

VICTORIA

Auditor General

Victoria

Protecting our environment and community from failing septic tanks

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AUDITOR GENERAL
VICTORIA

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President
Legislative Council
Parliament House
Melbourne

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Speaker
Legislative Assembly
Parliament House
Melbourne

Dear Presiding Officers

Under the provisions of section 16AB of the *Audit Act 1994*, I transmit my performance audit report on *Protecting our environment and community from failing septic tanks*.

Yours faithfully

JW CAMERON
Auditor-General

15 June 2006

Foreword

Since the early 1970s, successive governments have acknowledged that failing septic tanks causing environmental and public health risks need to be replaced with reticulated or alternative sewerage systems.

Over a 20-year period to the early 1990s, the number of metropolitan properties with this problem has reduced from an estimated 173 000 to around 14 000. It then increased to some 40 000 properties and has remained at that level for more than 10 years. Currently, an estimated 42 000 metropolitan properties, and an unknown number of regional properties, continue to use failing septic tanks. For some of these households exposure to environmental and health risks from the use of these septic tanks may continue for at least another 20 years. No similar assessment has been made for regional Victoria.

In a recent announcement, government has indicated a course of action to address almost half of the failing septic tanks in metropolitan Melbourne. It will be important that that goal is achieved. Of equal importance is the proposal to reduce the time frame for addressing the remaining metropolitan properties from the current estimate of 40 to 20 years.

I expect that by drawing this issue to public attention, that this report will act as a further stimulus to reduce the number of failing septic tanks in metropolitan and regional Victoria.



JW CAMERON
Auditor-General

15 June 2006

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1. Executive summary



1.1 About sewerage and backlog management

In Victoria, sewage is treated either through reticulated systems or individual on-site (non-reticulated) systems. A reticulated system comprises a network of collection pipes, sewer mains and pumping stations that transports wastewater to a treatment plant. On-site systems stand alone, and all waste should be treated and contained on-site, within the property boundaries. The septic tank is the most common type of on-site system.

Septic tanks have been extensively used since the 1950s, when they were an approved method of sewage disposal for domestic properties. In 1973, a planning directive from the then Melbourne and Metropolitan Board of Works, required all new subdivisions and developments to contain their waste on-site or connect to sewer. At this time, the number of backlog¹ properties in Melbourne peaked at 173 000. Across Victoria, around 250 000 septic tanks are currently in use.

Septic tanks are an acceptable sewage solution provided the wastewater is contained and disposed of effectively on-site. If it seeps from the property it can pollute surrounding soils, waterways or groundwater, exposing the community to environmental, public health and amenity risks.

Since the 1970s, successive governments have established backlog sewerage programs to address these risks by providing affected properties with access to a reticulated sewerage or other appropriate wastewater system. Today, 2 such programs are in place: one for metropolitan Melbourne and the other for regional Victoria. The metropolitan program is managed by South East Water Ltd (SEW) and Yarra Valley Water Ltd (YVW). City West Water Ltd (CWW) does not have a program as its backlog was completed in 1998. The Department of Sustainability and Environment (DSE) manages the regional program. The first regional program, the New Towns Initiative, was established in July 2000. This program was replaced by the Country Towns Water Supply and Sewerage Program, which commenced in July 2005.

¹ At this time, a backlog property was defined as being zoned “residential C” under the planning scheme and could not contain its waste on-site, i.e. the traditional quarter acre block.

In addition to regulating the installation and operation of septic tanks, local government, in consultation with the Environment Protection Authority (EPA), is responsible for identifying areas where septic tanks are failing. These areas should be highlighted in a domestic wastewater management plan. If the preferred sewage treatment option is reticulated sewerage, the relevant water companies (water authorities² in rural areas), must prepare a sewerage management plan. The water company or authority is then responsible for providing and managing sewerage infrastructure. It should be noted that a reticulated sewerage system can range from augmentation of an existing reticulated system, to construction of a stand-alone sewerage system, for example in small, isolated rural towns, to connecting up the septic tanks of a few allotments and having sewage treated collectively.

For priority areas, the new sewerage infrastructure is funded by borrowings serviced by customer tariffs. Property owners also pay a capped contribution to the infrastructure costs. This contribution represents anywhere from 3 to 10 per cent of infrastructure costs depending on the cost of the scheme. They also have to meet the cost of connecting their property to the new system. The government contributes to the cost of the new infrastructure (around 24 per cent), but only for rural properties.

In October 2002, the government committed to substantially reducing the time frames for providing reticulated sewerage to metropolitan backlog areas. In 2003, the government gazetted the revised State environment protection policy, *Waters of Victoria*, which outlined the various responsibilities of different agencies in relation to on-site domestic wastewater management and sewerage infrastructure planning. A further commitment was given in June 2004 to bring reticulated sewerage to metropolitan and rural backlog areas and improve on-site treatment technology.

Currently, an estimated 42 000 properties are included in the metropolitan backlog program, with cost estimates in the order of \$550 million for the provision of new infrastructure and a 40-year³ time frame. The equivalent numbers, costs and time frames for rural properties is unknown.

² Water authorities refer to all regional urban water authorities, plus those rural water authorities with urban responsibilities.

³ In August 2005, the minister requested that SEW prepare a business case to complete its backlog program within 20 years, and to include this proposal in its 2008 water plan.

1.2 Are sewerage backlog programs effective?

It has not been possible to conclude on the extent to which the metropolitan and regional sewerage backlog programs have been effective in reducing the environmental, public health and amenity risks caused by failing septic tanks. As the number of properties with failing septic tanks has not been accurately determined, it is not possible to identify whether, over time, backlog numbers (and therefore risks) are decreasing or increasing. At best, backlog numbers (and risks) might be reducing, but over an extended time frame. At worst, the size of the backlog (and risks) could be larger than estimated.

Nevertheless, it was clear that the government's commitment in October 2002 to substantially reduce the time lines for providing sewerage reticulation systems in metropolitan areas will still take some time to achieve. In rural areas, no time lines have been established. Thus, across metropolitan Melbourne and rural Victoria, parts of the community continue to be exposed to environmental, public health and amenity risks caused by failing septic tanks. Some communities may be exposed for up to 40 years (subject to adoption of SEW's 2008 water plan) and, except for priority country towns, for regional Victoria an unknown period of time.

There are a number of aspects relating to the management of the backlog programs that adversely impact on their effectiveness, namely:

- As most local governments had incomplete and/or inaccurate records of the location, age and condition of septic tanks in use, backlog numbers were mostly best guesses or estimated, but without a reliable basis.
- Statewide data sets, with land capability and catchment health information, which can help to identify high risk areas for septic tanks, are not used by DSE, EPA or most local governments.
- Since 2003, SEPP required local governments to prepare domestic wastewater management plans. To date, 47 draft plans have been submitted, albeit the plans were expected to improve the identification of septic tank risks.
- Local government use visual assessment to monitor the impact of septic tanks. However, it is not necessarily cost-effective to then undertake further chemical and biological monitoring.

- The risks associated with failing septic tanks are well documented. However, different criteria and weightings were used by DSE, DHS, EPA, water companies and authorities, and local government to prioritise backlog properties. The highest risk backlog properties are not always treated first. Water companies and authorities sometimes take an economically pragmatic approach and tend to sewer areas in logical sequence as infrastructure is progressively built. In the interim, no attempt is made to mitigate the risks posed by failing septic tanks.
- The potential risks of failing septic tanks are not always adequately managed by local government. Local government did not always fulfil its legislative responsibilities to ensure that tanks were properly installed, used and maintained. Failings within the current septic tank legislative framework, and its interpretation, have compounded this problem. Local governments were reactive rather than proactive in requiring property owners to address failing septic tanks. Many old (pre-1988) septic tank permits do not have relevant permit conditions, which has prevented local government officers from taking enforcement action.
- The inconsistent application of planning controls by local governments has resulted in a number of property developments being approved even though it is likely the septic tanks will fail and increase the size of the backlog.

Elimination of the backlog, and the time frame for this, is dependent on the level of investment in the backlog programs. It also depends on the financial viability of water companies and water authorities to meet the costs of constructing a reticulated system (when this is the preferred solution) and then the willingness of property owners to connect. Similarly, alternative sewerage solutions and their management also need to be financially viable for the water companies and authorities. However, DSE does not set targets or have plans or guidelines for backlog reduction, nor for the required amount of investment for backlog across the state.

Over the past 10 years, the metropolitan water companies have consistently spent less on eliminating the metropolitan backlog than they had committed, while at the same time the backlog has grown. If this trend and expenditure levels continue, it will take YVW and SEW more than 40 years to each eliminate their backlogs.

In regional Victoria, both the size of the backlog and the amount that was actually spent on it by water authorities are not readily identifiable. Thus, the level of investment required to eliminate backlog, and the time frame, is not known across the state.

The extent to which the estimated time frame for eliminating the backlog meets community expectations has not been determined by DSE, water companies or water authorities. Our survey of 600 backlog property owners identified that they were generally not satisfied with the time frames for providing reticulated sewerage to their properties.

Even where a reticulated system has been made available, in metropolitan areas it can take up to 10 years until a high proportion of property owners connect. Over the 10-year period to June 2005, neither water company had a 100 per cent result (YVW, 47 per cent; SEW, 76 per cent). Connection rates for regional areas are unknown. Our survey identified cost as the main barrier for connection, but this barrier was not being actively addressed. DSE, through DHS, allocated \$5.6 million between July 2000 and October 2005 to assist property owners connect to sewerage.

Therefore, much needs to be done by DSE, local government, water companies and water authorities to improve the effectiveness of backlog sewerage programs. In addition to improving the management of existing risks caused by septic tanks, the government's policy commitments need to be supported with a statewide plan, including targets and investment levels that match time lines for eliminating backlog. Similarly, property owners have an obligation to manage their septic tanks. The plan also needs to be balanced against community expectations. Water companies and water authorities, through the Essential Services Commission (ESC), also need to be more accountable for meeting these commitments.

Water companies and authorities need to provide more information to property owners about alternatives to large-scale reticulated sewerage systems. In particular, they need to promote the environmental and financial benefits of adopting alternate sewage solutions, such as upgrading and replacing failing septic tanks.

While we acknowledge that governments face competing priorities for resources, the progress of backlog programs to date needs to be balanced against the community's tolerance to being exposed to the risks of failing septic tanks.

Recommendations

The audit identified a clear need to improve backlog planning and prioritisation processes, the legislation regulating septic tank management, and reporting and accountability mechanisms. The recommendations are grouped to reflect these 3 themes which have been covered throughout the audit report.

Backlog planning and prioritisation

- That DSE, in conjunction with all relevant stakeholders - including local government, catchment management authorities (CMAs), water companies and water authorities - develop and implement a statewide backlog plan, which articulates with other relevant environmental planning processes (see Part 4, Recommendation 10).
- That DSE, the EPA and local government use available technical data sets such as land capability assessments, environmental monitoring and cadastre (lot size) information to identify and monitor the impact of failing septic tanks across the state (see Part 3, Recommendation 1).
- That DSE, in consultation with CMAs, the EPA, 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 (see Part 3, Recommendation 2).
- That DSE, in consultation with the 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 (see Part 3, Recommendation 3).

Legislative reform

- That DSE, in conjunction with the 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 (see Part 3, Recommendation 4).
- 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 (see Part 3, Recommendation 5).
- 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 (see Part 3, Recommendation 6).

- 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* to collect levies for septic tank management (see Part 3, Recommendation 7).
- 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 non-compliance (see Part 3, Recommendation 8).
- That local governments reassesses the resourcing levels needed to fulfil their legislative responsibilities for septic tanks (see Part 3, Recommendation 9).
- That the EPA seeks to establish a suitable mechanism to assure the quality of land capability assessments (see Part 4, Recommendation 11).
- 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 (see Part 4, Recommendation 12).
- That water companies and water authorities ensure that in all but exceptional cases property owners are connected to new sewerage infrastructure as required by the State environment protection policy, *Waters of Victoria* (see Part 4, Recommendation 13).

Reporting and monitoring

- 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 (see Part 4, Recommendation 14).
- 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 particular backlog schemes (see Part 4, Recommendation 15).
- That DSE and the ESC 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 (see Part 4, Recommendation 16).

Agency responses

This report covered a range of agencies including departments, local governments, water companies and water authorities. Their overall responses, where provided, have been included below and their detailed responses are set out in Appendix B of this report. Overall, agencies were supportive of the report and the recommendations.

RESPONSE provided by Secretary, Department of Human Services

DHS does not have any direct regulatory responsibility for septic tanks and, therefore, is not in a position to confirm all the material underlying the report, it has an ongoing interest in their application and operation from a public health perspective.

DHS agrees with the thrust of the report, and notes the recommendations involving consultation with DHS in order to assist in managing the risk to the community and environment.

RESPONSE provided by Acting Secretary, Department of Sustainability and Environment

I note the overall direction of the recommendations of the report in relation to legislative reform, and improving reporting and accountability processes. I have concerns about some of the recommendations (refer Appendix B).

As indicated to your Office previously, the State environment protection policy, Waters of Victoria, 2003, provides the policy framework for the management of septic tanks in the state and has guided the departmental processes. Your report does not sufficiently recognise this policy or evaluate performance against this policy.

The department has already taken steps to improve the management of septic tanks, including convening a forum in March this year which brought together a range of stakeholders to examine issues associated with managing septic tanks in the Yarra catchment and to identify options for improvement.

DSE will continue to work with key stakeholders to implement a strategic approach to managing septic tanks in Victoria, which includes an effective legislative framework, sound information management practices, clearly identifies roles and responsibilities, develops appropriate capacities and capabilities, and includes accountability and governance arrangements.

RESPONSE provided by Chairman, Environment Protection Authority

The EPA has welcomed the opportunity to be involved in this process, and believes such an audit is timely and appropriate to assist in dealing with this important environmental and public health issue across the state. In recent times, the EPA, in consultation with other stakeholders, has been looking at ways to address this very issue and I note that much of what is being recommended within the performance audit reflects the proposed approaches being developed by the EPA and others.

In general, the EPA believes the performance audit is a fair and reasonable reflection of the current situation with respect to on-site domestic wastewater management and provision of backlog across Victoria.

In particular, the EPA supports the recommendation of the need for legislative review. The EPA, in conjunction with the Department of Sustainability and Environment, and in consultation with other stakeholder agencies/ organisations, is currently working towards putting a position to the Minister for Water and the Environment towards this end.

The EPA's detailed comments are included in Appendix B.

RESPONSE provided by Chief Executive Officer, Barwon Region Water Authority

Barwon Water accepts all the conclusions reached in the report. On balance, the report appears to be largely fair and balanced. However, the report does not make a distinction between water authorities that have a sewerage backlog in their declared areas and those that do not. This would avoid the perception that water authorities such as Barwon Water are not performing adequately in this area.

RESPONSE provided by Chief Executive Officer, Barwon Region Water Authority - continued

There are some areas of the report that Barwon Water questions, these are:

- *The executive summary states that “much needs to be done by ... water authorities to improve the effectiveness of backlog sewerage programs”. This statement could be interpreted to apply to all water authorities. Barwon Water would like to reiterate that it does not have a backlog sewerage program within its sewerage districts (declared areas). There are some pockets within declared areas that are not seweraged but Barwon Water is not aware of any related public health or environmental issues in these areas. As part of the Country Towns Water Supply and Sewerage Program, Barwon Water is working with local government and other government agencies to investigate providing appropriate sewerage schemes to a small number of rural communities. These communities have been identified by local government as having public health or environmental risks substantial enough to warrant these investigations. Barwon Water, therefore, believes it is meeting its backlog sewerage program responsibilities fully.*
- *Barwon Water strongly objects to the assertion in section 4.3.2, Conclusion, that “the differentiation between declared sewerage areas and others is an historical legacy and may no longer serves a purpose”. While the funding inequities findings related to declared sewerage areas are noted, Barwon Water believes removing declared sewerage districts would create an impossible situation where any out of sequence development may require servicing despite technical and funding limitations.*

RESPONSE provided by Managing Director, City West Water Limited

City West Water has thoroughly reviewed the report and considers that from City West Water’s perspective, and more generally, the report provides a fair and accurate account of the nature and extent of the septic tank problem, as well as the roles and responsibilities of the various parties involved (or not involved) in the overall process of planning, regulating, managing, operating and decommissioning of septic tanks.

RESPONSE provided by Chief Executive Officer, Gippsland Region Water Authority

Gippsland Water has reviewed the report and generally believes the report is fair and balanced. However, we have a few concerns being:

- *in planning to address backlog areas, water authorities need to be aware of potential future developments to ensure an economic and practical outcome*
- *the definition of backlog area is too broad and should include that the backlog areas are within townships with wastewater reticulated services. Townships with no wastewater services should be addressed under the Country Towns Water Supply and Sewerage Program*
- *to take the financial burden away from the whole customer base, the household contribution capping should be eliminated*
- *that a high emphasis needs to be placed on recommendation 4, especially in water catchment areas.*

In general, the report provides a good framework and Gippsland Water would support the recommendations, once the above issues are satisfied.

RESPONSE provided by Chief Executive Officer, Goulburn Valley Region Water Authority

Overall, the audit report is considered to represent a fair and reasonable picture regarding the management of septic tanks in Victoria, and the status of recent and current initiatives to address the problems. The numerous issues contributing to the existing position have generally been identified and clearly described.

The report correctly highlights the major gaps in information regarding septic tanks and their performance, and the need to address this as a priority. As noted in our previous comments, it is disappointing that the audit did not recognise information that regional water authorities have and currently report to DSE and the EPA regarding previous expenditure on backlog works under the Small Towns Sewerage Program and connection rates to new sewerage works, respectively.

While I am not in a position to comment on what other water authorities have actually provided, Goulburn Valley Water has certainly provided this information.

RESPONSE provided by Chief Executive Officer, Goulburn Valley Region Water Authority - continued

While it is clear that large numbers of septic tanks are failing to perform satisfactorily, it is important to note that many others operate very well and will continue do so into the foreseeable future with appropriate maintenance. It is also important to recognise that for isolated rural dwellings, and for small low density rural communities, septic tanks will continue to represent the most appropriate means of treatment and disposal. With proper management this will represent the most appropriate and cost-effective outcome.

RESPONSE provided by Acting Chief Executive Officer, South East Water Limited

South East Water accepts the overall recommendations of the report, but has made some recommendations to further clarify and strengthen them to ensure that the outcomes they are seeking are effectively achieved (refer Appendix B). South East Water will actively work with DSE, the EPA and local governments to implement the final recommendations and the detailed actions arising from the report.

RESPONSE provided by Chief Executive Officer, Wannon Water

Wannon Water considers that, overall, the report is fair and balanced and supports the recommendations.

RESPONSE provided by Managing Director, Yarra Valley Water Limited

We believe that the report is a good summary of the broad issues relating to septic tanks.

RESPONSE provided by Chief Executive Officer, Benalla Rural City Council

The report was considered to be fair and balanced, with all research being presented in an unbiased manner.

Recommendations 1 – 16 are considered reasonable and valid, and council accepts these recommendations and supports the continuation of research in these areas in order to provide further information on the effect of failing septic tanks, particularly in rural areas.

RESPONSE provided by Chief Executive Officer, Greater Bendigo City Council

The City of Greater Bendigo supports the recommendations.

RESPONSE provided by Chief Executive Officer, Manningham City Council

Council has reviewed the document and agrees with the focus of DSE and the EPA providing leadership and management of septic tank systems from a statewide basis.

RESPONSE provided by Chief Executive Officer, Nillumbik Shire Council

Nillumbik Shire Council finds the report to be a fair and balanced document. It succinctly highlights the issues that are evident in regards to septic tank management at both the state and local government levels.

RESPONSE provided by Chief Executive Officer, Wellington Shire Council

The report lumps local governments together and makes general statements in relation to areas of poor performance. For example "... some local governments monitor areas where they have already seen risks and none monitor waterways". Wellington Shire Council monitors the water quality of Merrimans Creek at Seaspray. In this regard, the report is not fair and balanced. There would have been a variation of performances in relation to the range of issues addressed.

In relation to the report conclusions and recommendations, a number are of a non-specific nature and are unlikely to result in significant change. For example, "The Department of Sustainability and Environment, in conjunction with local government, develop and implement a statewide backlog plan". Local governments, in the preparation of their domestic wastewater management plans, are addressing many of the conclusions/recommendations but there are a number of issues which will be barriers to implementation which have been well identified in the report.

RESPONSE provided by Chief Executive Officer, Wodonga Rural City Council

As the report strongly indicates, there are thousands of aged and non-maintained septic tank systems that do not meet current standards and are polluting the environment. Council agrees that a major effort is required to address this situation.

Local government does not have the resources to undertake the necessary works relating to ongoing monitoring (nor often for the new installation) of septic tank systems and does not have the expertise relating to environmental protection that these other agencies have.

Wodonga Rural City Council is aware of litigation and insurance claims made against other councils and, thus, firmly believes all wastewater initiatives should be controlled at a state level or, at least, with the relevant water board. Agencies such as DSE and the EPA should be more involved in this realm of environment protection rather than local governments (often in rural areas with few funds, few resources and numerous alternative tasks).

RESPONSE provided by Chief Executive Officer, Yarra Ranges Shire Council

The Shire of Yarra Ranges generally supports the conclusions and recommendations within the report. However, the report should address the issue of septic tanks that were installed pre-1988 which have a legal right to discharge their wastewater off-site. In the Shire of Yarra Ranges 77 per cent (16 979) of all septic tanks were installed pre-1988, of these, 71 per cent are on allotments of less than one hectare where the land capacity may not be sufficient to meet current day standards.

Assuming that sufficient resources were available, the shire could only enforce compliance with the standards that applied at the time the permit was issued. These conditions are sub-standard in terms of current-day practice.

To address this issue, the options available to the government would be to either legislate to retrospectively require compliance and provide financial support for owners to upgrade their systems accordingly, or alternatively to accelerate and extend the backlog program to include all septic tanks identified in the domestic wastewater management plan. The current 20-year backlog program does not include all the septic tanks identified in the domestic wastewater management plan. Even if the program was to be extended, twenty years is too long to wait in terms of environmental and public health risks.



2. About sewage and backlog management



2.1 About sewage management

Under the *Environment Protection Act 1970*, sewage means “any waste containing human excreta or domestic wastewater”. Domestic wastewater from bathrooms, kitchens and laundries is known as greywater or sullage. Waste directly from the toilet is known as blackwater. Rainfall run-off carried through the stormwater system is not considered wastewater, but stormwater.

Effective sewage management should minimise and preferably eliminate the environmental, public health and amenity risks that result from sewage discharge.

2.1.1 Sewerage systems

Sewage in Victoria is treated either through reticulated (centralised or networked) sewerage¹ systems, or through individual, on-site systems.

Reticulated sewerage systems

A reticulated sewerage system comprises a network of collection pipes, mains pipes and pumping stations that take sewage off-site to a treatment plant. At a typical tertiary treatment plant, sewage is screened, subjected to biological activity, nutrient reduction and disinfection before being discharged either to marine or freshwater environments². However, many sewage treatment plants only treat wastewater to a secondary level and, hence, nutrient reduction does not occur.

In Melbourne, an extensive network of pipes transports most of the sewage to 2 major treatment plants (the Western Treatment Plant at Werribee, west of Melbourne; and the Eastern Treatment Plant at Carrum, south of Melbourne). Victoria's regional cities and towns have similar (although smaller) networks of pipes leading to treatment plants. Some rural areas have reticulated systems that service small numbers of properties by collecting sewage and disposing of it off-site.

¹ Sewage is the waste transported through a sewerage system. Sewerage refers to sewer pipes.

² Disposal to land is considered reuse and encouraged, however it can only occur in accordance with EPA guidelines.

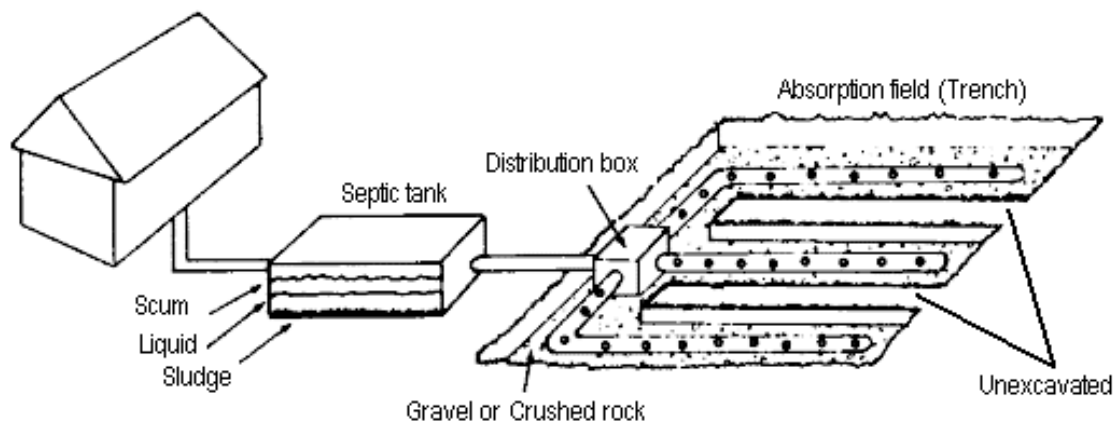
Industrial establishments also use the reticulated sewerage system. Under the trade waste agreements these establishments have with water companies and water authorities³, they are required to pre-treat their waste to specified standards before disposing of it into the reticulated system.

Small reticulated systems are used to service isolated developments. These systems are often referred to as alternative sewage disposal schemes because they are not an augmentation of an existing larger system. There are 2 main types of alternative sewage disposal: a common effluent disposal scheme (CEDS) and a septic tank effluent disposal scheme (STEDS). They can consist of as little as 2 houses reticulated together and be gravity fed or pressurised systems.

