog commitments and identify if government policy objectives are being achieved.	No	**DELWP—**This has not occurred.

Source: VAGO.

Appendix C
Glossary

Backlog

Backlog refers to the number of residential properties not serviced by a water authority, usually where:

- the property is too small to enable wastewater to be contained and disposed of within its boundaries
- the waste leaving the property pollutes surrounding soils, waterways or groundwater, thus causing public health and amenity risks
- the council identifies that the property's onsite system is an environmental, public health or amenity risk.

Sewer

The network of pipes, pumps and equipment that transfers all sewage (including domestic wastewater) from homes and businesses to a central treatment plant. A system of sewers is also known as sewerage.

Sewage

Domestic wastewater and human waste conveyed in sewers.

Current onsite system

An onsite system installed after 1996.

Legacy system

An onsite system installed before 1996.

Auditor-General's reports tabled during 2018–19

Report title	Date tabled
Local Government Insurance Risks (2018–19:1)	July 2018
Managing the Municipal and Industrial Landfill Levy (2018–19:2)	July 2018
School Councils in Government Schools (2018–19:3)	July 2018
Managing Rehabilitation Services in Youth Detention (2018–19:4)	August 2018
Police Management of Property and Exhibits (2018–19:5)	September 2018
Crime Data (2018–19:6)	September 2018
Follow up of Oversight and Accountability of Committees of Management (2018–19:7)	September 2018
Delivering Local Government Services (2018–19:8)	September 2018
Security and Privacy of Surveillance Technologies in Public Places (2018–19:9)	September 2018

All reports are available for download in PDF and HTML format on our website www.audit.vic.gov.au

Victorian Auditor-General's Office
Level 31, 35 Collins Street
Melbourne Vic 3000
AUSTRALIA

Phone +61 3 8601 7000
Email enquiries@audit.vic.gov.au