Individual on-site systems

On-site (non-reticulated) sewage systems are not networked across a number of properties, but treat and contain all waste on-site. The septic tank is the most common type of on-site system and is shown in Figure 2A.

FIGURE 2A: TYPICAL SEPTIC TANK SYSTEM



Note: A typical septic tank consists of an enclosed watertight container with one or 2 compartments. It collects sewage and provides primary treatment by allowing solids to settle out from the water that is then disposed through absorption trenches, irrigation or other approved system.

Source: Environment Protection Authority.

³ Water authorities refers to all regional urban water authorities, plus those rural water authorities with urban responsibilities (see Part 2.1.3 of this report).

Individual on-site systems are suitable for farmland, large allotments without access to reticulated systems and properties with soil types that are suited to disposal. However, the use of these systems is not always appropriate. From the 1950s, septic tanks were used extensively throughout Melbourne, and in small rural towns, in areas not reached by the reticulated sewerage system. Although septic tanks were better than the pan system (where a nightsoil operator had to empty the pan weekly), they were a key cause of the increasing pollution of Melbourne's rivers and creeks that threatened the health of Port Phillip Bay⁴. This was because Melbourne's clays and the Mornington Peninsula's sandy soils cannot absorb wastewater, which seeped and overflowed from septic tanks into drains, waterways and groundwater.

At the time of the audit, about 250 000 properties across Victoria used septic tanks.

For simplicity, we have referred to all individual on-site treatment systems as septic tanks in this report.

Sewerage assets

At 30 June 2005, the Victorian Water Industry Association valued the state's metropolitan and regional urban sewerage infrastructure at \$8.8 billion. This was 47 per cent of total metropolitan and regional urban water assets of \$18.9 billion^{5,6}.

In 2004-05, the water industry invested \$774 million in water and wastewater infrastructure through capital replacement and renewal. The wastewater investment was primarily to provide new infrastructure in newly developed areas, to renew and upgrade infrastructure to increase capacity, to improve the quality of treated sewage and to conduct sewerage backlog programs (which address environmental, public health or amenity risks).

In 2004-05, an estimated \$9 million was spent on backlog programs in the metropolitan area. Expenditure in regional areas was not readily available.

⁴ For more information, see T Dingle and C Rasmussen, *Vital connections: Melbourne and its Board of Works, 1891-1991*, McPhee Gribble, Ringwood, Victoria, 1991.

⁵ This includes the assets of Melbourne Water and regional urban water authorities, but excludes the assets of rural water authorities and catchment management authorities.

⁶ Victorian Water Industry Association 2006, *Victorian Water Review: An accountability report for the Victorian Water Industry 2004/2005*, Victorian Water Industry Association Inc., Melbourne.

2.1.2 Policy commitments

The government's sustainability goals for water and sewage management, including its commitment to reducing backlog, are stated in *Melbourne 2030*⁷ and in *Our Water Our Future: Securing our water future together*⁸. The State environment protection policy (SEPP), *Waters of Victoria*, establishes the legal framework for the state and local government agencies, businesses and communities to work together to protect and rehabilitate Victoria's surface water environments.

Melbourne 2030: Planning for sustainable growth

Melbourne 2030: Planning for sustainable growth, published in October 2002, expresses the government's commitment to substantially reducing the backlog time frames. This commitment only applies to the metropolitan backlog.

Policy 7.5⁹ in the document states (among other things) that "Although most parts of metropolitan Melbourne are now sewered, a significant backlog of properties awaits connection to sewerage systems in places such as the Mornington Peninsula and the Yarra Valley. At the current rate of funding, this backlog will not be completed by 2030¹⁰. The time lines for addressing this backlog will be substantially reduced". Initiative 7.5.1 will also "Review progress towards completing the sewerage backlog program and revise targets for priority areas".

Our Water Our Future: Securing our water future together

The government's *Our Water Our Future* white paper was released in June 2004. It states that "All Victorians will be provided with safe and reliable drinking water and sewerage services that protect public health and the environment". The white paper also notes that the government recognises the need to improve sewerage services, and that this includes bringing reticulated sewerage to metropolitan and rural backlog areas, and improving on-site treatment technology¹¹.

⁷ State of Victoria, 2002, *Melbourne 2030 Planning for sustainable growth*, Department of Infrastructure, Melbourne.

⁸ Victorian Government, 2004, *Our Water Our Future: Securing our water future together*, Department of Sustainability and Environment, Melbourne.

⁹ To "protect groundwater and land resources".

¹⁰ The current SEW program is estimated to be completed in 2044 (2008 water plan expected to reduce current 40-year time frame to 20 years).

¹¹ For more information about the achievement of these policy objectives, see Part 4, section 4.3 of this report.

State environment protection policy: Waters of Victoria

This SEPP was gazetted in 2003 and contains 3 key clauses specific to wastewater management:

- Clause 32 - On-site domestic wastewater management. States that occupiers (or property owners) must manage their septic tank in accordance with permit conditions and the Septic Tank Code of Practice and regularly assess their system's performance. Local government must assess land capability to determine site suitability for septic tank systems, ensure sewerage is provided at the time of subdivision, identify allotments not capable of containing their waste on-site and develop domestic wastewater management plans.
- Clause 33 - Sewerage planning. Where a domestic wastewater management plan identifies reticulated sewerage as a preferred option, then the relevant water company or authority must prepare a sewerage management plan in consultation with the EPA, local government and the community.
- Clause 34 - Connection to sewerage. Where sewerage is provided, a property must be connected, unless wastewater is reused in accordance with EPA guidelines and is retained on-site. Water companies and authorities are responsible for ensuring that properties, which cannot contain their waste on-site, are connected to reticulated sewerage.

The SEPP, *Groundwaters of Victoria*, was gazetted in 1997. This policy provides a framework for the protection of groundwaters. In certain circumstances, for example sandy soils, wastewater from septic tanks has the potential to contaminate groundwater.

2.1.3 Responsible agencies

Victorian Government

The Victorian Government oversees all Victoria's sewage management systems through the following agencies.

Sewage management

The Minister for Water, through the Department of Sustainability and Environment (DSE), is responsible for policy about - and reporting on - the water industry. DSE administers the *Water Act 1989* and the *Water Industry Act 1994*. It also provides administrative assistance to the Minister for Water and the Minister for Environment.

The Environment Protection Authority (EPA) is responsible for environmental regulation and for administering the *Environment Protection Act 1970* and subordinate legislation such as *State environment protection policy, Waters of Victoria*. The roles and responsibilities of the EPA and others are described in this legislation. The EPA approves septic tank systems; provides guidance on on-site domestic wastewater management (including land capability assessment and wastewater reuse); works with local governments to identify existing unsewered allotments that discharge wastewater beyond the allotment boundary and, hence, pose an environmental, public health and amenity risks; and works with water companies and authorities and local governments to develop sewerage management plans (where identified by a domestic wastewater management plan).

The Department of Human Services (DHS) is responsible for implementing Australian Drinking Water Guidelines and for administering the *Safe Drinking Water Act 2003* and the *Health Act 1958*.

Economic regulation

With respect to the regulation of sewage management, the Essential Services Commission (ESC) is responsible for regulating pricing policy and the Department of Treasury and Finance (DTF) has governance and financial regulation responsibilities. These responsibilities, in turn, are exercised by:

- Melbourne Water and the 3 water companies in the metropolitan area
- regional urban water authorities in rural Victoria.

Metropolitan agencies

The Melbourne Water Corporation (MWC) is responsible for operating the 2 major sewerage treatment plants located south and west of Melbourne, and transfer infrastructure¹². South East Water Limited (SEW), Yarra Valley Water Limited (YVW) and City West Water Limited (CWW) are responsible for managing the reticulated sewerage system within their operating boundaries, including collecting and disposing of their customers' sewage.

These bodies comprise the Melbourne metropolitan water industry and manage Melbourne's reticulated system. Figure 2B shows their boundaries.

¹² Transfer infrastructure comprises the large trunk sewers that collect sewage from water company areas then transfers it to Melbourne Water Corporation's main treatment plants.

FIGURE 2B MAP OF METROPOLITAN WATER COMPANY BOUNDARIES



Source: Department of Sustainability and Environment.

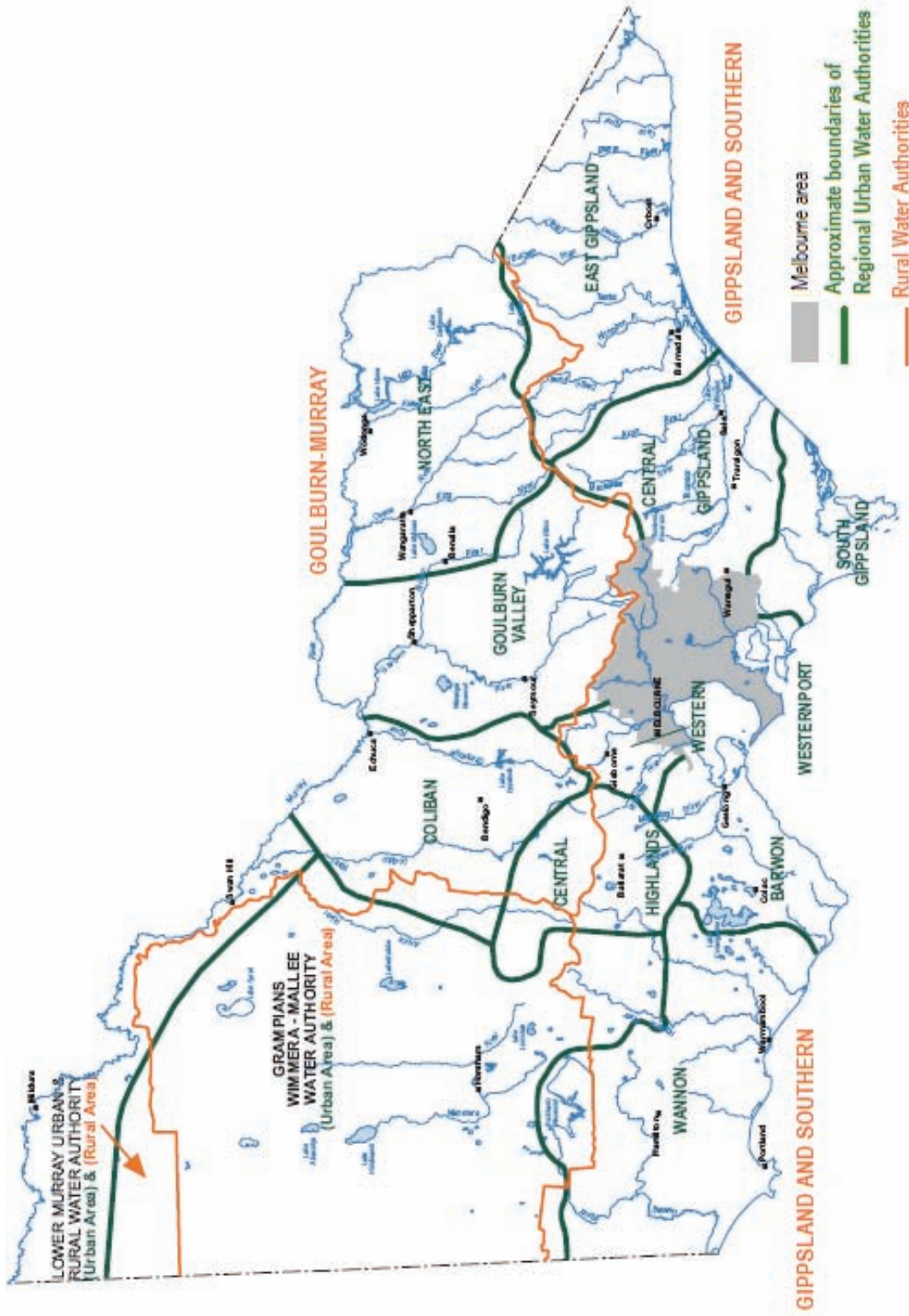
Regional urban water authorities

Victoria has 11 regional urban water authorities (see Figure 2C). These authorities provide water services to customers and manage the reticulated sewerage systems within specified statutory districts, called “declared sewerage districts”. The *Water Act 1989* authorises the Minister for Water to declare a sewerage district. A water authority does not have any jurisdiction outside a declared sewerage district or outside a declared “area of interest”. A water authority may provide services to multiple sewerage districts, as the towns it services all have seweraged areas that lie within a sewerage district.

Rural water authorities

The state is further divided into regions that are served by 4 rural water authorities and one irrigation trust. These agencies harvest water, operate headworks, manage irrigation districts and regulate groundwater extraction. Two rural water authorities, Grampians Wimmera Mallee Water and Lower Murray Water, have urban water and sewerage responsibilities. The water authority areas are also outlined in Figure 2C.

FIGURE 2C: MAP OF REGIONAL URBAN WATER AUTHORITIES AND RURAL WATER AUTHORITIES WITH URBAN RESPONSIBILITIES



Source: Department of Sustainability and Environment, December 2005.

Local government

Under the *Environment Protection Act 1970*, local government is the primary agency responsible for the management of septic tanks. Under this Act, a property owner cannot construct, alter or install a septic tank without a local government permit. Local governments (environmental health officers) use permits to regulate the installation, maintenance and monitoring of septic tanks within their municipal boundaries. They are also responsible for identifying failing septic tanks that are causing environmental, public health and amenity risks.

The SEPP *Waters of Victoria* states that local governments, where relevant, need to develop domestic wastewater management plans that set out how unsuitable sites should be assessed and managed. Both the Environment Protection Act and the SEPP specify specific responsibilities for local government.

Property owners

Under the SEPP, property owners are responsible for managing their own septic tank in accordance with their permit conditions and the EPA's *Septic Tanks Code of Practice*¹³ for on-site domestic wastewater management. Property owners are also responsible for ensuring that they continue to comply with permit conditions over the period of time they use a septic tank.

2.2 About the backlog

2.2.1 What is backlog?

Throughout this report “backlog” refers to the number of residential properties not connected to a reticulated sewerage system, and usually where:

- the property is too small to enable waste to be contained and disposed within its boundaries
- the waste leaving the property pollutes surrounding soils, waterways or groundwater, thus causing public health and amenity risks
- pooling of septic tank effluent causes a health threat
- the local government, in collaboration with the EPA, identify that the property's septic tank is an environmental, public health and/or amenity risk.

¹³ Environment Protection Authority, 2003, *Guidelines for Environmental Management Septic Tanks Code of Practice*, Environment Protection Authority, Melbourne.

The term backlog has traditionally only been applied to metropolitan Melbourne. However, in this report it also includes urban, regional and rural residential properties.

The inability to safely retain waste on-site (and the consequent environmental, public health and amenity risks) is a defining characteristic of a backlog property. The EPA's *Septic Tanks Code of Practice* advises local governments that reticulated sewerage should be seriously considered where residential lot sizes are smaller than 10 000 square metres (one hectare).

2.2.2 A brief history of the backlog

Metropolitan Melbourne

The provision of reticulated sewerage systems in Melbourne dates back to 1890 when the former Melbourne and Metropolitan Board of Works (MMBW) was formed.

Over the ensuing decades, the provision of sewerage infrastructure was unable to keep pace with population growth. Local governments often approved septic tanks as a temporary measure on the basis that connection to the reticulated system was imminent (within 5 years). Many of the systems approved were split systems that discharged non-toilet wastewater to stormwater. Some of these systems are still in use today.

In 1973, the number of unserviced properties in Melbourne peaked at 173 000¹⁴ properties. However, in the early 1970s, the MMBW began the Water and Sewerage Backlog Program (now referred to as the Metropolitan Sewerage Backlog Program). Among other things, this program extended the reticulated sewerage system to new metropolitan suburbs.

By the early 1990s, the total number of metropolitan backlog properties had fallen to about 14 000. It then increased by a further 30 000 properties when the former MMBW's geographic area of responsibility was increased. In 1994, the MMBW was restructured into the Melbourne Water Corporation and 3 retail water companies. This further extended the metropolitan geographic boundaries and increased the number of backlog properties. The 3 metropolitan retail water companies (CWW, YVW and SEW) inherited the former MMBW's backlog and incorporated it into their sewerage programs.

¹⁴ At that time, backlog properties only comprised those classified as residential C (i.e. quarter acre blocks).

In 2003-04, SEW and YVW estimated that it would take 40 years to complete their backlog programs. In July 2005, the ESC approved YVW's proposed revenue and tariff structure for 2005-08 specified in its water plan for that period. Under that plan, which is approved by the minister, YVW proposed to complete its backlog within 20 years. In August 2005, the Minister for Water asked SEW to prepare a business case to accelerate its backlog program so as to complete it by 2025. This business case is to form part of SEW's 2008 water plan, which is to be submitted to the ESC in 2007.

By December 2005, 94 per cent of properties in the area covered by the 3 metropolitan retail water companies that had access to reticulated water also had access to reticulated sewer. In 1947, 97 per cent of the area serviced by the MMBW had access to reticulated sewer.

In January 2006, the government's *Yarra River Action Plan* committed \$250 million over 20 years to accelerate the replacement of about 18 500 septic tanks in YVW's area with a reticulated sewerage system.

At December 2005, there were an estimated 42 000 backlog properties in metropolitan Melbourne. The 2 metropolitan retail water companies estimated it would cost some \$650 million to provide the properties all with reticulated sewerage, and it would take 40¹⁵ years to do so.

Regional Victoria

In 1972, the Commonwealth Government launched the National Sewerage Program. The program aimed to connect every Australian home to modern sewerage services, including those in many large regional centres, within 6 years. The program was unsuccessful and ceased in 1977. The state government then took some responsibility to fund sewerage infrastructure development.

¹⁵ The current SEW program is estimated to be completed in 2044 (2008 water plan expected to reduce current 40 year time frame to 20 years). YVW is expected to complete their program within 20 years.

Before the restructure of the water industry in 1994, country water boards were responsible for providing sewerage services in their areas. In the mid-1990s, the state government committed to sewerage all towns with more than 500 people. In July 2000, the New Town Sewerage Initiative began, aiming to sewer a further 60 towns over 3 years. In July 2005, this initiative was superseded by the Country Towns Water Supply and Sewerage Program. The majority of Victoria's larger towns now have reticulated sewerage. However, there are over 400 small towns and settlements that have no reticulated sewerage or water. The government has subsidised most regional sewerage schemes and there is an expectation that these subsidies will continue.

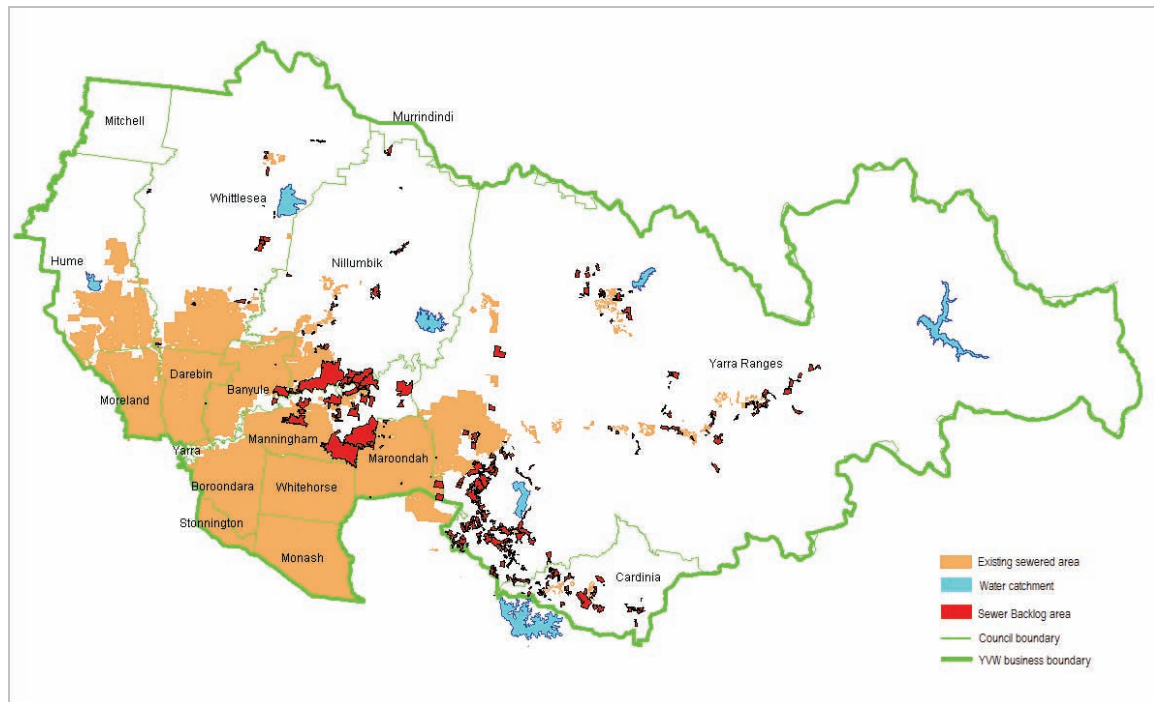
2.2.3 Sewerage backlog programs today

Public health, environmental and amenity risks caused by failing septic tanks are currently being addressed through the following 2 backlog programs.

Metropolitan Sewerage Backlog Program

YVW and SEW currently have backlog programs. CWW does not have a program as its backlog was completed in 1998. Figures 2D and 2E show the extent of YVW's and SEW's backlogs at 30 June 2005.

FIGURE 2D: YARRA VALLEY WATER BACKLOG AREA, 30 JUNE 2005



Source: Yarra Valley Water.

FIGURE 2E: SOUTH EAST WATER BACKLOG AREA, 30 JUNE 2005



Source: South East Water.

Country Towns Water Supply and Sewerage Program

DSE manages the Country Towns Water Supply and Sewerage Program. The program provides seed funding for water and sewerage infrastructure in towns that face significant environmental, public health or amenity risks from sewage discharges and which are not in declared sewerage districts. If a town has existing sewerage infrastructure, DSE considers its backlog to be infill, which does not qualify for funding under the program.

Under the program, the Victorian Government has allocated \$42 million over 6 years for:

- water and sewerage services for priority towns with the most urgent health and environmental issues (\$21 million)
- sewerage 3 towns in the Gippsland Lakes area (\$12 million)
- trialling 15 innovative treatment systems across the state, for example, YVW is investigating ways to sewer isolated towns that lie in difficult terrain (\$6 million)
- helping local governments to prepare domestic wastewater management plans (\$3 million)
- directing water authorities to extend the sewer to service properties in backlog areas within a declared sewerage district.

2.2.4 Who pays for backlog works?

Metropolitan water companies and water authorities are responsible for providing sewerage infrastructure in backlog areas. They fund the cost of this infrastructure through borrowings which they service with revenue from customers' tariffs. Property owners also contribute to infrastructure costs with contributions capped at \$500 per property in metropolitan areas and \$800 in rural areas¹⁶. These contributions generally make up less than 10 per cent of infrastructure costs. The government contributes about 24 per cent of infrastructure costs, but only for infrastructure in rural backlog areas.

A property owner (metropolitan and regional) pays the full cost of works from their house to the connection point at the boundary of the property. These costs can range from \$2 000 to \$25 000 or even more in some cases. To assist people with financial difficulties, the government has allocated funds to a hardship scheme administered by the DHS. In 2005, DHS identified the average cost of connecting a property was about \$4 000.

In the 10 years to June 2005, the metropolitan water companies spent \$110.22 million on their metropolitan backlog programs. In the 3 years to June 2003, the government spent \$22 million on the New Town Sewerage Initiative. It has allocated a further \$42 million to the Country Towns Water Supply and Sewerage Program for the 3 years to June 2008.

2.3 Audit objective and scope

The objective of this audit was to determine whether the sewerage backlog programs were achieving their objectives:

- of reducing environmental and public health risks across Victoria
- by increasing the number of properties provided with, and connected to, reticulated sewerage or alternative treatment systems.

To do this, the audit asked if:

- the public health and effluent pollution impacts of failing septic tanks were being identified and managed?
- sewerage connection targets were being met in backlog areas?
- sewerage programs were meeting community expectations?

¹⁶ The reason for the difference in the cap in metropolitan and non-metropolitan areas is that previously unsewered towns that are remote from existing reticulated systems need new treatment plants, and so the infrastructure is more expensive.

The audit covered DSE, EPA, YVW, SEW and water authorities. We conducted site visits at 10 local governments from both metropolitan and rural areas. We also surveyed 600 people from backlog areas across Victoria. More information about the conduct of the audit and agencies covered is provided in Appendix A of this report. We have also included additional comments from the agencies in Appendix B.



**3. Are the
environmental,
public health and
amenity risks
reducing?**



3.1 Introduction

Government policies state that the aims of sewage management are to protect groundwater and land resources, and to provide safe and reliable sewerage services to protect public health and the environment¹. This means mitigating the risks of poor sewage management (including the damage caused by failing septic tanks).

The public health, environmental and amenity risks of poor sewage management have been well documented. Figure 3A shows the 3 main risks.

FIGURE 3A: RISKS OF POOR SEWAGE MANAGEMENT

Type of risk	Risk
Public health	Drinking water sources polluted with bacteria, nitrates and phosphorous, resulting in stomach upsets, diarrhoea and more serious illnesses Recreational waterways and other water bodies polluted, thus placing at risk people who come into contact with polluted water through recreational pursuits
Environmental	Prolific weed growth and destruction of indigenous vegetation Polluted surface waters (such as creeks, waterways and drains) Polluted groundwater Harm to aquatic fauna (such as fish and macroinvertebrates)
Amenity	Smell, unsightly discharges and seepage leading to reduced amenity and reduction in property values

Source: Victorian Auditor-General's Office.

While these risks can arise from many activities, South East Water (SEW), Yarra Valley Water (YVW) and City West Water (CWW) and the water authorities² are responsible for managing the risks associated with reticulated sewerage systems. Local governments are responsible for managing the risks associated with the initial siting of a septic tank and for enforcing land owners' responsibilities. Property owners are responsible for managing the risks associated with their own septic tanks.

¹ State of Victoria 2002, *Melbourne 2030 Planning for sustainable growth*, Department of Infrastructure, Melbourne. Victorian Government 2004, *Our Water Our Future: Securing our water future together*, Department of Sustainability and Environment, Melbourne; and State environment protection policy (SEPP), *Waters of Victoria*.

² Water authorities refers to all regional urban water authorities plus those rural water authorities with urban responsibilities (see Part 2 of this report).

3.2 How well were risks identified, assessed, prioritised and treated?

A property's inherent risks (with respect to septic tanks) are its soil type, slope and rainfall. These risks can be managed by determining, for example, whether the property is large enough to contain all wastewater on-site, whether the design of the septic tank suits the property or whether connection to a reticulated sewerage system is needed.

Residual risks are those risks that remain after inherent risks are treated. These include all human controlled management decisions such as the size of a subdivision allotment, the type of wastewater treatment system allowed, the level of growth or development permitted in an area and decisions on land use.

In assessing whether the water companies and authorities and local governments were adequately managing public health, environmental and amenity risks associated with sewerage backlog areas, we examined whether they identified, assessed, prioritised and treated those risks.

3.2.1 How well were risks identified?

We expected local governments, the Environment Protection Authority (EPA) and catchment management authorities (CMAs) to identify public health, environmental and amenity risks that may arise from failing septic tanks. Water companies and water authorities also have a role in assessing septic tank risks and their potential to adversely impact on drinking water supplies. Proper identification of those risks is the necessary first step in managing them.

Risks can be identified either visually or by chemical and biological analysis. The visual signs that a septic tank is failing are seepage and lush green growth at the end of trench lines, general waterlogging of the surrounding area, dead and dying vegetation, pungent odours, blocked fixtures, overflowing wastewater and a surface layer of scum that blocks outflow.



Research into whether or not dieback, such as that shown above, is a direct result of waterlogging and nutrient overloads from failing septic tanks, is currently being carried out.

(Photo courtesy of Yarra Ranges Shire Council.)

Failing septic tanks can also degrade the quality of surface (rivers, lakes and streams) and ground waters. The polluting effect of failing septic tanks can be assessed by chemically and biologically analysing water samples with the most common tests being for bacteria (such as *E.coli*), nutrients (such as phosphorus and nitrogen) and biochemical oxygen demand. Temperature and flow are also useful indicators for monitoring wastewater impacts.

Water quality monitoring

Statewide monitoring

The Victorian Water Quality Monitoring Network (VWQMN) monitors the health of about 150 rivers and streams statewide. The network is administered by the Department of Sustainability and Environment (DSE) in regional Victoria, and Melbourne Water in metropolitan Melbourne. Data from this network aims to identify trends over the long-term. In general, bacteria and nutrient levels are only monitored in Melbourne Water's Yarra catchment sites and not statewide. The VWQMN highlights any deteriorating waterways which, in turn, can help focus pollution mitigation efforts. However, the VWQMN is not designed to identify specific pollution sources such as failing septic tanks.

Under the *Catchment and Land Protection Act 1994*, CMAs are responsible for advising on the condition of land and water resources, and for promoting cooperation between agencies involved in managing these resources. CMAs, in consultation with state agencies and the community, are responsible for preparing catchment management strategies and river health strategies, which incorporate data from nutrient management strategies, that have potential to highlight risks related to failing septic tanks.

The audit found that DSE, local governments and water companies and authorities only made limited use of CMA information in assessing backlog program priorities.

The Waterwatch program encourages community volunteers to monitor the health of rivers, creeks and wetlands. Although statewide, most of these groups operate in the Melbourne area. In 2004, 319 groups monitored 350 sites across the Port Phillip and Westernport catchments. This information was collected and entered into a statewide database that could be accessed on the internet. However, not all local governments used this information to identify high-risk areas. Local government advised that the Waterwatch database has not been working for sometime. The statewide website is administered by DSE.



Greywater from poorly designed septic tanks flows into residential streets.

Localised monitoring

The impact of failing septic tanks is most visible at the local level. Localised monitoring programs are carried out by a variety of agencies, including the EPA, water companies and water authorities, local governments and the community.

The EPA's Beachwatch program provides information on the health of Melbourne's beaches over summer. It is not designed to pinpoint specific sewerage pollutant sources, however, bacteria (*E. coli*) levels are monitored.

YVW has carried out localised monitoring in a Yarra River tributary that receives run-off from unsewered areas. YVW has also asked local governments in its area to monitor their unsewered areas to identify the impact of failing septic tanks so that YVW can use this information when prioritising backlog sewerage properties. Much of YVW's monitoring (as with monitoring by SEW and CWW) is about monitoring the impact of its own sewage treatment plants on waterways, in accordance with EPA licence conditions.

In 1999, SEW undertook a major study of contaminants in the streams and groundwater of unsewered areas on the Mornington Peninsula. It found that failing septic systems were a major contributor to elevated nutrient and bacteria levels in the groundwater, and these levels exceeded the standards in the Australian Drinking Water Guidelines. In 2003, SEW sampled both surface water and groundwater in its future backlog areas to gain a better understanding of the risks.

In 2005, SEW sampled groundwater in the Nepean Peninsula for the same reason. Flows into Western Port Bay from Flinders Bight during various rainfall events at several mussel farm sites were also studied. This resulted in the prohibition of mussel harvesting during certain rainfall events.

All local governments visited could show us areas where failing septic tanks were causing public health, environmental or amenity risks. We saw areas where vegetation was being destroyed by waterlogging (suspected of being due to wastewater flooding), where water quality had deteriorated and with strong odours. Most commonly, we saw patches of green weeds amid brown and dry vegetation. One local government was successfully using temperature and flow monitoring in stormwater drains to identify and assess the impact of failing septic tanks. The officers undertaking the trial stated that the technique was simple and cost-effective to use.

In areas where split-systems were commonly used, we saw greywater flowing down roadside gutters. Environmental health officers from 8 of the 10 local governments visited advised they were powerless to prevent greywater from discharging off-site (usually to the street), such discharges being allowable under the terms of permits issued many years ago. Officers also advised they had few powers to require property owners to maintain failing systems and upgrade inadequate systems unless there was a specific permit condition on which they could base action.

Most of the 10 local governments visited chose their monitoring sites on the basis of physical cues (sight or smell) or complaints. Subsequent water quality sampling often confirmed the environmental health officers' original assessment. Although 2 local governments had significant unsewered areas, neither had carried out extensive localised monitoring.

Only limited monitoring was undertaken of the impact of failing septic tanks on waterways. Three of the 10 local governments had no monitoring data, 4 had one-off records of monitoring at one specific site, and 3 had just begun to systematically sample. All 10 were reluctant to use resources to monitor problems in waterways when problems could be readily seen by their environmental health officers.

No monitoring was undertaken to determine the specific impact of industrial and commercial areas on the surrounding environment or nearby waterways.



Greywater turns rank in an open drain.

Our audit survey asked respondents if they had experienced any adverse effects from failing septic tanks. Fourteen per cent of respondents said their community had experienced adverse environmental or health effects from the impact of failing septic tanks. These effects included:

- strong odour and stench causing nausea
- overflows with effluent gathering in particular locations
- high levels of bacteria in the local creek and children contracting gastroenteritis
- blue-green algae in waterways
- discharge into gutters and streets
- high numbers of mosquitoes.

Respondents also noted that strong odours were off-putting for tourists and, hence, had an economic impact on their area.

Domestic wastewater management plans

Under the State environment protection policy (SEPP), *Waters of Victoria*, local governments are required to prepare a domestic wastewater management plan (DWMP). These plans strategically describe the on-site domestic wastewater management situation within municipalities. The plans outline the actions that will be taken, both now and in the future, to overcome the current environmental, health and amenity risks that exist. These actions include local governments' commitments to address all issues using a risk-based, priority approach.

Local governments are required by the SEPP to develop their DWMP in consultation with water companies or water authorities and the community. Where a DWMP identifies reticulated sewerage as a preferred option, the relevant water company or authority uses this information to prepare their backlog sewerage plans.

The SEPP does not specify a time frame for completing DWMPs and local governments are not penalised for not submitting them. To encourage local governments to prepare their plans, the EPA in 2001 funded the development of 5 plans under a pilot scheme. In 2005, DSE offered further incentive funding (\$40 000, with matching contribution). At April 2006, the 5 pilot plans were the only ones completed.

Initially 56 local governments (10 metropolitan and 46 regional) were expected to complete their plans by 30 March 2006. In late 2005, about half of the 10 local governments we visited anticipated asking DSE for an extension of the 30 March 2006 deadline. In October 2005, DSE reviewed local governments' progress and instead, asked for a draft plan, to be completed by 30 June 2006. By 30 April 2006, 47 of the expected 53 local governments (2 regional local governments withdrew and one had not submitted a list of prioritised towns upon which DSE funding was contingent) had submitted a draft DWMP.

Health monitoring

Under the Health (Infectious Diseases) Regulations 2001 pathology laboratories are required to notify the Department of Human Services (DHS) of specific micro-organisms detected in water supplies. These micro-organisms indicate the presence of a communicable disease that can have a potential impact on community health. Some of these diseases (such as giardiasis and *Campylobacter* infection) can be contracted through contact with sewage and household wastewater.

Sewage and wastewater can also contaminate drinking water supplies. DHS requires water companies and water authorities to prepare risk management plans that say how risks to water supplies will be mitigated (although private bores are not included in these plans). Failing septic tanks can be a key risk to drinking water supplies.

The audit found that the information DHS compiles is not widely used by agencies.



Open drains collect greywater adjacent to a children's play area.

Conclusion

We consider obtaining specific data on bacteria and nutrient levels to confirm local government's visual assessments is unnecessary. If further evidence is required to highlight the issue to the community or decision-making authorities, less expensive techniques could be used.

Since 2003, SEPP required local governments to prepare domestic wastewater management plans. To date, 47 draft plans have been completed, albeit these plans are expected to help local governments identify the risks of failing septic tanks.

Should monitoring of the environmental impacts of unsewered commercial and industrial areas reveal a problem, these sites should be included in backlog programs.

We consider that local governments could also draw on statewide data such as CMAs' land capability assessments, environmental monitoring and cadastre (lot size) information to validate their observations of high-risk areas.

3.2.2 Was risk assessment and prioritisation soundly based?

We expected that once water companies and regional urban authorities and local governments had identified the risks, they would prioritise them according to the probability of the risk occurring and the seriousness of the consequences. Properly prioritised risks using set criteria allows funds to be applied to mitigate the most probable and consequential risks. We also expected these agencies to manage both inherent and residual risks, and that risk management at the state level would guide local risk management.

Metropolitan

CWW does not have a backlog program and, hence, has not developed any risk criteria for backlog.

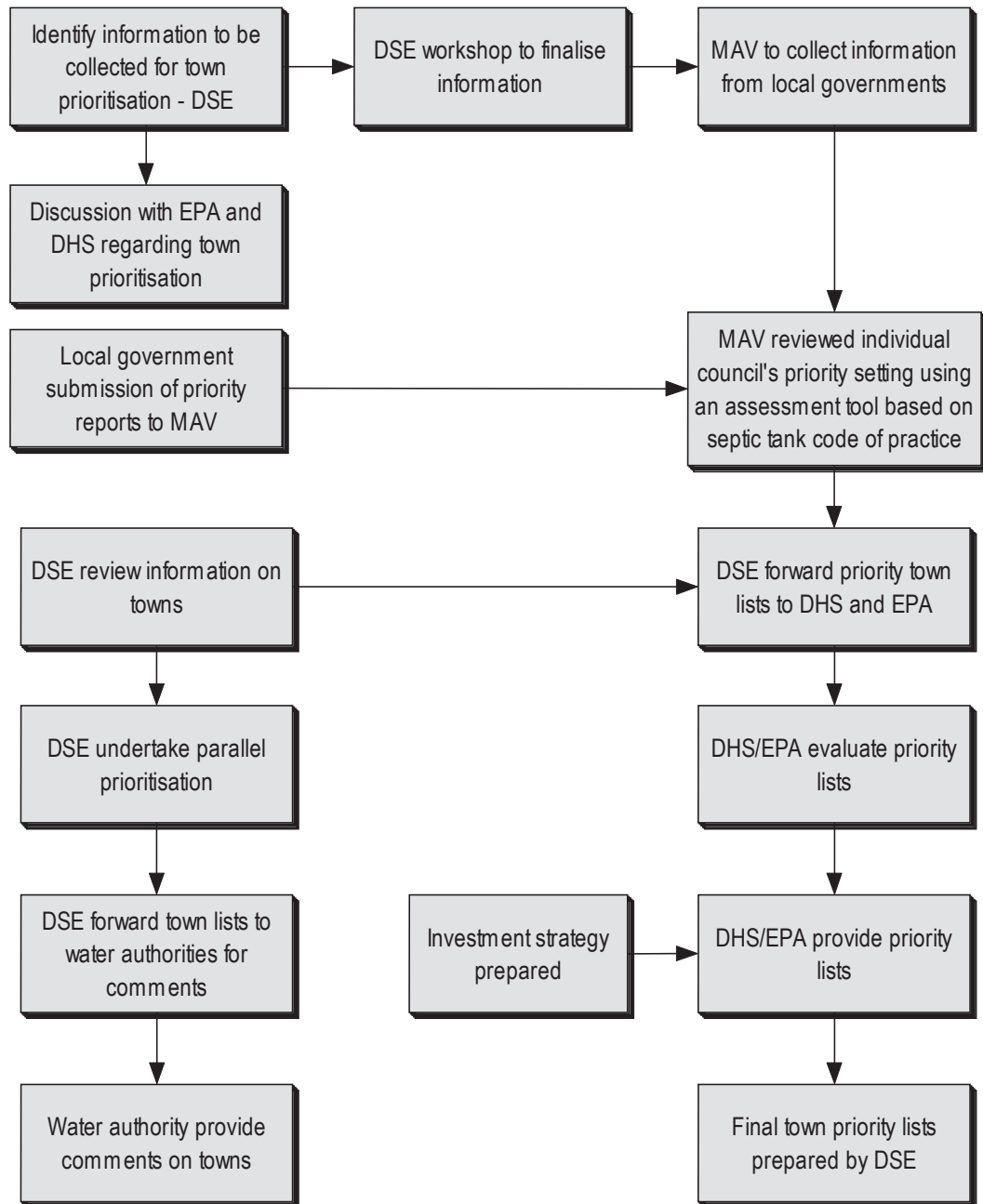
Both SEW and YVW used similar risk criteria to assess and prioritise backlog properties. These criteria included health impacts, waterway pollution, potential for residential development, impact on commercial/industrial development, local interest and capital investment. However, both companies applied different weightings to the criteria and took different approaches in consulting with local governments about them.

SEW consulted with each local government in its area to prioritise backlog within the company's area. SEW then invited local government environmental health officers to attend a meeting where they obtained agreement on the weightings to be used and the final prioritised list. SEW then obtained formal sign-off from each local government in the area to be sewered. YVW adopted a similar approach, but held a workshop attended by local governments, DSE, the EPA, Melbourne Water and SEW (as observers). During this workshop, participants agreed on the prioritisation criteria. Each local government and agency submitted a suggested weighting for each criteria which YVW used to compile the final weightings. However, local governments were not told of the final weightings in order to avoid previous problems of back-engineering the results or ranking all towns as high. Following the workshop YVW provided all local governments with a document outlining the criteria used, how scores were calculated and the information YVW used to determine the priority rankings.

Regional

For the Country Towns Water Supply and Sewerage Program, DSE consulted with local governments (through the Municipal Association of Victoria [MAV]). DSE then consulted with the EPA and DHS to determine which towns the Minister for Water would approve funding for sewerage infrastructure. Figure 3B outlines DSE's prioritisation approach.

FIGURE 3B: DSE'S PRIORITISATION PROCESS



Source: Department of Sustainability and Environment.

To prioritise towns, DSE first asked local governments to complete a questionnaire (Priority Infrastructure Planning Report) about their unsewered areas and to identify towns where failing septic tanks were causing environmental, public health or amenity risks. DSE then asked local governments to determine their top 5 priority towns by sampling 10 per cent of septic systems in each town to confirm that these towns were exposed to risks. However, the 10 participating metropolitan local governments were not asked to submit a list of prioritised towns as they were already included as part of YVW's and SEW's prioritisation process. Of the 48 local governments in Victoria with significant numbers of septic tanks, 43 (out of a possible 46), which agreed to participate in the program, submitted a list of up to 5 towns. These lists were collated and reviewed by the MAV then forwarded to DSE. DSE also asked the EPA and DHS to each independently verify the list of towns prioritised by local government. It also asked the water authorities for comment on the local government lists.

DSE also undertook a financial analysis to ensure the available funding could be equally distributed among those towns identified as needing improved sewerage and water systems. DSE then submitted a list of towns recommended for funding to the Minister for Water. This listing was based on the EPA priority rankings.

Although stakeholders had a high level of agreement on the final list of priority towns, the audit identified some opportunities for DSE to improve its process for identifying and prioritising towns for sewerage infrastructure programs.

Although DSE's questionnaire referred to risk criteria, it did not advise local governments how to weight the criteria when choosing their priority towns. In their responses to the questionnaire, only one local government specified the risk priority matrix it had used to rank its towns.

DSE's criteria covered the key parameters for assessing the environmental impacts of wastewater. However, it did not use the land capability assessment maps that are digitally available from state-owned data sets as an alternative source of information to assess the inherent risks of septic tanks across the state. These maps show risk areas such as steep slopes, areas with poor soil or high water use.

Neither local governments nor the EPA used land capability assessment maps to guide their decision-making. Two of the rural local governments we visited had commissioned consultants to help them develop land use risk ratings based on land capability assessment. None of the metropolitan local governments we visited had done so, nor had the water companies.

Only 2 of the rural local governments we visited had inspected a 10 per cent sample of septic tanks. Some of the others had chosen towns they thought had problems, while others sampled all towns. Some advised that they did not have the time or resources to take a 10 per cent sample.

Our site visits confirmed that most local governments conducted visual inspections rather than used environmental or health impact data to assess the extent of their backlog problem. Local governments also considered future development potential and infill of vacant lots.

DSE consulted with most key stakeholders but did not formally involve all relevant CMAs. CMAs have environmental monitoring and coordination responsibilities within a catchment and compile information about environmental risks.

DSE asked the EPA to validate the priority town lists obtained through the MAV. The EPA prioritised the lists of towns within its 4 regional areas but did not prioritise between areas to produce a whole-state ranking. The EPA held a workshop where regional staff were given a list of criteria upon which to make their assessment. The EPA relied on the experience of its regional staff, however, the rationale for giving a town a high, medium or low priority ranking was not clearly specified, nor was the rationale consistent across regions. Further, although DSE did not consider development potential a key criterion, the EPA did consider it.

To validate DSE's final list of priority towns, we developed a risk assessment framework and compared our results with those of DSE and the EPA. The audit risk assessment framework used inherent risk criteria such as land capability and rainfall. It then used residual risk criteria such as access to reticulated water supply, scale, off-site impacts and development pressure. We chose these as criteria because the geographical and geological conditions of an area affect the degree of risk of septic tank failure.

We assessed towns in both the Loddon catchment and south-west Victoria. We used our risk assessment framework and compared our list of priority towns with that determined by DSE and the EPA. Figure 3C shows the results.

FIGURE 3C: RISK ASSESSMENTS BY AUDIT, DSE AND THE EPA

Town	Audit	DSE	EPA
Wye River (a)	High	High	High
Separation Creek (a)	High	High	High
Dutton Way (a)	High	High	High
Peterborough (a)	High	High	High
Kennett River	High	Medium	Medium
Talbot	High	Medium	Medium
Nelson	High	Medium	Medium
Macarthur	High	Medium	Low
Koorong Vale (a)	Low	High	High
Newbridge (a)	Low	High	High

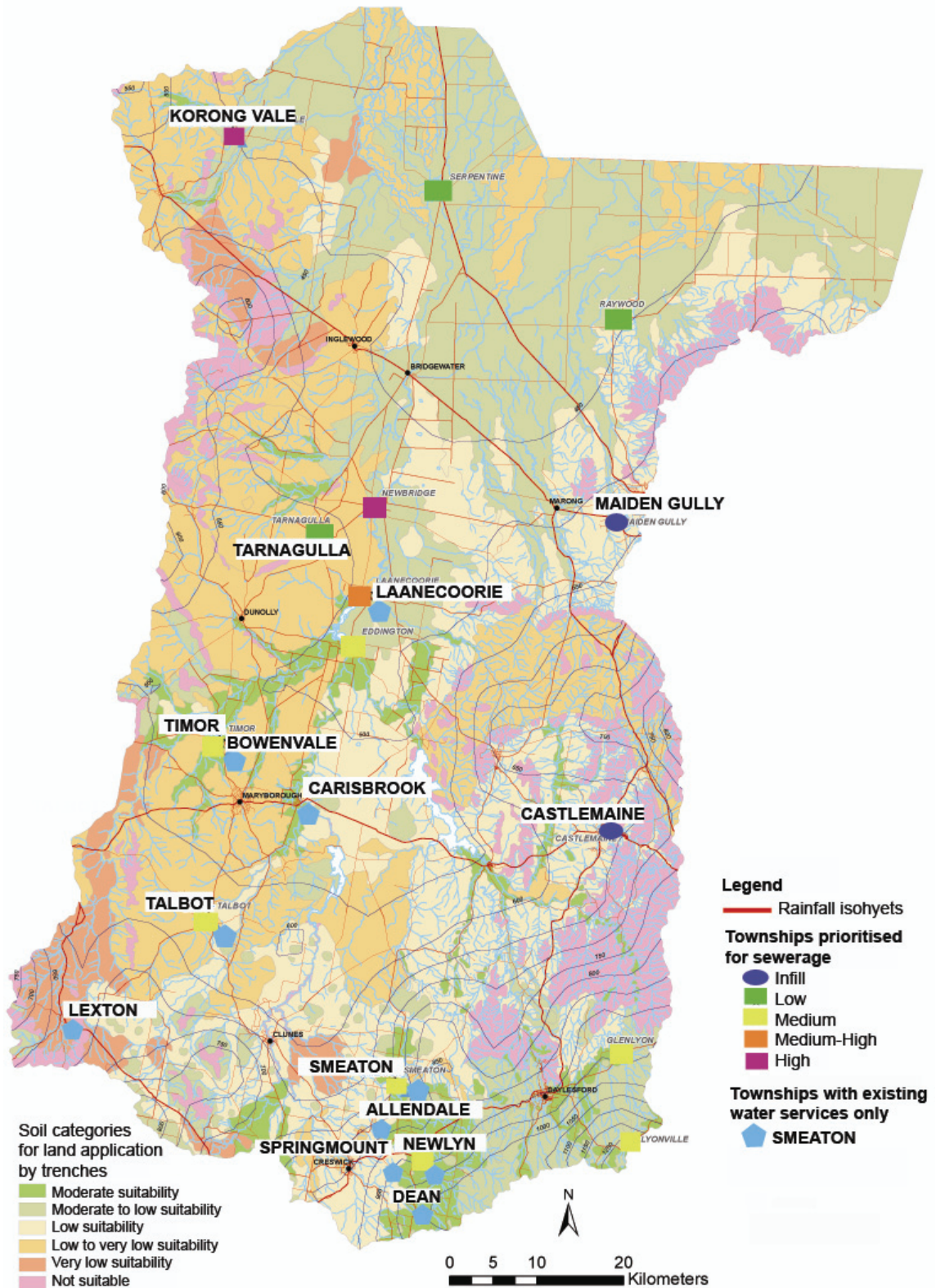
(a) Provided with a grant under the Country Towns Water Supply and Sewerage Program.

Source: Victorian Auditor-General's Office.

In the Loddon catchment, only 2 towns (Koorong Vale and Newbridge) were funded under the Country Towns Water Supply and Sewerage Program. As Figure 3D shows, neither town is in an area of inherent high-risk.

We acknowledge that the 2 prioritisation approaches are not necessarily conclusive. Our approach did not take the extra step of overlaying specific residual risk information to come up with a final listing. Towns were prioritised on the basis of their inherent risks only. DSE's process started from the basis of residual risk rather than inherent risk.

FIGURE 3D: MAP OF LODDON CATCHMENT WITH HIGH-RISK AREAS



Note: This map is based on the risk assessment framework our Office used to validate the priority rankings of DSE and the EPA.

Source: Victorian Auditor-General's Office.

Conclusion

In our opinion, DSE could improve the rigour of its process to identify and prioritise areas across the state exposed to public health, environmental and amenity risks arising from failing septic tanks. This is important given that there are so many stakeholders involved in making septic tank and sewerage decisions. Any decision that determines where public funds are allocated needs to be easily understood and based on sound data.

DSE could obtain a greater level of assurance, and better use local governments' limited resources, by also conducting a desktop study to identify areas of inherent high-risk and then use local knowledge to qualify these results. To do so, it could use state data sets for land capability, rainfall, topographical and cadastral information. This additional information would contribute to a consistent approach to prioritisation across the state and to better engage stakeholders.

3.2.3 Were risks treated in accordance with priorities?

We expected that water companies and water authorities would treat risks by providing sewerage infrastructure to areas that were prioritised according to public health, environmental and amenity risks.

Metropolitan

The audit found that in the past, risk treatment was usually based on financial and engineering considerations rather than on the assessed level of risk. Both SEW and YVW maintain that their current prioritisation processes are based on the level of environmental and health-risk. In the past, cost was often the only significant differing measure as environmental and health data was limited. This led to water companies usually providing sewerage in sequence order. That is, they provided it to the next suburb along the sewer main, not necessarily to the town at highest risk.

Out-of-sequence provision does occur, but only when property owners offer to share costs. For example, one of the local governments we visited had identified a priority backlog area. The water company told it that they would sewer the area earlier than originally scheduled if residents agreed to pay the full cost (which was significantly more than the \$500 capped contribution). Owners were advised that if they did not contribute to this scheme they would still have to spend money upgrading their septic tanks.

However, DSE advised us that the water companies are taking a greater interest in providing infrastructure to the highest-risk backlog areas as alternative treatment systems improve and find greater acceptance in the general community and the water industry.

Regional

In *declared*³ sewerage districts, financial viability and engineering considerations (rather than risk) generally determine which areas are sewered first. One water authority advised that a backlog area would not be treated until there were enough properties to enable the cost of providing the infrastructure to be recovered. Areas are added to its infrastructure works program when it is financially viable to do so.

In *undeclared* sewerage districts, DSE funding (through the Country Town Water Supply and Sewerage Program) determines where infrastructure will be provided.

In the most recent round of funding, 2 Gippsland towns (Venus Bay, with about approximately 2 260 lots and Sandy Point, with about 750 lots) were identified by DSE and the EPA as 2 of the state's highest-risk areas that needed reticulated sewerage. However, neither was allocated funding. DSE advised that sewerage infrastructure in such cases is part-funded by borrowings serviced through tariff increases, and that the projected 60 per cent tariff increase in both towns would be unacceptable to residents. Further, by removing these towns from the funding list, the available funding could be more widely distributed across the state to maximise the number of properties that could be sewered. At June 2006, DSE was still seeking alternative funding for these 2 towns.

Conclusion

In the metropolitan area, water companies have endeavoured to sewer the highest environmental and health-risk backlog properties first. In regional areas, particularly within declared sewerage districts, water authorities take an economically pragmatic approach and tend to sewer areas in physical sequence as reticulated systems are extended. This means the highest-risk backlog properties are not always treated first.

While such pragmatism may be inevitable, we are concerned that no agency conducts a mitigation program to protect communities from failing septic tanks while their area waits for funding.

³ A regional urban water authority only provides a sewerage service within a declared sewerage district.

For example, local governments, with state government support, could target septic tank owners in high-risk areas with education and, if necessary, enforcement activities. A water authority might provide an innovative alternative such as reticulating individual septic tanks and instigating a localised treatment system. It could also use a life cycle assessment approach where different sewerage solutions are assessed for their environmental impact and the most sustainable solution is adopted.



Greywater flowing into an open waterway.

3.2.4 Overall conclusion

We consider that the approaches taken by DSE, local governments and the EPA do not ensure the public health, environmental and amenity risks related to failing septic tanks are adequately identified, assessed, prioritised and treated.

Data collected through statewide monitoring networks could be better used to identify catchments at risk. Similarly, greater use of state data sets and key environmental management plans prepared by CMAs (such as river health strategies and nutrient management strategies) should be used when identifying risks. This information would also help to prioritise risks.

DSE and the EPA could also use data from statewide monitoring programs to determine where backlog programs would be likely to have the greatest impact in minimising environmental and public health risks. Further, such data could assist in determining the best type of sewerage solution, such as a fully reticulated system, upgrading septic tanks or constructing an alternative treatment system for a small number of properties, for a particular level of risk.

We consider that much of the water quality monitoring undertaken by local governments was unnecessary as it often occurred where risks had already been seen by environmental health officers.

Until local governments show a greater commitment to meeting their obligations to prepare domestic wastewater management plans, this initiative will have only minimal impact and will not improve the identification of environmental and public health risks caused by failing septic tanks.

The use of land capability assessments would provide a higher level of confidence than at present that backlog sewerage programs address the state's worst environmental and public health risks. These assessments combined with the results from other state data sets would also help target high-risk areas for more specific monitoring.

While we acknowledge that financial considerations are an important determinant of risk treatment, there are a variety of ways that environmental and health-risks can be mitigated while a community awaits a permanent risk treatment.

3.3 Were the risks of using septic tanks adequately managed?

3.3.1 Introduction

Responsibility for managing domestic septic tanks rests with local government and property owners. The EPA licences those sites, usually commercial premises, with facilities that discharge over 5 000 litres of wastewater per day.

In backlog areas, poorly functioning septic tanks pose risks to the environment, public health and amenity. These risks will continue until a reticulated system or other solution is provided. More risks can arise if new septic tanks are not properly regulated. Accordingly, there is an ongoing need for local government to regulate the installation and use of septic tanks.

In assessing whether local governments were adequately regulating the installation and use of septic tanks, we examined if:

- only EPA-approved septic tanks were installed
- property owners obtained permits to install and use septic tanks
- permit conditions were enforced
- records of septic tanks were complete and accurate
- property owners were informed of their septic tank responsibilities
- the level of allocated resources was sufficient.

3.3.2 Were only EPA-approved septic tanks installed?

We expected that mechanisms would be in place to ensure that risks to the environment, public health and amenity would not be increased through the installation of non-approved septic tanks.

Before a septic tank can be installed in Victoria, the manufacturer must obtain a certificate of approval from the EPA which details the operating requirements. Local governments then determine whether a particular type of septic tank is suitable for use in their municipality.

There are about 100 types of approved non-reticulated sewage systems. However, the certificate of approval system only started in 1990 and many old systems never needed certification as the 1988 amendments to the *Environment Protection Act 1970* were not applicable to systems installed before that time. In the case of more sophisticated septic tanks, the certificate also requires the property owner to have their septic tank regularly tested by a laboratory accredited with the National Association of Testing Authorities. Manufacturers must also audit the operation of their septic tanks in the field and submit the results to the EPA when renewing their certificate of approval.

In 2001, the EPA amended its certificates to make them valid for only 5 years from the date of approval. Before this change, the certificate was valid until the EPA withdrew it.

Environmental health officers advised us that some on-site systems did not always operate well once installed. Testing conditions are often different from domestic environments, where different chemicals are used and the volume and flow of effluent fluctuates. Although local governments make the final decision about which system a property owner is permitted to install, environmental health officers of at least 4 of the local governments we visited considered it difficult to disallow an approved system on the basis that it was not suitable for local conditions. However, they expect these concerns to be allayed by the limited 5-year approval and by the requirement for manufacturers to submit field data on the operating performance of systems.

The EPA does not have a formal process for collecting local government feedback about how on-site treatment systems operate in the field. It relies on being provided with feedback. However, both the EPA and environmental health officers advised that this feedback was generally not forthcoming.

Conclusion

There is an adequate process in place to minimise the risk that poorly performing septic tanks will be approved for installation. However, that process would be improved with greater input from local governments. A problem still exists in that the current approval process does not apply to septic tanks installed prior to 1990. Many of these septic tanks would not be approved today, yet there is no clear mechanism to upgrade or replace them.

3.3.3 Did property owners obtain the required septic tank permits?

Local governments are responsible for issuing septic tank permits. All 10 local governments we visited issued permits to install and use septic tanks.

Property owners are required to first obtain a permit to install a septic tank and then a certificate to use a septic tank. Both the permit and the certificate have conditions that aim to ensure that the septic tank does not damage the environment or cause public health and amenity risks. The certificate to use does not replace the permit to install: both remain valid for the life of the septic tank.

The audit found that local governments' permit conditions varied greatly. There was little consistency in what conditions were put on either permit. Of the 10 local governments we visited, 4 had very brief permit conditions that provided no guidance to the property owner. The other 6 had comprehensive conditions that included detailed drawings, plant lists of suitable species for effluent disposal areas and other technical management information.

Almost all permit conditions were derived from the EPA's set of model conditions published on its website. However, as the website does not state whether these conditions are for the permit to install or the permit to use, local governments have scope to interpret them differently. The EPA advised that it expects local governments to draw their permit conditions from the EPA's certificates of approval for septic tank systems.

Figure 3E shows the most common permit conditions and the number of local governments that had included (and not included) them on permits.

FIGURE 3E: CONDITIONS ON PERMITS TO INSTALL AND/OR PERMITS TO USE

Conditions	Total	Included	Not included	EPA model clause
Sunset clause	10	7	3	-
Must obtain permit to use before house occupied	10	10	-	Yes
Mandatory requirement for maintenance agreement	10	5	5	Yes
Must comply with certificate of approval	10	9	1	Yes
Must comply with <i>Environment Protection Act 1970</i>	10	9	1	Yes
Must comply with Australian Standards (AS/NZS 1546 and 1547:2000) for on-site domestic wastewater treatment units and on-site domestic wastewater management.	10	3	7	Yes
Must desludge tank every 3 years	10	8	2	Yes
Management advice provided (such as restrictions on plantings, toppings)	10	8	2	Yes
Must monitor septic tank performance	10	8	2	Yes

Source: Victorian Auditor-General's Office.

The inconsistencies in permit conditions also reflect the lack of guidance in the *Environment Protection Act 1970* about permit conditions. The Act states that a permit to install may have conditions attached to it, but is silent about whether a "certificate to use" can also have conditions.

The local governments we visited advised us that once issued, a permit to use cannot be withdrawn or upgraded. This meant that old split systems (originally permitted as a temporary measure in the Upper Yarra catchment) were still operating and contributing to environmental, health and amenity risks because the reticulated sewerage system was yet to replace these old systems. However, 2 local governments had stated in the permit conditions that wastewater had to be contained on-site and, hence, could force property owners to upgrade failing septic tanks if this condition was not met.

In the local governments we visited, about one-third did not include a sunset clause in either permit. Half the permits did not include the mandatory requirement for maintenance agreements.

Conclusion

Although property owners did obtain the required septic tank permits, the permit conditions varied greatly between local governments. Further, deficiencies in permit conditions prevent local governments from forcing property owners to address the environmental, public health and amenity risks caused by failing septic tanks.

3.3.4 Did local governments enforce septic tank permit conditions?

Local governments are responsible for enforcing septic tank permit conditions. Only 2 local governments we visited took a rigorous approach to enforcing the permit conditions. Of these, one had examined every septic tank in their municipality and the other was in the process of doing so. The other 8 had no enforcement program for old septic tanks and focused mainly on site assessments for new installations.

One local government issued permits that required property owners to provide it with certificates verifying that maintenance had been undertaken on their septic tank. This local government had received about 2 000 of these certificates (being for maintenance carried out over 2 years) but had not yet entered the data on its systems. Accordingly, it had not identified property owners who had not complied with this permit condition.

Environmental health officers advised us that they did not expect property owners to have the knowledge or skills to monitor their septic tanks. However, this did not absolve property owners of their responsibility to comply with permit requirements.

Half the local governments we visited advised that the permit to use requirement - to retain all waste water on-site - had been a key inhibitor to development in their areas. When one local government stopped issuing septic tank permits for sites that could not contain all wastewater on-site, there was a community outcry and a compromise was reached whereby septic systems were allowed in the "interim" until sewer became available. This has constrained development in the area.

Use of the Environment Protection Act 1970, Health Act 1958 or planning provisions

Local government has septic tank responsibilities under the *Environment Protection Act 1970*.

There are penalties in this Act for non-compliance with a permit condition or for installing septic tanks without a permit. The EPA has never charged anyone for breaching permit conditions or installing an unapproved system as septic tank installation and maintenance are a local government responsibility as set out in the Environment Protection Act and the SEPP, *Waters of Victoria*. The EPA also considers that the use of the Act's pollution of waters provisions could result in too severe a penalty for the offence.

One limitation with the Act is that there is no facility for local government to specify any rectification, improvements or alterations within a legal notice that would clearly direct the property owner in how to mitigate the problem of their failing septic tank. Local government can only initiate proceedings that may result in a fine to the property owner for non-compliance with a specific offence. EPA officers, however, have the power to require rectifications, improvements or alterations through a Pollution Abatement Notice (PAN). Another limitation with the Act is the inability of local government to withdraw or cancel "original" permits that allowed the installation and use of a septic system that now does not meet today's minimum standards and, hence, remains a continuing source of pollutants. This power was previously available under the Health Act regulations.

Eight of the 10 local governments we visited used the nuisance provisions of the *Health Act 1958* to make owners upgrade their failing septic tanks. The other 2 used the conditions of the original permit, where such permit conditions existed and were explicit enough to enforce. However, most old permits (pre-1988) did not have such conditions. As explained above, local governments cannot withdraw a permit that might not be appropriate now, but was valid when it was issued.

At June 2006, DSE and the EPA were preparing a submission to review septic tank legislation. They advised us that their submission would seek to clarify and strengthen provisions for septic tank management by clearly identifying responsibilities and authorisations, and by creating penalties for non-compliance.

Most local governments we visited also used the planning legislation to obtain upgrades of inadequate septic tank systems. However, this was completely opportunistic and relied on a resident applying for a planning permit to renovate or extend their house. Local governments then used this opportunity to include a permit condition requiring the property owner to upgrade the old septic system to one that is currently approved by the EPA.

Recouping enforcement costs

One local government we visited raised revenue through a septic tank levy and used the revenue to cover ongoing enforcement costs. This local government also had a septic tank enforcement budget. Another local government was proposing to introduce a similar levy.

Four local governments were keen to charge a levy, but had not yet sought legal advice about their power to do so. Four had received legal advice that they could not charge a levy. However, these local governments had sought legal opinions for different sections of the *Local Government Act 1989* and this may have contributed to the differing legal opinions. All 8 advised us that insufficient resources were the major barrier to enforcement.

Although this issue affects all local governments, neither DSE nor the EPA has clarified the differing legal opinions. It was also evident from our visits that some local governments are unaware that they can retain revenue generated from fines imposed using the septic tank provisions of the *Environment Protection Act 1970*.

Community experience

Our audit survey identified community concerns about the effectiveness of local governments' enforcement efforts. Most respondents (94 per cent) had not complained about another property's septic tank. Those who had complained usually complained to the local government, then the property owner, then the local water authority and finally DSE.

Most complainants were not satisfied with how their complaint had been handled. The most common causes of dissatisfaction were no follow-up or other action having been taken, no empathy with their situation having been shown or the problem not having been fixed properly. However, complainants were satisfied if the problem was fixed properly, was suitably mediated or settled, or if the agency was responsive.

Conclusion

We consider that the enforcement of permit conditions by 8 of the local governments we visited was unsatisfactory, increasing the risk that poorly functioning septic tanks were not identified. Local governments were using the provisions of the Health Act, rather than the Environment Protection Act, to make property owners improve their septic tanks as they were not confident of achieving the same result under the latter Act. Local government needs to implement a coordinated enforcement program that systematically identifies non-compliance rather than relying on the current reactive approach whereby action is taken only when a problem is reported.

All local governments faced difficulties resulting from neighbouring local governments using inconsistent approaches.

3.3.5 Were septic tank records complete and accurate?

Only 2 of the 10 local governments we visited had comprehensive records of the septic tanks being used in their municipalities. The other 8 had estimated their septic tank numbers by comparing the number of properties that had reticulated sewerage with the number of ratepayers.

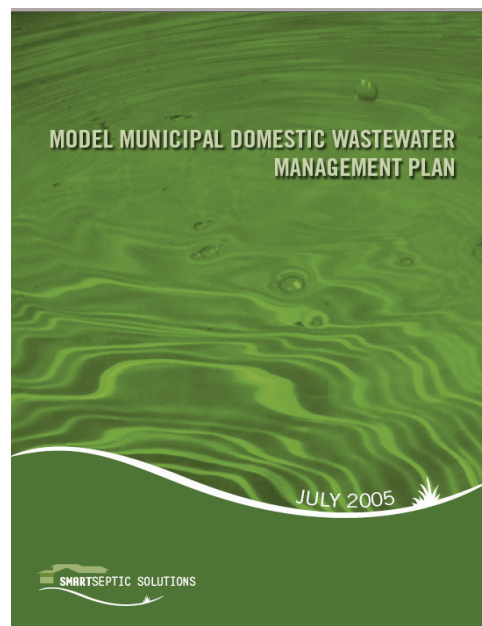
Although required by the EPA, none of the local governments we visited kept records on the number of septic tanks decommissioned. This information could be easily obtained from the water companies or water authorities when customers connect to the sewerage system.

Conclusion

We consider that the quality of information recorded by local government was inadequate. As a result, it was not possible to establish the number of septic tanks that may be contributing to environmental, public health and amenity risks.

3.3.6 Were property owners informed of their responsibilities?

Most of the 10 local governments we visited had some form of septic tank information available for property owners. The quality of that information varied. In 2005, the MAV (with funds from the EPA) produced an education kit for local government as part of the Smart Septics Program. This kit provided local government with standard information about septic tanks and with handouts for distribution to the community.



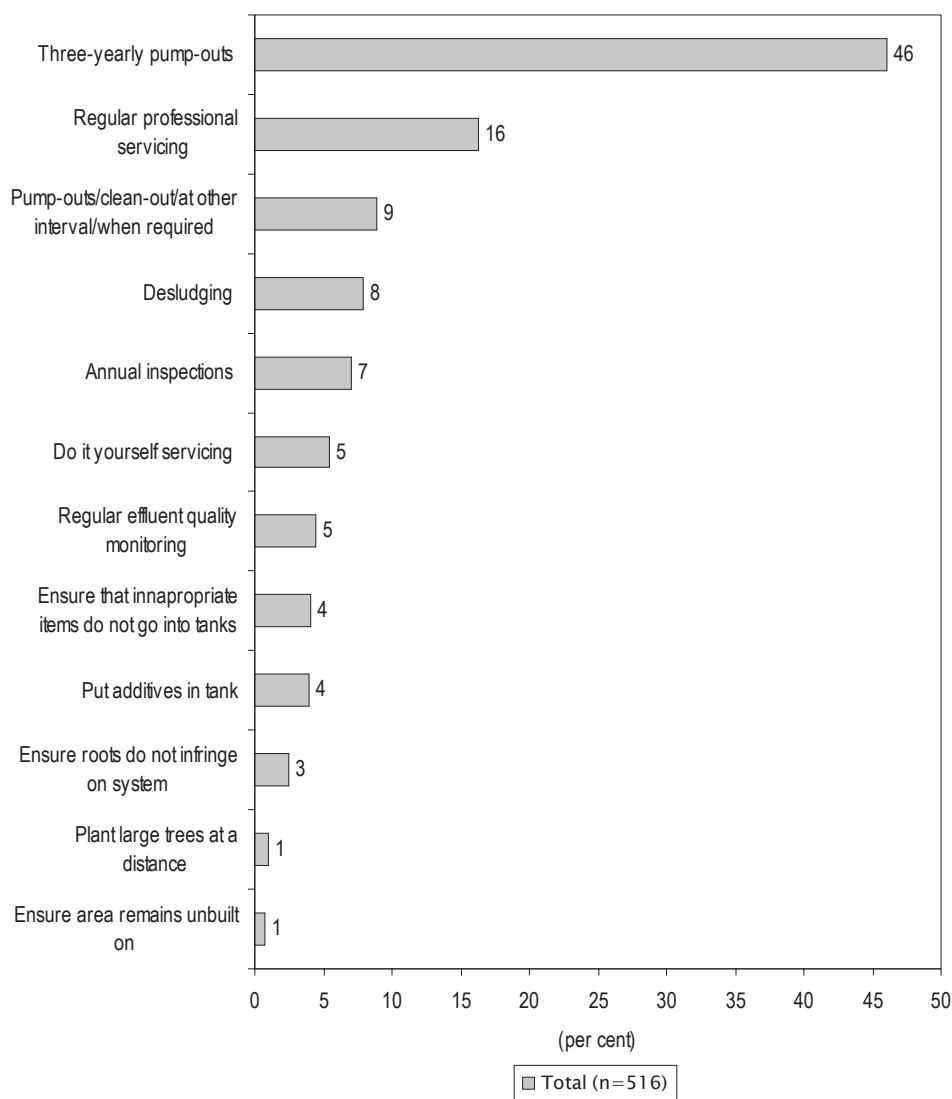
Education products prepared by the Municipal Association of Victoria with funding from DSE. (Photo courtesy of Municipal Association of Victoria).

The audit survey sought to find out if property owners were aware of their septic tank responsibilities. Most respondents (96 per cent) that had a septic tank knew that they had one. However, 10 per cent of these respondents said that they were not made aware of this fact when they bought their property. We noted it is not a legislative requirement (*Sale of Land Act 1962*) to disclose information on whether a property relies on a septic for sewage disposal or to hand over any associated septic tank permits and certificates.

Eighty-seven per cent of respondents believed it was their responsibility to regularly maintain their septic tank. Furthermore, 80 per cent of these respondents knew that they were responsible for minimising environmental, public health and amenity risks by ensuring that their system was properly installed, operated, serviced and maintained.

Of the 516 survey respondents, 46 per cent reported pumping out their septic tank every 3 years. This is a cost-effective maintenance activity. Almost half the respondents did some form of maintenance on their septic tank. Figure 3F shows the main maintenance activities undertaken by respondents.

FIGURE 3F: MAINTENANCE ACTIVITIES UNDERTAKEN



Source: Victorian Auditor-General's Office.

Environmental health officers advised us that (in their experience) most property owners had not seen their permits to install or were not aware they existed. They thought that was because the owners had often not made the original application or had not been given it when they purchased the property.

Despite property owners' high level of awareness of their responsibility to maintain their septic tank, 84 per cent of respondents reported that they had not received information about their responsibilities as a septic tank owner.

Most respondents (71 per cent) reported that their local government had provided them with information, while only 9 per cent had received information from their water authority. Most water companies and authorities do not provide septic tank information to residents but refer these inquiries to local government. Thirty-six per cent of respondents would have liked to receive more information from their local government.

Conclusion

A basic requirement for property owners to manage the risks associated with septic tanks is for them to have access to information about their responsibilities. While the majority of respondents to our survey indicated that they obtained their information from local government and were aware of their general responsibilities, they did not understand the detail. We consider that this information should be printed on the septic tank permit to use.

3.3.7 Are resourcing levels sufficient?

Environmental health officers have many responsibilities as well as septic tank regulation. For example, food safety, noise, nuisance abatement, immunisation programs, communicable disease investigations, neighbourhood dispute resolution, personal care and body art industries, prevention of selling cigarettes to minors, no smoking and health warning signage in licensed premises and restaurants, and enforcing smoking bans in enclosed workplaces.

The 10 local governments we visited had (at 30 June 2005) between an estimated 900 and 35 000 septic tanks in their areas. These local governments had between one and 7 environmental health officers who spent differing amounts of time carrying out their septic tank responsibilities. We estimated that the number of septic tanks managed by each officer (full-time-equivalent) ranged from 1 250 to 12 500. Details are shown in Figure 3G.

FIGURE 3G: NUMBER OF SEPTIC TANKS VERSUS ENVIRONMENTAL HEALTH OFFICERS (EHO)

No of EHOs or Wastewater Managers and EHO leader	No. of septic tanks	No. of septic tanks per EHO	No. of septic tanks per EFT (a) equivalent
7	35 000	5 000	12 500
6	12 000	2 000	6 000
3	900	300	2 250
1	4 000	4 000	6 667
4	10 100	2 525	8 417
1.6	2 074	1 296	2 593
4.5	6 000	1 333	1 250
3	4 000	1 333	4 444
3	6 026	2 009	15 065
5	23 000	4 600	11 500

(a) EFT means effective full-time equivalent, i.e. a full-time person.

Source: Victorian Auditor-General's Office.

The competing demands on environmental health officers' time has meant that tasks such as completing data sets on septic tanks over 5 years old has simply not occurred.

Conclusion

Most local governments have not allocated adequate resources to effectively carry out their legislative responsibilities for septic tank management. The level of resources allocated to septic tank management or the level of responsibility expected from local government needs to be reviewed.

3.3.8 Conclusion

Local governments need to improve their management of septic tanks. Our visits to the 10 local governments identified many instances where they failed to ensure that septic tanks were properly installed, used and maintained.

Individual environmental health officers manage a high number of septic tanks and have other responsibilities. It is, therefore, unlikely that local governments will improve their management of septic tanks without a reassessment of the effort and resources required. Some local governments have explored ways to increase the resources available through levies and enforcement programs. Most have not.

There are failings in the current septic tank legislative framework that, if addressed, could help local governments to carry out their regulatory functions.

DSE needs to exercise more leadership in the management of septic tanks and reduce the current confusion among local governments about their responsibilities and legal powers.

3.4 Overall conclusion - Reduction in risks

Records management and enforcement are 2 essential approaches to the management of environmental, public health and amenity risks caused by failing septic tanks. However, neither has been adequately addressed in almost all local governments we visited. Without complete and accurate records of the location, age and condition of septic tanks in use, local governments cannot determine the extent of the risks their communities face. Equally, risks that have been identified are not being adequately managed through existing legislative and other controls.

Therefore, it is quite likely that the magnitude of the damage caused by failing septic tanks is greater than that known; and that it will increase unless the risks are treated.

Local governments need to do more. The challenge they face is to improve the efficiency and effectiveness of their efforts within their available resources. DSE and the EPA should exercise strong statewide leadership by clarifying and strengthening the legislative controls over septic tanks and improving the tools that local governments can use to adequately manage the risks. There is also scope to develop better cooperation between water companies, or water authorities, and local governments to improve data management and collection as well as enforcement programs.

Recommendations

1. That DSE, the EPA and local government use available technical data sets such as land capability assessments, environmental monitoring and cadastre (lot size) information to identify and monitor the impact of failing septic tanks across the state.
2. That DSE, in consultation with CMAs, the EPA, 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.
3. That DSE, in consultation with the 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.

4. That DSE, in conjunction with the 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.
 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.
 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.
 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* to collect levies for septic tank management.
 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 non-compliance.
 9. That local governments reassess the resourcing levels needed to fulfil their legislative responsibilities for septic tanks.
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4. Is the backlog reducing?



4.1 Introduction

The first backlog sewerage program was established in the early 1970s. Since then, ongoing efforts have been made to reduce the backlog.

Both the metropolitan and regional sewerage backlog programs aim to provide sewerage infrastructure in areas and towns that face significant public health, environmental or amenity risks from sewage discharges.

4.2 Was the extent of the backlog known and controlled?

We expected that backlog numbers would have been reliably determined so that the extent of the problem (and, therefore, the risks faced by the community) could be assessed. Appropriate management actions could then be developed and implemented to minimise the risks. To answer this question, we asked if:

- septic tank records were complete and accurate
- backlog numbers were defined
- the size of the backlog was managed.

4.2.1 Completeness and accuracy of septic tank records

To adequately manage the regulation of septic tanks, local governments must have accurate records of the number, age, type and condition of tanks. Further, such records enable local governments to enforce septic tank permit conditions.

Only one of the 10 local governments we visited had comprehensive records of septic tanks installed in their municipalities. No local government had collected complete information about the age or type of tanks, or whether they had been decommissioned. Only one of the 10 had complete records for septic tanks over 5 years old. Similarly, only one local government knew the total number of tanks within its area and was inspecting them to assess property owners' compliance with permit conditions.

We found 2 groups of local governments that were funding the development of septic tank databases. Both groups were researching and defining the type of information required. However, they were not doing so within the context of a statewide approach and operated in isolation.

Under the *Environment Protection Act 1970*, all local governments must submit an annual septic tank return to the Environment Protection Authority (EPA). These returns require information about the number of septic tank permits issued, the number of septic tanks disconnected and decommissioned, the number of tanks inspected and the number of tanks in operation during the year.

The EPA received septic tank annual returns from some local governments up to the late 1990s. The EPA files indicate that only 17 of 79¹ local governments submitted a septic tank return for 1997-1998. The EPA did not penalise local governments for not providing these annual returns, nor have there been efforts made to require annual returns from local governments since the late 1990s.

The EPA advised us that annual septic tank returns do not provide useful information for setting strategic backlog priorities. Although the EPA had considered changes to annual returns in past years², none had been made. Domestic wastewater management plans (DWMP) are considered to be of greater value than the annual returns as these plans should contain more detailed information and suggestions on how best to mitigate septic tank risks. The requirement for local government to produce a DWMP is now a clause within the State environment protection policy, *Waters of Victoria*.

Conclusion

We consider that the quality of information recorded by local governments about the number and condition of septic tanks in their municipalities was inadequate. This reduces local governments' ability to adequately manage septic tanks in their municipalities.

4.2.2 Definition of backlog numbers

Metropolitan retail water companies and water authorities³ source backlog property data from local governments.

¹ A local government is exempt from submitting an annual return if there are no septic tanks in the municipality. There are 54 local governments that have a large number of septic tanks.

² In the mid-1990s the EPA established a multi-agency working group (the EPA, Local Government Association, Department of Human Services (DHS), Department of Sustainability and Environment (DSE), water industry and health surveyor representatives) that reported to the then Minister for Environment in the late 1990s. The working group proposed a number of legislative changes, including changes to the annual returns requirements. The government chose not to proceed; a repeat submission in 2002 was also unsuccessful.

³ Water authorities refers to all regional urban water authorities plus those rural water authorities with urban responsibilities (see Part 2 of this report).

Metropolitan retail water companies

The Melbourne Planning Scheme introduced in 1968 required new property subdivisions to have adequate sewerage infrastructure. This requirement was intended to prevent growth in backlog. As backlog numbers should, therefore, not have grown since that date, it would have been an ideal time to calculate the size of the backlog. However, the size of the backlog was not calculated at that time.

In 2002, following consultations with the EPA and relevant local governments, South East Water Limited (SEW) published definitive maps of its backlog areas on its website. These areas were based on an assessment of the environmental, health and amenity risks attributed to failing septic tanks. SEW's backlog maps are updated annually using information collected from its own investigations and using advice from local governments. SEW estimated that at June 2005 it had 25 000 backlog properties.

Yarra Valley Water Limited (YVW) has not accurately determined its backlog numbers. It has mapped its backlog areas, but not to the same level of detail as SEW. At June 2006, YVW was working with local governments to finalise backlog numbers.

YVW estimated that at June 2005 it had 18 500⁴ backlog properties. This figure did not include a further 3 000 properties that it was assessing for their potential to be classified as a backlog property.

At June 2006, metropolitan local governments had not determined their total number of septic tanks, nor had they sought the EPA's confirmation that specific properties should be included in the backlog program. In the absence of action by local governments, YVW and SEW had organised discussions with local governments to identify what data was still needed and who would collect it.

Backlog numbers can be estimated by identifying properties with access to reticulated water but not reticulated sewerage. However, water companies have only recently provided local governments with geographic information system overlays of their sewerage and reticulated water systems. Of the 4 metropolitan local governments we visited, Manningham and Nillumbik had mapped their unsewered areas, and Mornington and the Shire of Yarra Ranges were in the process of doing so.

⁴ The YVW 2005-08 Water Plan, approved by the Essential Services Commission in June 2005.

Regional urban and rural water authorities

Of the 6 non-metropolitan local governments we visited, only Wodonga had mapped its unsewered areas. South Gippsland was in the process of doing so. Therefore, any estimate of the number of backlog septic tanks in regional Victoria, as in metropolitan areas, can at best only be a broad estimate.

Although under the Country Towns Water Supply and Sewerage Program the Department of Sustainability and Environment (DSE) is responsible for allocating funding to rural and regional areas for sewerage infrastructure, it does not maintain data on backlog numbers. DSE advised us that in the future it proposed to compile this data from information on failing septic tanks that local governments are required to collect.

Also, most water authorities did not have complete and accurate data about backlog properties within declared sewerage districts.

Conclusion

At June 2006, the number of failing septic tanks in use in metropolitan and rural and regional Victoria was unknown.

4.2.3 Was the size of the backlog controlled?

“Backlog creep” refers to the increase in the number of backlog properties that occurs over time because property development is allowed despite wastewater being unable to be contained on-site. In recent years, legislation and regulations to curb backlog creep (such as planning restrictions, referral processes and environmental standards) have been introduced.

We expected that local governments would be taking steps to ensure that backlog creep was eliminated, or at least minimised.

Planning and environmental legislation

In 1973 the (then) Melbourne and Metropolitan Board of Works (MMBW) issued a planning directive that all new subdivisions and developments must be able to contain their waste on-site or must connect to a reticulated sewerage system. In 1988, the State environment protection policy (SEPP), *Waters of Victoria* applied this requirement to the entire state. Had this directive been complied with, backlog creep would have ceased in Melbourne from 1973 and in regional areas from 1988.

However, it was not complied with. SEW told the (then) Department of Natural Resources and Environment in 2001 that “the number of lots requiring backlog sewerage is continually increasing, so the actual length of the program will be greater”. Similarly, in November 2002, YVW wrote to local governments stating “We have also noted that some councils have included relatively new subdivided properties where sewerage reticulation had not been provided at subdivision. We find this ‘backlog creep’ unacceptable as the backlog program could potentially be ongoing with no limit”.

In the 1980s, the MMBW allowed unserviced development to proceed in the Yarra catchment on the basis that reticulated sewerage would be provided within 5 years. This decision contributed to backlog creep; some of these developments have still not been serviced and are now on YVW’s backlog program.

A recent audit of Glenelg Shire Council by our Office⁵ found that it had issued planning approval for a development in an area known as Dutton Way in contravention of the SEPP. The sandy soils and small-lot subdivisions in the area mean that wastewater could not be contained within property boundaries. This audit did not identify any further instances of local governments contravening SEPP for new subdivisions.

However, development on old subdivisions remains a problem. Local governments we visited showed us examples where they had requested comment from the EPA about sites that would have an off-site discharge. EPA’s responses reinforced the SEPP requirements. Local government had allowed developments to proceed on old subdivisions despite access to reticulated sewerage not being available and properties not being able to contain their waste on-site. This was often considered an interim solution until reticulated sewerage could be provided.

We also found that local governments did not assess the cumulative impacts of their planning decisions on their region. For example, 2 local governments had independently approved property developments on either side of an inlet. Both local governments now agree that the cumulative impact of these developments increases the risk of environmental damage to the inlet. DSE is now examining how to best address this risk.

⁵ Victorian Auditor-General's Office 2005, *Community planning services in Glenelg Shire Council: 1998-2005*, Victorian Government Printer, Melbourne.

Did state referral authorities prevent backlog creep?

Under the *Planning and Environment Act 1987*, local governments must refer a planning application to any referral authorities specified in their planning schemes. Referral authorities can be state agencies (such as water companies and authorities or catchment management authorities) or private service providers (such as power and telephone companies).

Local governments refer applications to referral authorities to determine if the authorities would object to the granting of a planning permit, or require specific conditions to be included on the permit. We found instances where state agencies had:

- provided non-committal, standard responses that were difficult to translate into a clear permit condition
- advised the local government to obtain an independent assessment
- provided contradictory advice
- ignored the referral and not responded within the statutory time frame.

We also found instances where advice provided by DSE to local governments was unclear. In one instance, DSE advised that it had no objection to a septic tank permit being issued but that “a permeability test should be taken because of the shallowness of impermeable soils over rock and other impervious materials in parts of this locality”. However, DSE did not ask to see the results of the permeability test before it advised its decision; nor did it use its knowledge of this soil type to require reticulated sewerage or some other acceptable solution.

We found that water authorities consistently advised local governments as to whether a sewer connection was available. However, if a connection was not available, they did not indicate when one might be available, or whether alternative sewerage solutions were an option. Local governments did not necessarily follow-up such advice with the water company.

Not all planning applications have to be referred by local governments to state agencies. For example, an application to add a tennis court or driveway, which increases a property’s hard surface area, does not, even though it reduces the land available for absorption of septic tank effluent. If the property is subsequently unable to retain its waste on-site, the local government will recommend to the water company that the property be added to the backlog program. We found no evidence that local governments always considered the consequences of such applications when assessing them.



Septic tank situated beneath a concrete driveway. Property owners sometimes make alterations to their homes that render septic tank maintenance and monitoring difficult, if not impossible. (Photo courtesy of Ballarat City Council.)

Use of land capability consultants

Land capability assessments assess the capacity of a property to retain waste on-site. Property owners organise these assessments, and environmental health officers use them to make land use planning decisions and approve septic tanks. The EPA's *Septic Tanks Code of Practice* states how assessments must be conducted.

We found instances where local governments commissioned their own land capability assessment because they doubted the integrity of the assessment supplied by the property owner. We also found that the quality of the advice provided by land capability consultants varied. For example, some consultants submitted assessments that had not been carried out in accordance with the *Septic Tanks Code of Practice*.

The language and technical detail in assessment reports is often difficult for property owners and environmental health officers (with limited training in this field) to understand.

One local government we visited advised that it asked the EPA to comment on land capability assessment reports that it considered to be wrong. However, if the local government then refused the application on the basis of the EPA's interpretation of the quality of the report, it ran a real risk that its refusal would be successfully appealed through the Victorian Civil and Administrative Tribunal (VCAT). Although the EPA often gave written advice, planning decisions were usually only upheld when an EPA officer personally presented the EPA's advice to the tribunal.

The EPA is aware of the inconsistent advice by, and the poor qualifications of, some land capability consultants. To overcome these problems, the EPA is considering developing (in conjunction with an educational institution) an accredited land capability assessment training course to provide a level of certainty for property owners about the quality of services provided.

In early 2006, DSE funded the Municipal Association of Victoria (MAV) to develop and conduct land capability training workshops for environmental health officers, to improve their understanding of land capability. MAV also developed a model land capability assessment report as a best practice guide for consultants.

VCAT review of local government planning decisions

If a local government rejects a property owner's planning application, the owner can refer the decision to VCAT.

We reviewed 15 VCAT planning application decisions involving septic tanks made in the 6 months to October 2005. In 53 per cent of cases, the tribunal upheld the local government's decision to deny the application. In the majority (66 per cent) of these cases, the local government denied a septic tank permit because the SEPP requirements had not been met.

In the other 47 per cent of cases, VCAT overturned the local government's decision and a septic tank permit was issued. In most (86 per cent) of these cases, septic tank issues were only part of the local government's reason for denying a planning permit. Development was ultimately allowed even though all septic tank permit requirements were not met.

As explained earlier, when an EPA officer attended a VCAT hearing, a local government's decision was more likely to be upheld. The EPA officer provided expert advice about SEPP requirements and informed rebuttals of the land capability assessment consultant's report.

Control over private building surveyor activity

A property owner is required to obtain the approval of a building surveyor before occupying a new dwelling. Building surveyors are not permitted to issue a certificate of occupancy without the local government's confirmation that either a septic tank permit has been issued (or will be issued) or reticulated sewerage is available.

We found instances of private building surveyors having issued a certificate of occupancy for an unsewered property without first getting written confirmation from the local government that waste could be contained on-site. When this occurs, local governments approve the septic tank installation and tell the property owner to seek an exemption from the EPA to allow the septic tank to discharge off-site.

Measures to curb backlog creep

Metropolitan retail water companies

Both SEW and YVW have acted to curtail backlog creep. If a backlog property is subdivided before SEW or YVW provides a connection point, only one capped-price connection point will be provided. Additional connection points will be provided to the subdivided properties if the property owners meet the full cost of the new infrastructure.

Regional urban and rural water authorities

In January 2006, under the Country Towns Water Supply and Sewerage Program, the government approved funding for 23⁶ towns for new sewerage services. The water authorities advise that it takes a further 2 to 3 years until the actual sewerage systems are constructed. DSE is aware that during this period there is potential for backlog numbers to increase if local governments approve new subdivisions.

Conclusion

There are a number of legislative and other controls (such as planning restrictions, referral processes and environmental standards) aimed at curbing backlog creep. However, these controls are not being fully enforced and properties are still being developed even though their wastewater cannot be contained on-site. It is likely that the backlog will increase until controls are fully enforced.

⁶ Wye River, Separation Creek, Gordon, Barry's Reef, Blackwood, Simmonds Reef, Newbridge, Koorong Vale, Coongulla, Glenmaggie, Rupanyup, Nichols Point, Harrierville, Eskdale, Glenrowan, Oxley, Tungamah, Nyora, Poowong, Loch, Mt Macedon, Peterborough, Dutton Way.

4.2.4 Overall conclusion

As most local government septic tank records are incomplete and/or inaccurate, the actual number of backlog properties can only be estimated. No state agency, only one water company and few of the 10 local governments we visited had reliable data for determining backlog numbers. The figures provided to us were mostly based on best guesses or estimates deduced from incomplete databases of unsewered properties across the state.

Without complete and accurate information about backlog numbers it is not possible to fully understand the magnitude of environmental, public health and amenity risks or the likely emerging risks. Nor can a sustainable strategy to treat the risks, nor an estimate of the likely cost of doing so, be developed.

Although new subdivisions appear to be better managed today than in the past, development is still occurring on old subdivisions where allotments are too small to contain wastewater from septic tanks on-site. It is occurring not because legislative controls are weak, but because they are being inconsistently applied. This is largely a failing of local governments, but it is also resulting from decisions outside their control, or from local governments being presented with development fait accomplis which they cannot reverse.

Local governments need to be more vigilant in complying with planning controls. Water companies and regional urban water authorities could also help by accurately determining backlog areas and properties, and publishing this information.

Efforts to curb backlog creep should be encouraged and promoted across the water industry. The inadvertent or opportune creation of more backlog properties simply extends the time frames and costs of backlog programs.

4.3 Were there backlog strategies and were they adequate?

We examined whether the metropolitan and regional backlog programs were being well-managed and, hence, reducing the number of backlog properties so that environmental, public health and amenity risks are managed effectively. Specifically, we examined if:

- there was a statewide backlog strategy
- investment in backlog programs was adequate
- the community was informed about backlog time frames.

The metropolitan program is managed by SEW and YVW (City West Water does not have a backlog program). The regional program is managed by the 11 regional urban water authorities and 2 rural water authorities.

4.3.1 Statewide backlog strategy

In implementing the metropolitan and regional backlog programs we expected SEW, YVW and the regional urban and rural water authorities to have prepared plans for their backlog areas. We expected these plans to reflect a commitment to reducing backlog numbers in line with government and community expectations. We expected these plans to include time lines, targets, required expenditure, performance indicators and reporting mechanisms. We also expected that there would be a statewide strategy to ensure that the government's policy commitments to reducing backlog were achieved.

In 1994, the MMBW was abolished and the 3 metropolitan retail water companies were established. There was no condition in the companies' licences requiring them to conduct backlog programs in their operational areas. SEW advised the Minister for Water that it would stop its backlog program as it was uneconomic. YVW continued with a much-reduced program.

In 1995, the government required each company to conduct a backlog program, to submit 3-year rolling backlog plans and to report on progress annually. At the same time, it required the regional urban water authorities to sewer towns with 500 or more people.

In 2004, the Minister for Water required the metropolitan retail water companies to specify their proposed backlog activity in the water plans they submit to the Essential Services Commission (ESC). Although the same conditions were not imposed on regional urban water authorities, some have specified their proposed backlog activity in the water plans they submitted to the ESC.

Our examination of the water plans and annual reports of the water companies and authorities identified some shortcomings which made understanding backlog program achievements difficult. Specifically:

- companies and authorities did not report the number of backlog sites that they provided with access to a reticulated system (or other solution)
- although regional urban water authorities' 2005-2008 water plans indicated major capital expenditure commitments, only 6 specified backlog activity
- water companies and authorities developed their own indicators, which were not consistent across the water industry

- indicators measured outputs (such as the number of properties serviced, the number of pump stations built and kilometres of pipe installed) but not outcomes in terms of the objectives of backlog programs (such as reductions in environmental, public health and amenity risks, and reduction in backlog numbers)
- neither the Minister for Water (through DSE) nor the ESC required water companies and authorities to report on backlog progress using outcome-based indicators
- annual reports did not report actual backlog progress against planned progress
- DSE's annual report on the regional backlog program only indicated that grants were made and that investment in infrastructure occurred. The report did not indicate whether funded schemes were built, how many properties were serviced, how many were connected and how many septic tanks were decommissioned; and hence the extent to which environmental, public health and amenity risks were mitigated.

Also, water plans and annual reports did not state whether or how companies and authorities were held accountable for achieving the targets in the water plans.

At the state government level, commitments to reducing the backlog are included in 3 policy statements: *Melbourne 2030*, *Our Water Our Future* and the *Yarra River Action Plan*. However, there was no statewide sewerage management or backlog strategy or plan to act on these commitments. Therefore, the plans and programs of companies and authorities did not aggregate into (or derive from) a statewide plan.

No one agency, on behalf of the Minister for Water, monitored the progress of companies or authorities in achieving the government's commitments (or their own commitments) to eliminating backlog numbers.

Conclusion

We are concerned that the government's commitment to eliminating backlog numbers is not supported by a statewide plan. Such a plan would help to identify the most cost-effective solution for areas that have been historically difficult to sewer. In the absence of a statewide plan, the backlog plans prepared by water companies and authorities reflect self-imposed commitments, which may or may not complement the government's commitments.

Reporting about the performance of backlog programs by water companies and authorities and DSE is poor. It was not clear whether backlog programs were progressing as planned, whether targets were being met or whether environmental, public health and amenity risks were being managed effectively.

4.3.2 Was the investment in backlog programs adequate?

The backlog programs aim to increase the number of properties with access to a reticulated sewerage system, either by extending a current (metropolitan, city or town) reticulated system or providing a new system. How quickly (and indeed whether) this is done and the environmental, public health and amenity risks caused by failing septic tanks eliminated depends on available funds. Investment decisions are made in light of the availability of funding, competing demands for funds, the willingness of the community to contribute and the community's expectations of sewerage services.

Metropolitan retail water companies

In metropolitan areas, backlog infrastructure works to the property boundary are paid for by the water companies using borrowings, although property owners make a capped contribution of \$500. The government does not contribute. Figure 4A shows contributions by water companies and property owners in the 10 years to 2005.

FIGURE 4A: CONTRIBUTION OF PROPERTY OWNERS AND WATER COMPANIES TO PROVISION OF BACKLOG SEWERAGE INFRASTRUCTURE

Metropolitan backlog 1 July 1995 - 30 June 2005		
Total number of properties "serviced"	(number)	10 498
Estimate of capped contributions	(\$ million)	5.249
Total expenditure on backlog by SEW and YVW	(\$ million)	109.300
Estimated percentage contribution by property owners to cost of providing sewerage connection point	(%)	(a) 5

(a) The actual percentage per property varies depending on the cost of the connection point.

Note: City West Water Ltd advised it had no further backlog properties.

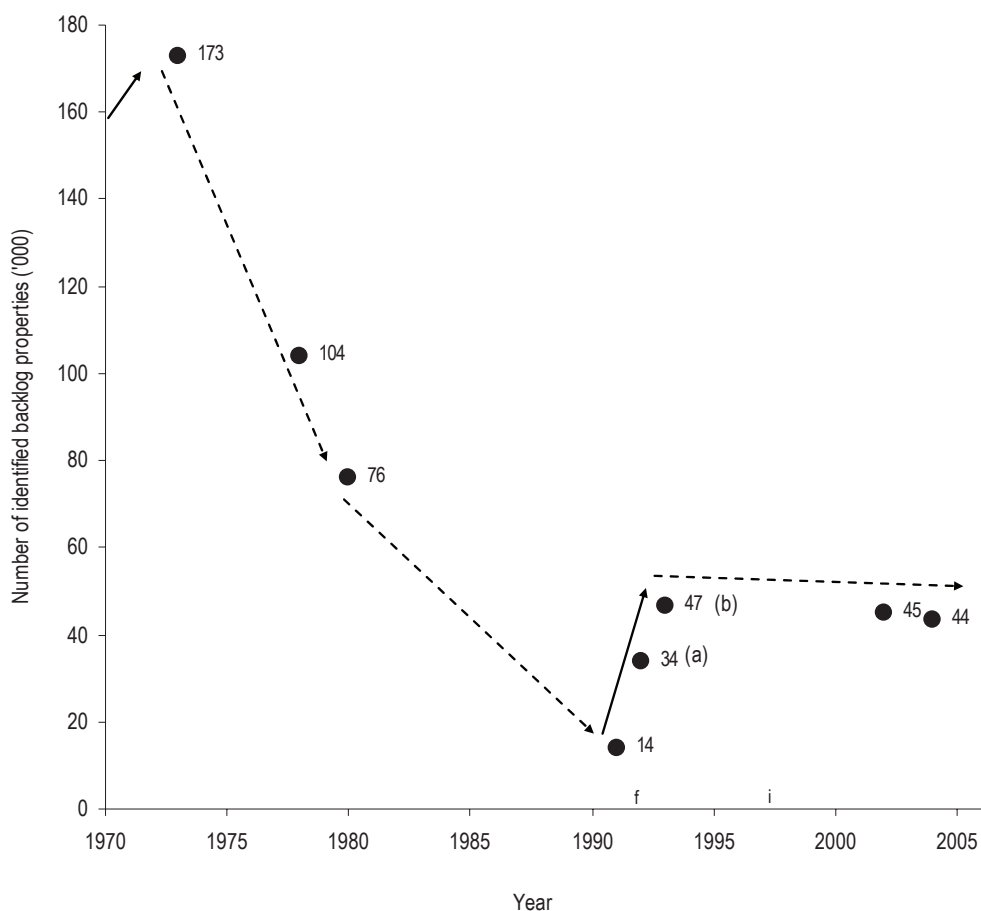
Source: Compiled by Victorian Auditor-General's Office, using data supplied by YVW and SEW.

Water companies expect to service their borrowings by increasing customer tariffs, subject to approval by the ESC. The ESC bases its price determinations on the revenue that the water companies and authorities need to charge to fulfil the commitments they make in their water plans. That is, to fund water plan commitments, tariff revenue must cover operating expenses plus the cost of any borrowings.

The Minister for Water, through DSE, has not reviewed the amount of the capped contribution by property owners since it was set 8 years ago. YVW's draft 2005-08 water plan contained a proposal to increase the cap from \$500 to \$800 per backlog property. The ESC rejected this proposal.

Figure 4B shows the extent of Melbourne's estimated backlog since 1970. It shows that there was a dramatic decline in Melbourne's estimated backlog from the late 1970s to the early 1990s.

FIGURE 4B: MELBOURNE'S ESTIMATED SEWERAGE BACKLOG



(a) In 1991-92, the backlog program was comprehensively defined for the first time. The government committed the MMBW to sewer 34 000 (compared with 17 000 properties prior to the merger of the MMBW with several other urban water boards, and excluded lots over one acre) urban backlog properties within 3-5 years, at an estimated cost of \$550 million.

(b) In 1995, the MMBW was disaggregated into the 3 retail water companies (SEW, YVW, CWW).

Note: Prior to 1995, only residential C lots (quarter acre blocks) were included in the backlog program. From 1995, the definition was broadened to include all residential properties that posed an environmental, health or amenity risk. This contributed to the increase in backlog numbers.

Source: Information collated by Victorian Auditor-General's Office.

Successive governments (including the current government) have made commitments to eliminate the metropolitan backlog. In the 1970s, the MMBW estimated that it would take 6 years, then 9 years, to do so. In the early 1990s, it was 3 years, then 5, 12, 15 and 20 years. None of these estimates were met. The water companies presently estimate it will take 40 years.

Since 1996, SEW and YVW have been directed by the Minister for Water to invest \$7.5 and \$5.5 million a year, respectively, on their backlog programs. Figure 4C shows estimated and actual expenditure by both companies in the 10 years to June 2005.

FIGURE 4C: YARRA VALLEY WATER AND SOUTH EAST WATER EXPENDITURE ON BACKLOG PROGRAMS (\$MILLION)

Financial year	Estimated	SEW	Estimated	YVW	Estimated	Total
1996	7.5	5.30	5.5	3.48	13.0	8.78
1997	7.5	0.40	5.5	4.72	13.0	5.12
1998	7.5	3.30	5.5	5.22	13.0	8.52
1999	7.5	5.40	5.5	5.01	13.0	10.41
2000	7.5	6.40	5.5	3.95	13.0	10.35
2001	7.5	9.80	5.5	4.78	13.0	14.58
2002	7.5	3.00	5.5	2.93	13.0	5.93
2003	7.5	10.90	5.5	6.69	13.0	17.59
2004	7.5	14.50	5.5	5.37	13.0	19.87
2005	7.5	6.30	5.5	2.77	13.0	9.07
10 year total	75.0	65.30	55.0	44.92	130.0	110.22
10 year average		6.53		4.49		11.02

Source: Victorian Auditor-General's Office, using data from SEW and YVW.

Figure 4C shows that in the past 10 years, on average, SEW spent \$6.5 million a year on backlog programs and YVW spent \$4.5 million a year. That is, each company spent about \$1 million less on average each year than they foreshadowed in their plans. Over the 10-year period, total expenditure was about 15 per cent below the planned amount (\$110.22 million compared with \$130 million).

In 2000, the Treasurer rejected a proposal by SEW to reduce its dividend payment from 65 per cent to 55 per cent of its pre-tax profits and increase its borrowings to accelerate and complete its backlog program.

In 2001, the Treasurer granted the water companies a price increase provided they undertook additional backlog works as part of their environmental programs. SEW budgeted to spend an additional \$10.5 million on its backlog program over 3 years (2002-2004). However, it only spent \$2 million in 2002, \$3 million in 2003 and \$1.3 million in 2004. This was a shortfall of \$4.2 million on the planned amount. YVW did not commit to any additional backlog expenditure.

SEW and YVW advised us that underspending on backlog occurred because of:

- the need to increase the capacity of existing infrastructure to deal with a greater number of connections
- the lead times required to undertake projects
- the unavailability of preferred contractors
- the unavailability of major material components (such as pumps)
- planning issues that required extended community consultations
- savings made through a combination of competitive tenders and the adoption of innovative sewerage works designs
- difficulties in obtaining local government planning permits to proceed with sewer construction.

Figure 4D shows SEW's and YVW's progress addressing their backlog in the 10 years to 30 June 2005.

FIGURE 4D: YARRA VALLEY WATER, SOUTH EAST WATER BACKLOG PROGRESS, 1995-2005

Progress indicator	SEW	YVW
Estimated number of backlog properties at 30 June 1995	25 291	7 559
Number of backlog properties brought onto program	3 844	13 574
Number of backlog properties serviced (i.e. sewerage connection points made available)	6 690	3 808
Estimated total number of backlog properties at 30 June 2005	22 445	(a) 18 500
Net change in backlog inventory over past 10 years	Decrease of 2 846	Increase of 9 766
Number of backlog properties connected	5 268	1 786
Connection rate over 10 years (%) (b)	76	47
Total amount spent over past 10 years (\$m)	65.3	44.92
Average cost of servicing a property (\$)	12 800	(c) 11 800

(a) YVW's water plan (written in September 2004 and approved in June 2005) quoted a backlog figure of 18 500 and the company has based its 3-year planning cycle on this number. In March 2006, the estimated number of backlog properties was revised to 17 325 when there were a further 3 000 properties still under investigation to determine their backlog status.

(b) Percentage of property owners who actually connected over the 10-year period.

(c) Excludes expenditure on projects related to servicing the backlog such as upgrading of pumping stations and mains sewerage lines to transport the extra load.

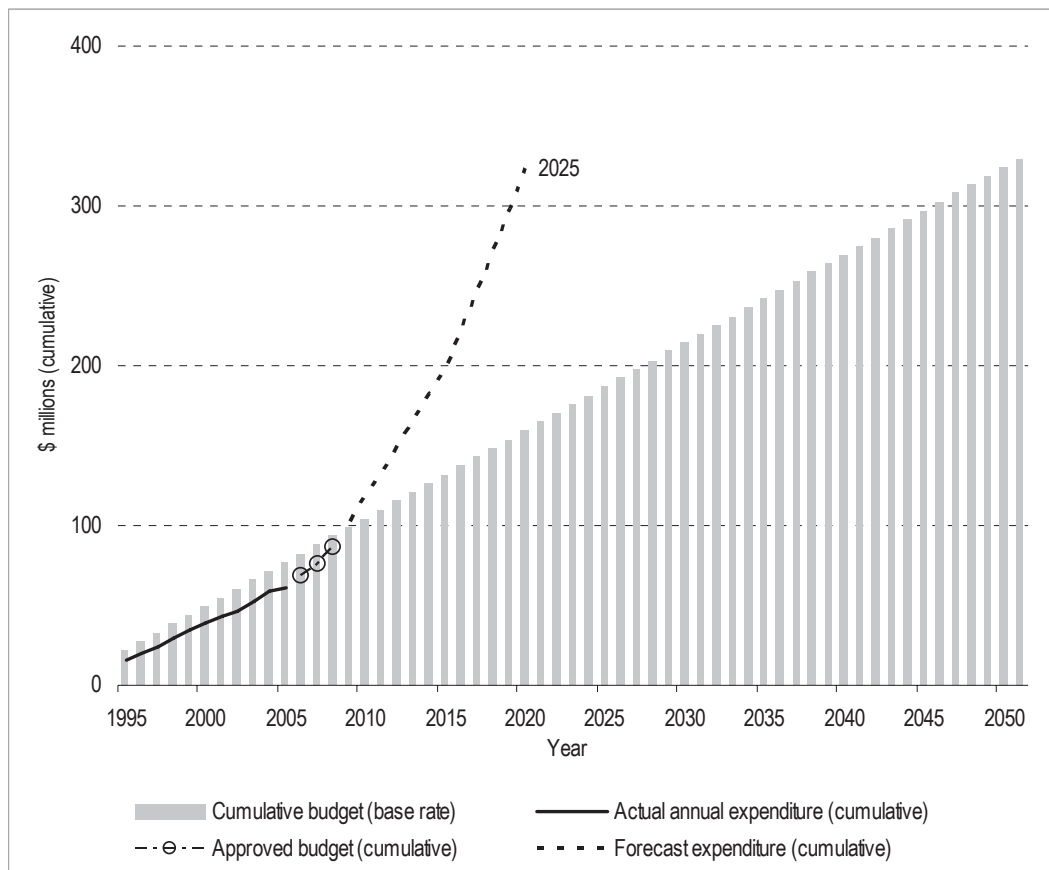
Source: Compiled by Victorian Auditor-General's Office, using data from YVW and SEW.

Figure 4D shows that YVW, despite servicing many backlog properties, has experienced a net increase in its number of backlog properties. In June 2005, YVW's water plan stated that it would cost about \$250 million to complete the backlog program for the estimated 18 500 properties. This same plan proposed accelerating YVW's backlog program to complete it within 20 years.

In August 2005, the Minister for Water asked SEW to prepare a business case to accelerate its backlog program. This plan will be included in SEW's water plan submission for the 2008 pricing period. Both companies accepted that their programs need to be accelerated.

Figures 4E and 4F show the actual, budgeted and projected backlog expenditure that YVW and SEW will need to make to complete their backlog programs.

FIGURE 4E: YARRA VALLEY WATER - ACTUAL, BUDGETED AND PROJECTED BACKLOG EXPENDITURE



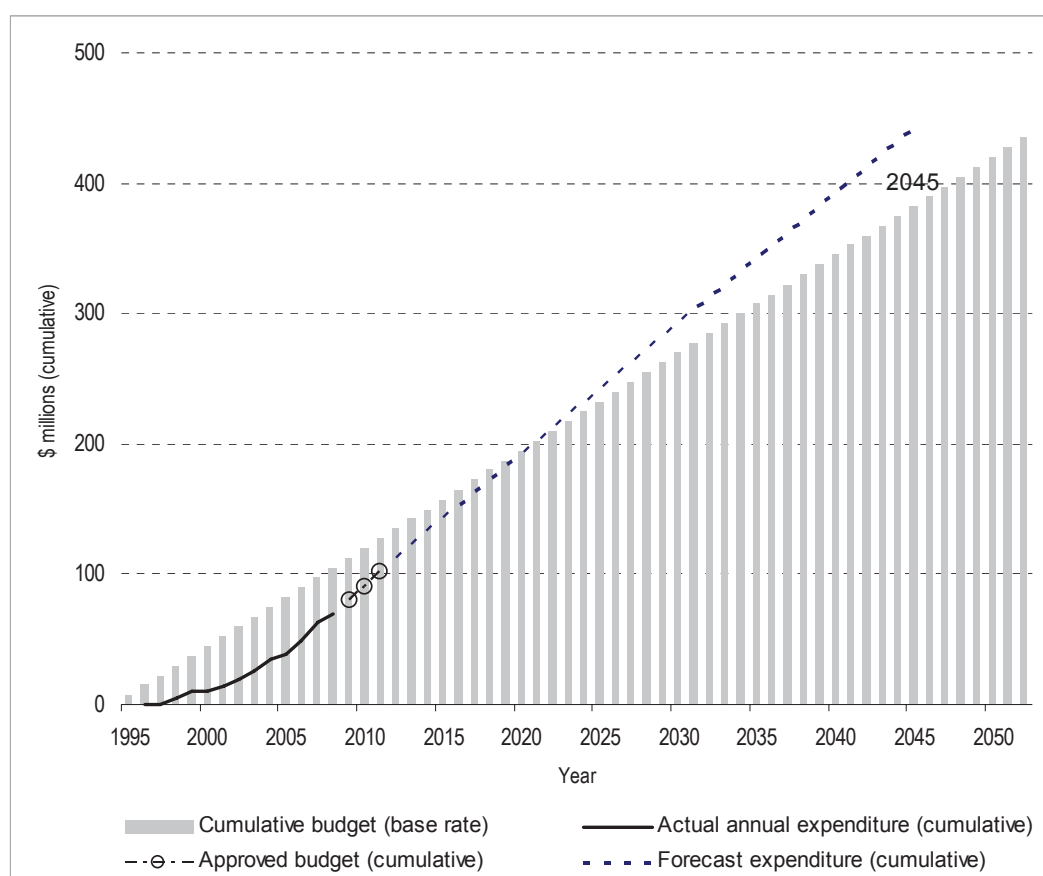
Note: Figure 4E shows (the columns) that if spending continues at historic levels of \$5.5 million a year, the program would take over 40 years (2005-2050) to complete (when expenditure reached cumulative value of \$330 million). In June 2005, YVW estimated that its accelerated (20 year) program will cost \$250 million. Figure 4E also shows (dotted line) the level of investment required if YVW's proposed accelerated backlog program was adopted with an estimated completion date of 2025.

Source: Victorian Auditor-General's Office, using figures supplied by YVW.

Figure 4E shows that if YVW continues at its current rate of expenditure (\$5.5 million a year) it will spend a cumulative \$330 million by 2045 when its backlog is completed, assuming that no further backlog properties are identified. YVW has also estimated its backlog of 18 500 properties would cost \$250 million and take 20 years. It also shows that YVW's cumulative expenditure has trended below its budgeted expenditure since 1995 which, if this continues, would extend the period beyond 2045 (on the assumption that no further backlog properties are identified).

In January 2006, the government announced (as a priority project under its *Yarra River Action Plan*) funding of about \$250 million over the next 20 years to accelerate the replacement of about 18 500 septic tanks with reticulated sewage systems. YVW advised that it would need to fund this proposal with borrowings and that the ESC would need to approve a tariff increase to service the debt. The government's announcement means that YVW's current annual estimated expenditure on backlog would need to more than double to eliminate the current estimated backlog by 2025.

FIGURE 4F: SOUTH EAST WATER - ACTUAL, BUDGETED AND PROJECTED BACKLOG EXPENDITURE.



Note: Figure 4F shows that early expenditure was under the initial \$7.5 million a year but that expenditure has been approved that will bring SEW back on track by 2009. Annual expenditure beyond this period is forecast at \$10 million each year. SEW has not yet proposed an accelerated program and estimate that the 23 000 properties on its backlog program at 2005 would take 40 years to complete and cost \$300 million.

Source: Victorian Auditor-General's Office, using figures supplied by SEW.

In 2005, SEW estimated that it could clear its backlog of 23 000 properties at a cost of \$300 million over 40 years. However, if SEW's forecast expenditure of \$10 million each year from 2010 is achieved, the time frame for completing the backlog program could be reduced by around 8 years (from 2042 to 2034).

Based on past actual expenditure levels only, we estimate that if SEW's current average expenditure continues and investment⁷ levels are unchanged, SEW could actually take 46 years to provide the sewerage infrastructure and for all property owners to connect. For YVW it could take 55 years.

Regional urban water authorities

There are backlog properties in declared sewerage districts and in the rest of regional and rural Victoria. Funding for backlog works varies according to whether a property is in a declared sewerage district or not.

Backlog works in a declared sewerage district are not subsidised by the government and are paid for entirely by the water authority and the property owner who connects to the system. Backlog works in areas that are not in declared sewerage districts are paid for partly with seed funding from DSE (through the Country Towns Water Supply and Sewerage Program, around 24 per cent of costs), partly by the water authority (which borrows in order to pay around 66 per cent of costs) and partly by property owners (who make capped contributions totalling about 10 per cent of costs).

Water authorities expect the ESC to approve increased tariffs so they can service their borrowings.

Figure 4G shows DSE's process for allocating funds through the Country Towns Water Supply and Sewerage Program.

⁷ Assuming that its rate of investment and the rate of backlog creep remain the same.

FIGURE 4G: DSE PROCESS TO ALLOCATE FUNDS UNDER THE COUNTRY TOWN WATER SUPPLY AND SEWERAGE PROGRAM

Step	Indicative amount	Granted to	Purpose
Town identified as priority	\$10 000	Local government	Determining within a municipality which towns should be a priority for sewerage, given environmental, public health and amenity risks. Obtain information on existing assets and other relevant data.
Development of DWMP	\$30 000	Local government	Preparation of domestic wastewater management plan.
Concept plan	\$25 000	Local government Water authority	Conducting community consultation and to determine the best type of sewerage solution for the town.
Functional/detailed design	Up to \$140 000	Water authority	Evaluating the results of community consultations, preparing functional/detailed design for the selected scheme and putting the design to tender to undertake the work (a). Declaration of sewerage district.
Construction	About 20 per cent of tender price	Water authority	Undertaking construction work.

(a) DSE will approve the business case for each water authority project following a technical review that examines the level of innovation adopted.

Source: Victorian Auditor-General's Office, using information supplied by DSE.

Under the program, a priority town's community and water authority must reach a consensus about the most suitable type of sewage system. If the community opposes a sewerage system proposal, water authorities must consult further with property owners, DSE, the local government and the EPA. The Minister for Water ultimately decides the type of scheme. That decision is final and property owners must participate.

Under the initial New Towns Initiative, DSE provided \$22.5 million over 3 years (2001-2004) for new sewerage systems in 60 towns. Actual expenditure over the 3 years was \$22 million for 54 towns. The funding was expected to provide reticulated sewerage to 17 500 properties. However, no assessment was made of the number of properties actually connected.

At June 2006, the 6 remaining towns had not constructed their sewerage schemes. Three of these towns were being funded through the Country Towns Water Supply and Sewerage Program. The sewerage schemes of the remaining 3 were being constructed as part of the relevant water authority's capital works program.

The Country Towns Water Supply and Sewerage Program will allocate funds of \$42 million over 3 years (2005-2008) to priority towns to service an estimated 9 000 properties. In January 2006, 23 priority towns were identified. Three of these were carried over from the 2001-2004 program and 2 towns had already been included in their water authority's water plan. The water authority had already set aside the necessary funding to complete the 2 schemes and the ESC had approved any necessary tariff increase.

We were not able to determine backlog sewerage expenditure by regional urban water authorities for the 10 years to June 2005, nor the number of backlog properties, nor the number of properties connected.

Conclusion

It is concerning that over the past 10 years the metropolitan water companies have consistently spent less on eliminating the metropolitan backlog than they had committed to spend, while the backlog continued to grow. At this rate, based on current expenditure levels, it could take more than 40 years to eliminate the current backlog. Given that measures to halt backlog creep have, to date, been unsuccessful, even these longer time frames would appear conservative.

In regional Victoria, it is very hard to make predictions because there appears to be inadequate data to estimate the size of the backlog, the amount that water authorities have spent on it and the funds required to eliminate it.

That the metropolitan water companies and regional urban water authorities are in this situation is perhaps not surprising. DSE has no statewide plan to reduce backlog, no targets, no guidelines and provides no indication of the required amount of investment for backlog.

It appears to us that the differentiation between declared sewerage areas and others is an historical legacy and may no longer serve a purpose. It has little connection to minimising environmental, public health and amenity risks equitably across the state and has resulted in funding inequities. Property owners' contributions are capped in metropolitan areas and outside declared sewerage districts, while those inside declared sewerage districts are not.

Given that tariffs imposed on property owners include a component for backlog, it is hoped that the ESC⁸ will have a suitable mechanism to determine whether water companies and authorities actually spend the planned amount on backlog works. Neither is it clear whether (and how) water companies and regional urban water authorities are held accountable for not meeting budget expenditure commitments.

4.3.3 Was the community informed about backlog time frames?

Our Office surveyed 600 people across Victoria about septic tank and sewerage backlog issues. There were 200 respondents in SEW's area, 200 in YVW's area and 200 in regional Victoria. There were 3 types of respondents: those who lived in a backlog area that had been sewered in the past 2 years; those whose properties were due to be sewered in the next 2-5 years; and those whose properties were on a long-term backlog program.

The audit survey asked respondents if they were satisfied with the length of time between being told when reticulated sewerage would be available to their property and when a connection point was actually provided.

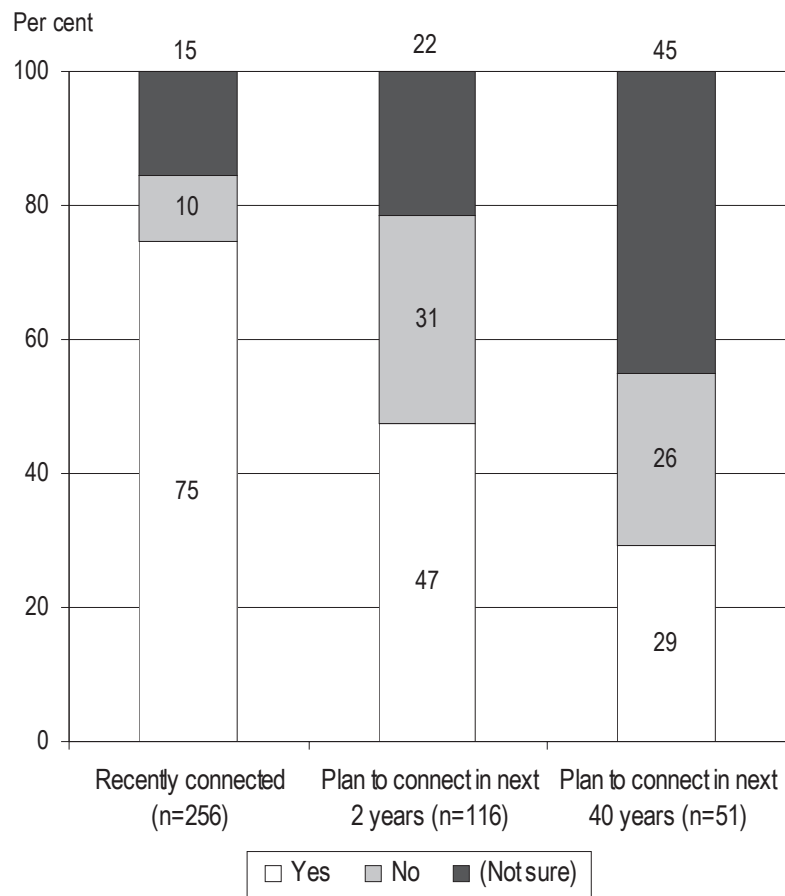
Respondents whose properties had recently been provided with a connection point were mostly satisfied with the time taken between hearing about the backlog sewerage program and being connected. However, less than half (47 per cent) of respondents who were told they would be connected within 2 years were satisfied with that time frame. For those facing longer waits, less than one-third (29 per cent) were satisfied with the time frame, although there was a high level of uncertainty about the time frame among this group. YVW's customers were least satisfied.

Comments from householders suggested that time frames had been extended several times and no definite time frame had been given.

Figure 4H shows the satisfaction of survey respondents with the time taken to provide a connection, and the proposed time frame.

⁸ The ESC's responsibility for water tariffs commenced on 1 July 2005. In 2005-06, the ESC established regulatory accounts to monitor expenditure. The ESC will also monitor delivery of key programs contained within water company and water authority water plans.

FIGURE 4H: SATISFACTION WITH TIME FRAME AND PROPOSED CONNECTION TIME FRAME



Source: Victorian Auditor-General’s Office survey report 2005.

Conclusion

Although property owners were informed by water companies and regional urban water authorities of connection time frames, it is concerning that they were generally not satisfied with the time frames.

4.3.4 Overall conclusion

Although there are backlog programs for metropolitan and regional Victoria, they have not resulted in the timely elimination of the backlog. It is highly undesirable that people in some areas of the state should remain exposed for extended periods to environmental, public health and amenity risks caused by failing septic tanks.

4.4 Were property owners connecting to sewerage?

The backlog program aims to eliminate environmental, public health and amenity risks caused by failing septic tanks. It is, therefore, important that once a connection point to a reticulated sewerage system is provided that the property owner promptly connects to it and decommissions their septic tank. Property owners are responsible for this connection cost which averages about \$2 000, but can be \$25 000 or higher in difficult sites. Water companies and authorities have the power under the *Water Act 1989* and the *Water Industries Act 1994* to make property owners connect.

In assessing whether property owners were connecting to a reticulated sewerage system where it was provided, we examined:

- connection rates in metropolitan and regional Victoria
- the barriers to connecting
- the risks of not connecting.

4.4.1 Connection rates in metropolitan and regional Victoria

In the 10 years to June 2005, YVW achieved a 47 per cent connection rate and SEW a 74 per cent connection rate for occupied properties. Figures 4I and 4J show connection rates for both companies.

Connection rates were generally low after 2 years with connection rates for YVW's schemes ranging from 14 to 56 per cent, and SEW's from 14 to 61 per cent.

FIGURE 4I: CONNECTION RATES FOR YARRA VALLEY WATER

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Localities provided with access to the reticulated sewerage system	Healesville Yarra Junction Warburton	Eltham Epping Warrandyte Kilsyth Montrose Warburton Yarra Junction	Healesville	Campbellfield Somerton Healesville Wesburn Junction Launching Place Warburton	Woori Yallock Warburton Launching Place Wesburn Miligrove Yarra Junction Donvale	Fawkner Doncaster Craigieburn Ringwood Lilydale Yarra Glen Yarra Junction	Seville East Seville Wandin	Wandin North Wandin Wandin	Wandin North Seville Healesville	Park Orchards Healesville Mt Evelyn	Healesville	
Lots provided	150	498	168	873	802	426	449	516	55	9	12	3 958
Lots connected												
1995-1997	81	240	12									333
1998	6	32	13	63								114
1999	4	18	10	118	93							243
2000	10	12	17	54	77	84						254
2001	5	7	11	30	44	44	34					175
2002	24	9	7	32	36	24	29	180				341
2003	5	1	9	18	24	17	29	56	24			183
2004	8	3	6	20	17	14	22	40	18	4		152
2005	4	1	3	14	11	8	8	12	10	1	2	74
Total	147	323	88	349	302	191	122	288	52	5	2	1 869

Source: Yarra Valley Water.

FIGURE 4J: CONNECTION RATES FOR SOUTH EAST WATER

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Localities provided with access to the reticulated sewerage system												
Unknown												
Knox												
Belgrave												
Lots provided	220	-	-	359	517	1 006	245	134	481	1 726	437	4 685
Lots connected												
1995												
1996		60										60
1997		26										26
1998		17		132								149
1999		9		57								66
2000		9		38	188							235
2001		5		19	91	458	165					738
2002		9		19	5	239	80					352
2003		7		12	46	29		31	177			302
2004		7		19	10	48		12	291	713		1 100
2005		6		15	15	29		9	2	74	309	459
Total	155	-	-	311	355	803	245	52	470	787	309	3 487

Source: South East Water.

If water companies want to use their legislative powers to make property owners connect, they must have evidence from the local government and the EPA to prove an environmental problem exists. In the last 10 years, neither YVW nor SEW took a property owner to court for not connecting. Nor did they force entry to make a connection, as allowed by legislation. YVW and SEW advised us that property owners often connected if issued with a legal notice that threatened further action.

Both SEW and YVW have formal processes for dealing with property owners. In general, they first send a letter asking the owner to connect, then another letter pointing out the owner's legal obligations. As a last resort, they consider unilaterally entering the property and making a connection, although they acknowledge that this step has risks. The process can take one to 2 years. However, YVW advised us that (based on past connection rates) they expect a property owner will take up to 10 years to connect.

In regional areas, most water authorities have not recorded connection rates for the (now-completed) New Town Initiative. We were unable to estimate connection rates for this initiative. However, some water authorities indicated that they have been highly successful in obtaining connections. Regional urban water authorities also have legislative powers to make property owners connect. However, it is not mandatory that they have evidence from EPA and local government before initiating action. Regional urban water authorities have the power to charge a wastewater tariff even if a house is not connected. The metropolitan water companies do not have this same inducement available to use on their customers.

Conclusion

YVW and SEW have improved connection rates over the last 2 to 3 years. However, the performance of YVW, and to a lesser extent SEW, in encouraging property owners to connect is not adequate. It is also unacceptable that the connection rates achieved by regional urban water authorities are, in most cases, unknown.

4.4.2 Barriers to connecting

Figure 4K shows the results of our audit survey and of a 2005 survey by YVW that asked property owners about barriers to connecting. The results of the audit survey were very similar for both metropolitan and regional areas.

FIGURE 4K: BARRIERS TO CONNECTION

Victorian Auditor-General's Office survey (2005, n=600)	Yarra Valley Water survey (2005, n=50)
Too expensive (42%)	High cost of connection
Can contain waste on-site, system operates correctly (6%)	Septic tank recently upgraded or perceived to be operating correctly or prefers to contain waste on-site
Difficult or inconvenient to be connected or "haven't got around to it yet" (29%)	Connection process too complicated or time consuming
Waiting until renovate (8%)	Distrustful of water company
Expect to connect soon (6%)	Concern over subdivisions or development
	Discouraged by neighbours
	Concern about inconvenience or environmental damage caused by digging

Source: Victorian Auditor-General's Office and Yarra Valley Water.

The greatest barrier for audit survey respondents (as it was for YVW survey respondents) was cost. This was followed by a belief that the septic system operated correctly, followed by the difficulty or inconvenience of getting connected. Specifically, respondents were concerned about the difficulty of engaging a plumber, ongoing sewerage charges, concern about digging up the garden and concern about losing their supply of greywater (particularly in areas with water restrictions).

The water companies advised us that backlog areas on long-term time frames were generally the most difficult and expensive to connect. One local government advised us that costs in areas with steep slopes, old plumbing systems and difficult routes to the nearest sewer were often around \$20 000 and could be much higher. For some YVW customers, costs of this magnitude were the norm rather than the exception.

Audit survey respondents from the YVW area were most likely to cite high costs as a reason for not connecting to the sewerage system.

The average cost to audit survey respondents of connecting was about \$2 700, although connections in Country Towns Water Supply and Sewerage Program areas were likely to have cost more. In the metropolitan area, connection costs were highest in the Yarra Ranges Shire (average cost of \$3 080) and lowest in the south-eastern outer Melbourne region (\$1 700).

Neither YVW nor SEW offered property owners financial help to connect. Both companies advised us that they had considered doing so, but could not provide financing at better rates than a bank and did not consider it their role to lend money.

DSE (through the Department of Human Services [DHS]) provides funding to help people with financial difficulties to pay for the cost of connection. Between July 2000 and October 2005, 1 584 people were given a total of \$5.6 million under the hardship scheme⁹. In 2005, the average payment under the scheme was about \$4 000. As part of the New Town Initiative, the government made an extra \$4 million available for the scheme.

Both water companies advised us that they had processes for customers experiencing hardship. SEW's processes includes the DSE's hardship scheme and a counselling service with a local charity to help people with financial difficulties. YVW completed research into the barriers preventing property owners from connecting (see section 4.4.2) and is using this information to shape an improved communication plan.

The experience of some regional water authorities is that some property owners who do not qualify for hardship assistance still struggle to find the necessary funds to connect their property to sewerage. Some regions have found property owners to be completely opposed to mandatory backlog schemes which results in low connection rates.

Conclusion

Both water companies and regional urban water authorities need to be more proactive in identifying and addressing barriers preventing property owners from connecting to the reticulated sewerage system.

4.4.3 Information about the risks of not connecting

Both SEW and YVW send letters to property owners in backlog areas about the risks of not connecting. Several local governments provided general information about septic tank management and owners' responsibilities to people who asked for it.

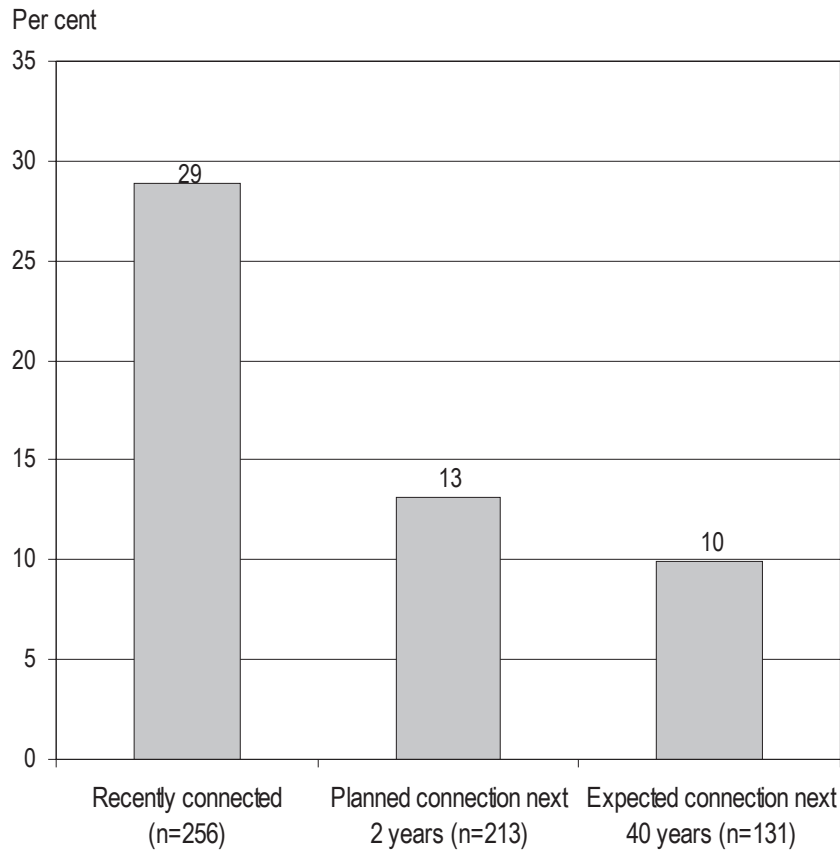
Figure 4L shows that 29 per cent of audit survey respondents with metropolitan properties that had recently been connected to the reticulated sewerage system recalled being told about the risks of not connecting. An even smaller percentage of respondents whose properties had not yet been connected recalled being told about these risks. There was little variation in awareness levels between rural and metropolitan respondents.

Householders in YVW's area were least likely to recall being told about the risks of not connecting. Water companies consider it is local governments' responsibility to provide information on septic tanks to the community.

⁹ To be eligible for the hardship scheme, applicants must hold a current concession card (pensioner card, healthcare card or Gold Card from the Commonwealth Department of Veteran Affairs), be unable to pay for current connection costs and found that other assistance schemes are not appropriate.

Most respondents who recalled having received information about their responsibilities as a septic tank owner had obtained that information from their local government (71 per cent) rather than the water company (9 per cent).

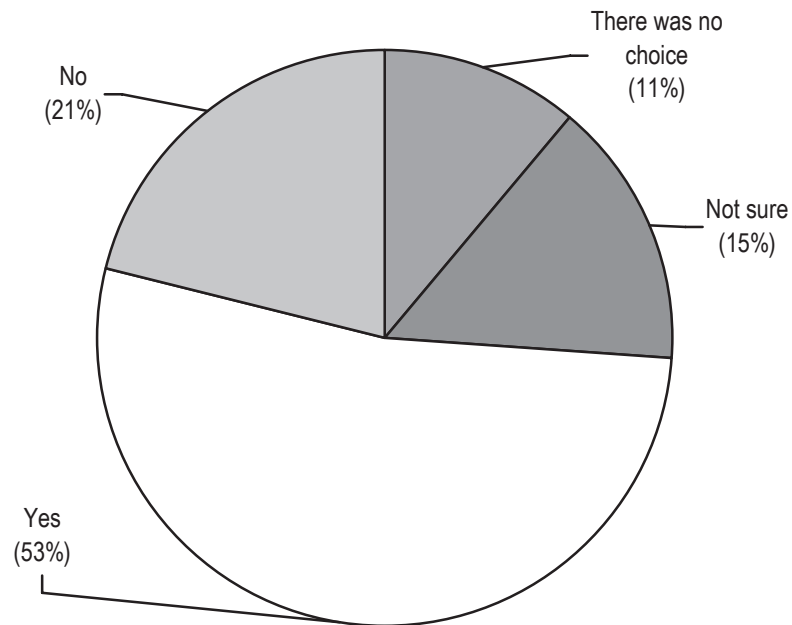
FIGURE 4L: PERCENTAGE OF RESPONDENTS WHO RECALLED BEING TOLD OF THE RISKS OF NOT CONNECTING



Source: Victorian Auditor-General's Office survey report 2005.

Figure 4M shows that only half the survey respondents who had recently connected - and who recalled being told about the risks of not connecting - were satisfied with the amount and type of information they had received about the need to connect. Twenty-one per cent were not satisfied. Some respondents were unclear about whether they had to connect or not. Others were not satisfied with the information provided about the costs of connection.

FIGURE 4M: SATISFACTION WITH INFORMATION PROVIDED ABOUT THE NEED TO CONNECT



Source: Victorian Auditor-General's Office survey report, 2005.

Conclusion

Water companies, regional urban water authorities and local government need to reassess the effectiveness of their mediums for informing property owners about the risks of not connecting to the reticulated sewerage system.

4.4.4 Overall conclusion

Despite the considerable investment in infrastructure required to extend reticulated sewerage systems, backlog program objectives are not ultimately achieved unless a property owner connects. We cannot form an opinion on the situation in regional Victoria because we were unable to determine connection rates for the New Town Initiative.

Innovative ways need to be found to encourage property owners to connect to the sewerage system as quickly as possible. Water companies could do so by addressing financial barriers to connection, by improving community knowledge and awareness of the risks of failing septic tanks, and by making greater use of their legislative power to enforce connections.

4.5 Were alternatives to reticulated systems explored?

Backlog sewerage programs have traditionally involved extending an existing reticulated sewerage system (such as metropolitan or regional city systems). Waste is then piped to a distant sewage treatment plant. In regional Victoria, backlog sewerage schemes often involve stand-alone sewage treatment systems (wastewater collection and treatment) for whole towns.

Although this is often the most practical and economical solution, there are other solutions. In some cases, they could be less expensive and more environmentally friendly. Such alternative approaches are also consistent with modern thinking about waste management that emphasises the treatment of waste as close as possible to its source.

Alternatives to further expanding large reticulated sewerage systems include:

- upgrading outdated split systems to all-waste systems¹⁰
- installing composting toilets as well as a reuse system for wastewater from the bathroom, kitchen and laundry
- constructing small-scale treatment plants to service clusters of properties (such as septic tank effluent disposal schemes and common effluent disposal schemes)
- installing reticulated systems that use pumps rather than gravity to move effluent to a treatment plant
- improving the management of septic tanks, including the maintenance and upgrading of failing tanks.

SEW and YVW have occasionally considered and used alternatives to extending the reticulated sewerage system. SEW has installed one pressurised¹¹ sewerage system. YVW was exploring options with local government, with the help of Country Towns Water Supply and Sewerage Program funding.

¹⁰ Split systems pipe all toilet waste to the septic tank and all grey wastewater (laundry, bathroom, kitchen) to stormwater drains. All waste systems pipe all wastewater (toilet and greywater) to the septic tank.

¹¹ This system pumps sewage under pressure to a mains sewer. The system uses smaller diameter pipes that do not need to be laid as deep as pipes used for gravity-fed sewerage systems.

While both companies had considered and rejected some alternative solutions, they were also considering others. At Nar Nar Goon and Tynong, SEW had examined reticulating properties and treating the effluent locally or pumping it back to Pakenham where it would enter the system to be treated at the Eastern Treatment Plant in Carrum. SEW chose the latter option as it was more economical than establishing a local treatment plant. YVW was also working with Murrindindi Shire (in the Kinglake West/Pheasant Creek area) to investigate options for localised sewage treatment in the shire's hilly and difficult terrain. DSE funded the investigation, to foster innovation in water company and water authority solutions. YVW is preparing detailed designs for a pressurised sewer pipe system for Gembrook. YVW also intends to use this technology throughout the Belgrave-Gembrook corridor.

With a few exceptions, funding provided under the New Towns Initiative and the Country Towns Water Supply and Sewerage Program has been used for infrastructure works. DSE does, however, encourage alternative solutions. For example, it has funded common effluent disposal schemes where clusters of septic tanks are reticulated and the sewage treated in a nearby small treatment plant or transported to a large plant. In another instance, DSE found that a town's water supply was being polluted from septic tanks and DSE funded a sewerage scheme rather than water infrastructure.

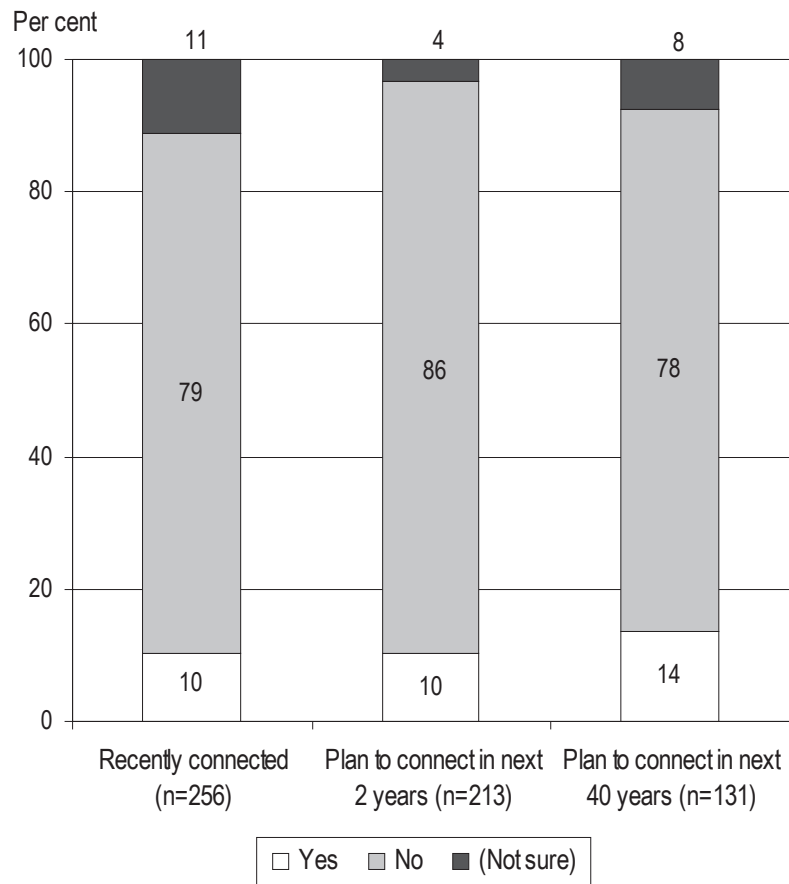
The Country Towns Water Supply and Sewerage Program encourages local governments, communities and water authorities to jointly consider a broader range of options than just extension of a reticulated sewage system. To achieve this, DSE has withheld funding until possible alternatives have been identified and fully discussed with the community.

Water companies and authorities advised us that alternative solutions can sometimes be more expensive than extending a large reticulated system. At Airies Inlet, for example, the area to be seweraged comprised 2 adjacent valleys. Although the community wanted individual, localised treatment plants in each valley, the water authority determined that a pipe through the hill to join the 2 valleys was more cost-efficient.

4.5.1 Community perspective

As Figure 4N shows, the majority of audit survey respondents could not recall receiving information about alternative sewage solutions. YVW householders were less likely than other respondents to recall being told about alternative sewerage solutions.

FIGURE 4N: PERCENTAGE OF RESPONDENTS WHO RECALLED BEING INFORMED OF ALTERNATIVE SEWAGE SOLUTIONS



Source: Victorian Auditor-General’s Office survey report 2005.

Fifteen per cent of respondents reported that they had been asked to participate in a group or forum to discuss suitable sewerage solutions for their areas. Only 7 per cent of urban respondents recalled discussing alternative solutions, a lower percentage than regional customers.

Recent years of drought and water restrictions have increased awareness about the use of greywater. Survey respondents noted that when their septic tank was replaced by a reticulated system, they lost access to greywater for gardening. Many found this a real problem now that they lived with tighter water restrictions. We note that residents are not prevented from recycling their greywater provided their system meets local government and EPA specifications. There is also a requirement for a sewerage connection point to take any overflow, thereby preventing any greywater flowing off-site.

Although respondents expressed a variety of attitudes towards alternatives, many were unwilling to accept that there might be an alternative to reticulated sewage and were wary of new ideas.

Conclusion

The audit survey indicates that property owners need to be made more aware of alternatives to large-scale reticulated sewerage systems. There are only a few alternatives in the metropolitan area, and most backlog works have taken the traditional approach of extending the metropolitan reticulated sewerage system.

Such education could possibly draw on the example set by alternative solutions in regional areas, which are more prevalent. In regional areas, the smaller population clusters away from the main towns make alternative solutions more financially viable. However, there are still only a few examples of alternative systems currently operating. Ensuring septic tanks are maintained and operate correctly can also be a viable solution for some backlog areas.

4.5.2 Overall conclusion

Although there was some evidence that alternatives to reticulated systems have been considered, very few have actually been constructed.

Traditionally, backlog funding has basically been earmarked for the provision of a reticulated sewerage system, and that situation continues today. However, we consider that backlog programs are also about risk management. Some backlog funding may have been better used to search for alternative solutions that might have more promptly and more cost-effectively reduced the risks facing communities. For example, it could have been spent on monitoring septic systems, educating property owners about how to maintain and minimise stress on these systems, upgrading poorly designed septic tanks and helping local governments to more effectively enforce regulations about on-site treatment systems.

DSE is to be commended for encouraging alternative sewage solutions through the Country Towns Water Supply and Sewerage Program. However, given the limited adoption of alternative solutions, DSE and the EPA should consider working more closely with the water industry to promote alternatives that are more environmentally and financially viable.

Alternative solutions depend strongly on community support. Water companies and authorities need to provide more information to the public about alternatives to large-scale reticulated sewerage systems. In particular, they need to promote the environmental and financial benefits of alternate sewage solutions.

4.6 Overall conclusion - Backlog reduction

Elimination of the backlog, and the amount of time that takes, depends on the level of investment in the backlog programs. It also requires backlog programs to be financially viable for water companies and authorities, and for property owners to be willing to connect (when reticulated sewerage is the preferred solution). The actual level of total investment further needs to be considered within the context of community expectations about sewerage services and the level of environmental, public health and amenity risks that may result from failing septic tanks in backlog areas.

The audit shows that investment in metropolitan backlog programs by water companies over the past 10 years was below what the companies committed to spend. If this situation continues, the earliest the backlog will be eliminated will be approaching the middle of the century. However, neither the time line nor the total investment can be predicted with certainty because records of backlog numbers are neither complete nor accurate in metropolitan or regional backlog areas.

This situation is not entirely surprising given the government's policy commitment to reducing backlog is not supported by a statewide backlog plan or reflected in the plans prepared by water companies and authorities. Neither is it entirely surprising because they appear to be unaccountable for achieving backlog program objectives.

From the community perspective, it was not evident that DSE, water companies or water authorities had consulted with the community about community expectations for access to a reticulated system or about the acceptability of proposed time lines. Audit survey respondents were dissatisfied with the inability of governments and the water industry to deliver on commitments to eliminate the backlog.

We have not been able to reliably determine if backlog is reducing because of inadequate information. At best, it might be reducing but over an extended time frame. At worst, the size of the backlog could be much larger than estimated.

Recommendations

10. That DSE, in conjunction with all relevant stakeholders - including local government, catchment management authorities (CMAs), water companies and water authorities - develop and implement a statewide backlog plan, which articulates with other relevant environmental planning processes.
 11. That the EPA seeks to establish a suitable mechanism to assure the quality of land capability assessments.
 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.
 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 the State environment protection policy, *Waters of Victoria*.
 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.
 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 particular backlog schemes.
 16. That DSE and the ESC 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.
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Appendix A. Audit approach



What did we do?

The objective of the audit was to determine whether Victoria's sewerage backlog programs were reducing environmental, public health and amenity risks across the state.

The audit did not assume that all properties should be connected to a reticulated sewage system. There will always be parts of Victoria that are not connected to a reticulated system because it is unnecessary, impractical or uneconomic to do so. However, there are situations where these on-site treatment systems have environmental, public health and amenity risks, so septic tank management was included in the audit scope.

Method

To assess whether the public health and pollution impacts of septic tanks were being identified and managed, we examined the roles of the Environment Protection Authority (EPA) and the Department of Sustainability and Environment (DSE), 10 local governments across the state, the water industry and selected property owners.

We began by looking at government policies (*Our Water Our Future*, *Melbourne 2030*, *Yarra River Action Plan*, State environment protection policies) and the impact of these on the backlog. We then examined DSE's record and accountability systems, and how it made decisions about the state's backlog. A key part of this examination involved examining the adequacy of the legal frameworks for septic tank management, and coordination between agencies addressing the backlog.

To assess whether connection targets were being met in backlog areas, we examined:

- whether or not a statewide sewerage plan existed
- DSE's performance monitoring and management
- how the water industry was monitoring and managing its backlog programs.

To assess whether backlog programs were meeting community expectations, we conducted a statewide survey of 600 people in rural and metropolitan areas. The survey examined people's attitudes to the backlog and how well informed they were about it. The survey targeted people whose backlog properties had recently been serviced, that were due to be serviced in the next few years, and that were due to be serviced in the long-term.

During the audit, we visited 10 local governments across the state and examined how they were managing septic tanks and how they identified, monitored and acted on environmental and health risks.

We also visited Yarra Valley Water and South East Water to assess how they were implementing their backlog programs.

The audit was performed in accordance with the Australian auditing standards applicable to performance audits, and included tests and procedures necessary to conduct the audit. The cost of the audit was \$585 000. This cost includes staff time, overheads, expert advice and printing.

Audit assistance

The audit team had specialist assistance from:

- RCMG Consultants, which provided information about land capability and geographic information systems
- Market Solutions, which conducted the telephone survey and analysed the results.

The audit steering group comprised Mr Carsten Osmer (formerly of the EPA and an expert in wastewater treatment and wastewater policy), Dr Stephen Gray (of Victoria University, who is involved with alternative solutions to reticulated sewerage systems) and Dr Graham Moore (of the Faculty of Engineering at The University of Melbourne). We thank the steering group for their valuable insights and contributions throughout the audit.

We appreciate the support and assistance of management and staff at the departments, local governments and other agencies covered in the audit.



Appendix B. **Agency responses**



Department of Sustainability and Environment

Recommendations 1 and 2

Recommendation 1 and 2 suggest the use of state-owned data sets, such as land capability maps and water quality data, to assist in identifying and monitoring the risks associated with failing septic tanks particularly for priority setting for investment. These data sets were gathered for purposes unrelated to septic tank management and at a wide range of scales. Thus, from a technical perspective, these data sets are of very limited use in understanding and setting priorities for the provision of sewerage services. The present system provides a much more rigorous method. Accepting this recommendation would add to, rather than reduce, the risks to public health and the environment.

Based on the above approach, the process adopted by your Office to test the priority setting under the County Town Water Supply and Sewerage Program would pose an unacceptable risk to public health and the environment.

Recommendation 10

Recommendation 10 refers to the development of a statewide backlog plan, which would bring together the metropolitan and regional programs. Such an approach would have to give due recognition to the different nature and scale of risks, varying funding mechanisms, and different technical and financial capacities in metropolitan and regional areas.

Recommendations 14 and 15

Councils are already collecting the data referred to in these recommendations, via the municipal domestic wastewater management plan process. It is important that this continues and that the resulting information is integrated at the state level.

Environment Protection Authority

Section 2.1.3 - Responsible agencies

While the roles and responsibilities of the EPA with respect to on-site domestic wastewater management have been reasonably well captured within the performance audit, it should be noted that the EPA, in accordance with clause 33 of the State environment protection policy, Waters of Victoria, also has a role to advise (in writing) water authorities or companies to ensure connection to sewerage for premises where sewerage is provided and that cannot retain wastewater on-site.

Section 3.2.1 - Conclusion

The EPA generally agrees with the conclusions drawn, in particular that local government could be further advanced in the development and implementation of domestic wastewater management plans. See also comments made on Recommendation 8.

Section 3.2.2 - Was risk assessment and prioritisation soundly based?

To clarify, with respect to the EPA's activities for the prioritisation of towns within the Country Towns Water and Sewerage Supply Program, the EPA provided consistent criteria upon which regional services staff based their assessment and ranking. As such, the EPA believes the rationale for giving a town either a high, medium or low ranking was clear and consistent across regions. The rationale used by the EPA can be seen in the comments provided with ranked township lists (for each region) provided to DSE, and subsequently the Auditor-General, by the EPA.

Section 3.2.2 - Conclusion

The EPA generally agrees with the conclusions drawn.

Section 3.2.3 - Conclusion

The EPA generally agrees with the conclusions drawn. The EPA believes that the domestic wastewater management planning process, once fully implemented, should identify options/actions with respect to protecting public health and the environment for areas awaiting backlog provision.

Section 3.2.4 - Overall conclusion

The EPA believes that water companies and authorities should also be identified along with the other agencies/organisations mentioned in the report with respect to the approaches taken to ensure risks associated with failing septic tanks are adequately identified, assessed, prioritised and treated.

The EPA generally agrees with the conclusions drawn, in particular the need to ensure commitment to the domestic wastewater management planning process.

Environment Protection Authority - continued

Section 3.3.1 - Introduction

To clarify, with respect to responsibilities for the management of septic tank systems as opposed to larger treatment systems (discharging above 5 000 litres per day):

- septic tanks systems are defined within Part IXB of the Environment Protection Act 1970. These systems are designed to discharge less than 5 000 litres per day
- premises with a treatment system discharging greater than 5 000 litres per day are a scheduled premises under the Environment Protection (Scheduled Premises and Exemptions) Regulations 1996. This means that the treatment system requires works approval and may be licensed.

Section 3.3.2 - Conclusion

The EPA generally agrees with the conclusions drawn.

Section 3.3.3 - Did property owners obtain the required septic tank permits?

With respect to conditions for septic tank permits issued by local government, the EPA expects that the conditions within the Certificate of Approval for the system to be installed/used would generally form the basis for permit conditions imposed by local government. However, should local government wish to include other conditions it deemed necessary, it is free to do so.

Section 3.3.3 - Conclusion

Under the Environment Protection Act 1970, local governments are free to impose any conditions within a septic tank permit they think appropriate. Additionally, there are clear enforcement provisions under the Environment Protection Act 1970 available to local governments with respect to requiring compliance with permit conditions, with associated penalties up to approximately \$12 000.

As such, the conclusion drawn that deficiencies in permit conditions prevent local governments from forcing property owners to address risks caused by failing septic tanks would appear to be incorrect.

Environment Protection Authority - continued

Section 3.3.4 - Did local governments enforce septic tank permit conditions?

The report states “When one local government stopped issuing septic tank permits for sites that could not contain all waste water on-site, there was a community outcry and a compromise was reached whereby septic systems were allowed in the ‘interim’ until sewer became available”.

Such action by the local council (that is issuing septic tank permits for installation/use where wastewater cannot be contained on-site) would appear to be in direct contravention of the Environment Protection Act 1970 sections 53M(6), 53M(7) and clause 32 of the State environment protection policy, Waters of Victoria.

To clarify, with respect to the powers of EPA officers:

- *only officers “Authorised” pursuant to the Environment Protection Act 1970 may use those powers set out therein*
- *the use of a Pollution Abatement Notice on individual households would appear to be inappropriate for a number of reasons, including:*
 - *the penalties associated with non-compliance of the notice would be of an order of magnitude beyond the scope of a typical household*
 - *the inability, given nominal staff numbers, of the EPA to resource the use of Pollution Abatement Notices on individual households with failing septic tanks.*

The report states that neither the EPA nor DSE has clarified differing legal opinions with respect to the Local Government Act 1989. However, the EPA does not believe it has a role to provide a legal opinion/interpretation on the Local Government Act 1989.

Section 3.3.4 - Conclusion

The EPA generally agrees with the conclusion drawn that local governments should have a coordinated enforcement program for septic tanks. The Environment Protection Act 1970 provides clear enforcement provisions for local government.

Section 3.3.5 - Conclusion

The EPA generally agrees with the conclusion drawn.

Environment Protection Authority - continued

Section 3.3.6 - Conclusion

The EPA generally agrees with the conclusions drawn, in that appropriate information should be provided to owners/users of onsite domestic wastewater systems.

Section 3.3.7 - Conclusion

The EPA generally agrees with the conclusion drawn. As stated in the EPA's comments with respect to recommendation 9, the EPA believes all agencies/organisations with regulatory responsibilities for onsite domestic wastewater management should seek to clearly understand their resource requirements to adequately fulfil their role/duties.

Section 3.3.8 - Conclusion

The EPA generally agrees with the conclusions drawn.

Section 3.4 - Overall conclusion

The EPA generally agrees with the conclusions drawn.

Section 4.2.1 - Completeness and accuracy of septic tank records

To clarify, with respect to annual septic tank returns as required by the Environment Protection Act 1970, the review undertaken by the EPA in the 1990s (in conjunction with other key stakeholders) identified that the information required by the Environment Protection Act 1970 was of little value with regard to strategic planning and decision-making, and that a more useful mechanism was required.

This led to the development of domestic wastewater management plans (DWMPs) which were seen as being of far greater value in terms of information collection and provision, linked with strategic planning and actions. As such, the EPA has now focussed its efforts towards local government developing DWMPs, as required by the State environment protection policy, Waters of Victoria, when amended in 2003. This is reflected in the comments made on recommendation 8.

Section 4.2.1 - Conclusion

The EPA generally agrees with the conclusion drawn. As stated in the EPA's comments for recommendation 15, we believe that the domestic wastewater management planning process should ensure that appropriate information is collected and recorded into the future.

Environment Protection Authority - continued

Section 4.2.2 - Conclusion

The EPA believes the conclusion drawn is fair comment.

Section 4.2.3 - Was the size of the backlog controlled?

The EPA believes that there may be some confusion with regard to subdivisions created before 15 March 1988 (when the original State environment protection policy, Waters of Victoria came into effect). EPA Publication 629 Domestic Wastewater Management Series, Development Approvals in Sewered and Unsewered Areas addresses the issue of these old subdivisions, providing recognition that the new rules (as then set out in the State environment protection policy, Waters of Victoria 1988) should not apply retrospectively to those who may have purchased a property in good faith before that time. Further, Publication 629 sets out very specific requirements for local government with respect to assessment protocols for proposals for off-site discharges in this instance. These requirements include that the State environment protection policy, Waters of Victoria water quality objectives for the receiving watercourse should not be exceeded.

The report comments on instances of local government approving septic tank installations and advising property owners to then seek an exemption from the EPA to allow the septic tank to discharge off-site (where a building surveyor has issued a certificate of occupancy for an unsewered property unable to contain waste on-site).

The EPA believes that the approval of installation and ongoing operation of septic tanks clearly resides with council, and that both the Environment Protection Act 1970 and State environment protection policy, Waters of Victoria clearly state that local government should not approve any septic tank where an off-site discharge will result.

If the instances described are occurring, the EPA believes that any building surveyor would most likely be acting illegally, and as such should be reported by local government to the appropriate registration/accreditation agency. If indeed there is an issue, where the building approval process and septic tank permit process are not aligned, it would appear to be the responsibility of local government to identify and act to rectify the situation.

Section 4.2.3 - Conclusion

The EPA generally agrees with the conclusion drawn.

Environment Protection Authority - continued

Section 4.2.4 - Overall conclusion

The EPA generally agrees with the conclusions drawn.

Section 4.3.1 - Conclusion

The EPA generally agrees with the conclusion drawn. As stated in the response to recommendation 10, the EPA is fully supportive of a single, all encompassing process to plan and prioritise backlog activities and expenditure across the state.

Section 4.3.2 - Conclusion

The EPA generally agrees with the conclusions drawn and supports the concept of equity across the state in terms of provision of sewerage infrastructure.

Section 4.3.3 - Conclusion

The EPA has no comment on this conclusion.

The EPA notes, however, that the question posed to those surveyed could be interpreted 2 ways, in that a person might be satisfied with the connection time frame because they were after a quick connection and reticulated sewerage was provided in a short time frame, or alternatively they were satisfied because they did not want to connect and the time of reticulated sewerage provision was slow. As such, the responses to this question might not be truly reflective of general community desire for connection.

Section 4.3.4 - Overall conclusion

The EPA generally agrees with the conclusion drawn.

Section 4.4.2 - Conclusion

The EPA generally agrees with the conclusion drawn. As stated in the response to recommendation 13, the EPA fully supports the need for timely, mandatory connection to sewerage infrastructure where provided.

Section 4.4.3 - Conclusion

The EPA generally agrees with the conclusion drawn.

Section 4.4.4 - Overall conclusion

The EPA generally agrees with the conclusions drawn. As stated in the response to recommendation 13, the EPA fully supports the need for timely, mandatory connection to sewerage infrastructure where provided.

Environment Protection Authority - continued

Section 4.5.1 - Conclusion

The EPA generally agrees with the conclusions drawn. The EPA is fully supportive of exploring innovative/alternative solutions for sewerage management, and has actively supported the innovations component of the Country Towns Water and Sewerage Supply Program.

Section 4.5.2 - Overall conclusion

The EPA generally agrees with the conclusions drawn.

Section 4.6 - Overall conclusion – Backlog reduction

The EPA generally agrees with the conclusions drawn.

Recommendation 1

Partially support. The EPA believes that all relevant data should be used where practicable to inform decision-making for backlog prioritisation.

The use of both land capability and lot size data would not in itself be adequate to identify high priority problem areas. Rather, this information would allow for the determination of the level of risk for a given area and would be useful to scope further detailed studies. As such, this information should be used as a key aid to identify high risk areas, which in turn would need to have more detailed environmental quality monitoring to verify the actual level of impact on the environment and public health.

Recommendation 2

Partially support. In making data available, the EPA believes it is important that all relevant data sets are made readily and easily available in a common location, and overseen by a single, nominated agency. Furthermore, these data sets need to be evaluated, used and updated as necessary to ensure priority decision-making is as informed as possible. See also comments made with respect to recommendation 1.

Recommendation 3

Support. The EPA is fully supportive of the development of consistent criteria for decision-making across the state. Further, the EPA believes that there is a need for comprehensive community consultation with respect to potential sewerage solutions in any given area across the state.

Environment Protection Authority - continued

Recommendation 4

Support. The EPA is fully supportive of a comprehensive review of the current septic tank regulatory framework, particularly given the relevance to the government's White Paper — Our Water Our Future and the specific action for review of the public health and environmental framework supporting alternative urban water supplies, including recycled water (including sewage) and greywater.

The EPA is working closely with DSE and other relevant stakeholders to prepare advice on a potential review of on-site domestic wastewater management to government.

The EPA believes that any such review should be broad and comprehensive in nature and cover all aspects of the regulatory framework and not be limited to clarifying roles and responsibilities for local government and water businesses.

The review should include, but not be limited to:

- roles and responsibilities of all stakeholder agencies, including potential paradigm shifts with respect to which agencies are best placed to undertake roles not formerly within their responsibility*
- roles and responsibilities of the owner and/or user of systems*
- enforcement powers in all relevant aspects of on-site domestic wastewater management*
- appropriate cost recovery mechanisms to adequately fund on-site domestic wastewater management.*

Recommendation 5

Partially support. The EPA agrees with the concept of where possible having agreed standard conditions for permitting on-site domestic wastewater systems and that these standard conditions should be developed in consultation with all relevant stakeholders. However, conditions will need some flexibility to ensure that they are responsive to particular circumstances.

The EPA applies consistent conditions for the approval of system types. Further, the State environment protection policy, Waters of Victoria, sets the framework for standard permit conditions to be set by local government.

Environment Protection Authority - continued

The EPA believes the work associated with this recommendation would best be undertaken in conjunction with the regulatory framework review referred to in recommendation 4. Consequently, the roles and responsibilities of implementing agencies may differ slightly from those stated. However, the EPA will play a key role in this regard.

Recommendation 6

Support. Within the existing regulatory framework, the EPA believes it is important that all owners/occupiers of properties with on-site domestic wastewater systems have readily available information and understand that they have specific responsibilities, and that these responsibilities are adhered to (see response to recommendation 4).

With respect to recommendation 4, for any review of the current regulatory framework, it is important that there be a nominated agency with responsibility for informing owners/occupiers, but more importantly that there be a clear mechanism(s) to ensure that this occurs.

Recommendation 7

Support. The EPA supports the concept of appropriate cost recovery for administering regulatory functions with respect to on-site domestic wastewater management for all relevant regulatory agencies. Within the existing regulatory framework, all endeavours should be made to recover relevant costs by the best means available. Levies may not be the best form of collection. A fee-for-service may be more appropriate.

With respect to recommendation 4, within any future regulatory framework review, the EPA believes that it is important that appropriate cost recovery mechanisms, coupled with appropriate associated enforcement powers, be an integral part of any new regulatory framework.

Recommendation 8

Support. The EPA fully supports DWMPs as the primary vehicle for ensuring that appropriate strategic planning and management of on-site domestic wastewater at the municipal level. When coupled with the concept of a statewide backlog planning process (as referred to in recommendation 10), this mechanism would allow a sound information base for planning and prioritisation across the state. As such, reinforcing and strengthening the legal basis for the development, approval and review of DWMPs is supported.

Environment Protection Authority - continued

DWMPs are required by the State environment protection policy, Waters of Victoria, but without regulations to set penalties for non-compliance. The approach taken by the EPA and the Victorian Government has been to work closely with local government, primarily via the Municipal Association of Victoria, including running a pilot process for the development of 5 DWMPs, preparation of guidance on developing DWMPs for local government use and supporting the Country Towns Water and Sewerage Supply Program, which provides funding to local government for the development of DWMPs.

The EPA expects that work to progress this recommendation would be undertaken as part of the regulatory framework review referred to in recommendation 4.

Recommendation 9

Partially support. The EPA believes that all agencies/organisations with regulatory responsibilities for on-site domestic wastewater management should seek to clearly understand their resource requirements to adequately fulfil their role/duties.

Furthermore, as part of any regulatory framework review (referred to in recommendation 4), the issue of adequate capacity and capability should be addressed for all agencies/organisations determined to have a specific regulatory responsibility, and that appropriate resources be made available where the existing resources are found to be inadequate. This also relates to the need for appropriate cost recovery mechanisms to ensure the funding of these resource requirements.

Recommendation 10

Support. The EPA is fully supportive of a single, all encompassing process to plan and prioritise backlog activities and expenditure across the state. The EPA is a key stakeholder along with the other agencies/organisations mentioned in the recommendation.

As mentioned in comments on recommendation 8, the EPA sees DWMPs as the primary vehicle for ensuring appropriate strategic planning and management of on-site domestic wastewater at the municipal level. The aggregation of DWMPs should then provide the basis for statewide backlog planning.

Environment Protection Authority - continued

Recommendation 11

Support. The EPA believes that there is clearly a need to assure the quality of land capability assessments (LCAs), be it via the quality/detail of guidance material, the suitability and conduct of those undertaking LCAs, or the interpretation and use of LCA information by local government in decision-making.

In addition, the EPA believes that there is also a need to assure the quality of other areas of on-site domestic wastewater management, for example the suitability and capabilities for the maintenance and inspection of systems.

The EPA expects that work to progress this recommendation would be undertaken as part of the regulatory framework review referred to in recommendation 4.

Recommendation 12

Support. The EPA believes that, in line with recommendation 4, any regulatory framework review should include all relevant legislation, including the Water Act 1989 and the Water Industry Act 1994, to ensure consistency across the state with respect to sewerage provision.

Recommendation 13

Support. The EPA fully supports the need for timely, mandatory connection to sewerage infrastructure where provided. However, as stated within the State environment protection policy, Waters of Victoria, where a premises can demonstrate that wastewater is reused in accordance with guidance provided by the EPA and retained on-site, connection need not be required.

Furthermore, as part of any regulatory framework review (referred to in recommendation 4), any review of the regulatory framework should ensure that there are appropriate enforcement provisions for requiring connection to sewerage, with allowances for appropriate reuse on-site and exceptional circumstances.

Any new regulatory framework should also cater for these exceptional circumstances, particularly financial hardship, by allowing realistic payment methods or funding assistance as appropriate.

Recommendation 14

Support. The EPA fully supports the concept of agreed approaches and standard information collection across the state, and believes this will further enhance and assist the DWMP process. See also comments made with respect to recommendation 15.

Environment Protection Authority - continued

Recommendation 15

Support. The EPA fully supports the concept of accurately identifying on-site domestic wastewater systems across the state to inform backlog planning and prioritisation, and clarify the responsible agencies.

The recommendation, while under the heading of “Reporting and monitoring”, appears to cover what is clearly a planning issue, namely, the identification of responsible agencies for completing particular backlog schemes. The EPA proposes that DSE, in consultation with water companies and water authorities, assign responsibility for any particular backlog scheme, in line with recommendation 4.

The EPA believes that the most appropriate means by which to collect the information referred to in recommendation 15 is reflected in recommendation 8. As stated in our response to recommendation 8, the EPA believes DWMPs are the primary vehicle for ensuring appropriate strategic planning and management of on-site domestic wastewater at the municipal level. One of the key components of a DWMP is appropriate information collection and analysis upon which to base decision-making and planning. Core information for a DWMP would include the number and location of septic tanks within the municipality. Provided information was collected and reported in a consistent, standard manner across municipalities, DWMPs, when aggregated, would provide a statewide data set of numbers and locations of septic tanks. As such, this would appear to fulfil the primary intent of recommendation 15, providing the mechanism for a “comprehensive review”.

The collection of such information would require the development of a database within which the information will be stored. The information within this database needs to be utilised to map and prioritise statewide backlog needs, in accordance with agreed risk criteria and methodologies, as put forward in recommendation 3.

As such, the EPA believes that the intent of this recommendation could be met by recommendation 14 ensuring:

- that domestic wastewater management plans have standard approaches to collect and report information on septic tank numbers, condition and locations, to allow data to be aggregated at the local, regional or state level*
- that a statewide septic tank and backlog database is put in place*
- mapping and prioritisation of statewide backlog needs is enabled.*

Recommendation 16

Support. While fully supporting the concept of agreed reporting requirements and monitoring of expenditure for backlog infrastructure, the EPA believes that in general the Essential Services Commission’s processes, and in particular its auditing procedures/functions, are robust and appropriate to achieve the intent of the recommendation.

Goulburn Valley Region Water Authority

Recommendations 1, 2 and 3

Agreed.

Recommendation 4

Agreed, except as water companies and water authorities would be affected by any changes to the septic tank regulatory framework, they should also be consulted as part of the review.

Recommendations 5, 6, 7, 9, 10 and 11

Agreed.

Recommendation 12

Agreed, except this review should be carried out in consultation with the water companies and water authorities.

Recommendation 13

Agreed. The provisions of section 147 of the Water Act 1989 to require property owners to connect to new sewerage infrastructure are very clear and include measures such as applying a financial penalty and undertaking connection works on behalf of owners and recovering the cost. Given these significant powers, it is important that water authorities act reasonably and should exercise them in consultation with local government and the EPA.

Recommendation 14

Agreed.

Recommendation 15

Agreed. However, in the absence of sufficient reliable data it is difficult to see how this can be done with any confidence until this issue is first addressed.

Goulburn Valley Region Water Authority - continued

Recommendation 16

Agreed. In respect of this item it is disappointing that the audit did not identify the information previously and currently reported to DSE and the EPA by Goulburn Valley Water and presumably other water authorities regarding:

- *expenditure on backlog works under the Small Towns Sewerage Program (DSE)*
- *connection rates achieved by regional urban water authorities (the EPA as part of the annual environmental report).*

It is important to ensure that any additional reporting does not duplicate existing requirements and unnecessarily add to existing extensive reporting provisions and costs to the community.

South East Water Limited

Recommendations 1, 2, 3 and 10

South East Water has, for a number of years, maintained a prioritised list of future backlog areas based on the need and urgency for providing sewerage facilities to those areas. The prioritising criteria and weighting were developed in consultation with affected local councils and the final prioritised listing was “signed-off” by those councils. This information is freely available on our website. The main obstacle encountered by South East Water in assessing these priorities has always been the lack of performance data from failing septic tanks and scientific evidence of the impacts of those failures. In many instances, South East Water has had to assume responsibility for the monitoring and analysing of water quality data to provide the necessary evidence on which to base the priority ranking. In fact, we are currently developing a proposal for a detailed quantitative risk analysis for groundwater on the Nepean Peninsula and will shortly be engaging relevant stakeholders to finalise the proposal.

It is recommended that the responsibility and accountability for the collection of scientific evidence of the impacts of failing septic tanks be clearly defined.

South East Water Limited - continued

Recommendation 4

South East Water fully supports the key recommendation that the current septic tank regulatory framework, including related legislation, policy and guidance be reviewed. Many of the associated recommendations appear to be predicated on the basis that the current septic tank management responsibilities for local government will be clarified and strengthened. The terms of reference for the legislative reform review should include the option of water authorities assuming greater responsibility for septic tank management. Water authorities generally have the technical and commercial capacity to take on greater responsibility. Such an arrangement would facilitate the development of innovative community-based servicing options involving a combination of on-site and off-site facilities which consider the treated effluent as a resource rather than a waste product.

It is recommended that when reviewing the legislation regarding septic tank management, adequate consideration be given to the option of water authorities assuming greater responsibility for septic tank management.

Recommendation 13

In relation to the recommendation concerning water authorities ensuring all property owners connect to new infrastructure, the report highlights that the primary reason given for customers not connecting to new infrastructure is their inability to fund the cost of connection. It would assist South East Water in this regard if we had the ability to recover moneys loaned to customers to assist them cover connection costs, as currently such loans are unsecured. The water authority should be able to charge the property connected with the costs incurred by the authority in connecting the property to sewer. The encumbrance thus created would then need to be discharged on or before the sale of the property.

It is recommended that legislation be amended to enable costs incurred by water authorities connecting properties to sewer to be charged to the property.

Water authorities, local government and the EPA currently share the responsibility for encouraging and enforcing connection to sewer. Improved clarity and integration of these responsibilities would assist water authorities, which currently appear to have prime responsibility.

South East Water Limited - continued

The draft report recommends that customers should be compelled to connect to reticulated sewerage infrastructure save in exceptional circumstances. If this recommendation is to be effectively implemented, water authorities will need stronger powers of compulsion. The power should be unqualified by reference to health of environmental protection (as per current legislation), as it should be assumed that once the sewerage infrastructure has been built as part of a properly planned backlog program, the need for all properties to connect has already been established and no further qualification is required.

It is recommended that legislation be amended to clarify, simplify, strengthen and integrate responsibilities for encouraging and enforcing connection to sewer, as suggested above.

Implementation of backlog sewerage schemes by water companies and authorities is often hindered by difficulties in obtaining local government planning permits.

It is recommended that local government permit processes be improved to enable more efficient delivery of backlog sewerage schemes.

Recommendations 14, 15 and 16

South East Water has worked with local councils to develop detailed plans showing the location of all future backlog areas, and regularly reviews and updates the plans. These plans form the basis of the prioritised future backlog program. We will continue to work with DSE, the EPA, DHS and local government to regularly monitor and report on the future program and outcomes from completed works.

Wannon Water

Section 3.2.3 - Were risks treated in accordance with priorities?

Wannon Water, and the 3 former authorities that merged to form Wannon Water on 1 July 2005, have endeavored to sewer the higher health risk backlog areas within the financial capacity of the authority.

Section 4.5 - Were alternatives to reticulated systems explored?

The current regulatory regime, where the EPA and local government are responsible for on-site systems, inhibits the adoption of a mixture of on-site and reticulation systems. Any on-site disposal options are assumed to have been fully assessed by local government and the EPA before the town is identified to the authority for sewerage servicing and are, accordingly, not considered further. This issue could be addressed by the water authority being involved in the initial options evaluation.

Recommendation 13

Wannon Water is actively managing the connection of properties to which a sewerage service was created in the last 10 years and is available for connection:

Town/scheme	Non-vacant properties served	Properties connected	Percentage of properties connected
Allansford	241	230	95.44
Koroit	544	529	97.24
Mortlake	556	456	82.01
Timboon	333	279	83.78
Dunkeld	239	233	97.5
Coleraine Road, Hamilton	45	38	84.4

Wannon Water will continue to work with councils and customers to identify the reasons for non-connection and will require owners to proceed with connection where environmental or health issues arise.

The relevant property owners are currently being surveyed to ascertain the reasons for non-connection with issues then to be addressed by Wannon Water in consultation with the owner. Issues of financial hardship and the availability of plumbing contractors to undertake connections will continue to be identified and worked through with customers on a one-to-one basis.

Yarra Valley Water Limited

Section 1.2 - Are sewerage backlog programs effective?

In general, Yarra Valley Water emphasises that:

- *we have a 20-year program not 40 years. Our 2005-2008 pricing submission to the Essential Service Commission commits to a 20-year delivery of the sewerage backlog program*
- *when developing servicing strategies for backlog areas, we investigate the use of alternate servicing technologies and are committed to delivering the least community cost and most sustainable solution*
- *we believe that our current prioritisation model (developed in consultation with key local government and state government stakeholders), provides us with a robust method for setting priorities across municipalities*
- *local government should take a more proactive approach in regards to the management of septic tanks under their jurisdiction, where a sewerage service has been recommended and programmed but not as yet delivered (interim solutions); or septic tanks are in fact the most sustainable long-term option for managing domestic wastewater.*

Greater Bendigo City Council

The City of Greater Bendigo acknowledges many of the recommendations made with respect to the improved data and compliance management of existing septic tanks, and has identified this as a key action requirement of our domestic wastewater management plan.

The City of Greater Bendigo's domestic wastewater management plan has also identified the need to review the current legislative, policy and guidance framework in conjunction with all key stakeholders to clarify roles, responsibilities and enforcement powers in order to ensure consistent and clear application of the septic tank regulatory framework. The City of Greater Bendigo would also like to see consistency with legalisation/policy and guidelines information in relation to the reuse of greywater in sewerred areas.

The City of Greater Bendigo would also like to advise that we have undergone the development of the domestic wastewater management plan and are in the final stages of community consultation. Once the consultation process is completed, the plan will be formally adopted by council and the plan's key actions implemented over a 4-year period.

Greater Bendigo City Council - continued

The City of Greater Bendigo developed the domestic wastewater management plan in 2 stages. The first stage of the plan reviews previously conducted land capability assessments for the Greater Bendigo area. As a result of the review, a land capability mapping and assessments tool has been produced. The second stage of the domestic wastewater management plan has been developed in accordance with the specified framework provided as a part of the Country Towns Water Supply and Sewerage Program.

The land capability mapping and assessment tool has resulted in the development of soil maps where soils are classified according to the Australian Standard, depending on soil type and land capability parameters. Depending on the soil classification, it can be determined if a property is suitable for effluent disposal, what type of septic tank system is suitable, land area required for effluent disposal, minimum size of allotment for subdivision and minimum size of allotments for effluent disposal on existing subdivisions. The tool is yet to be formally adopted and we are awaiting comments from the EPA's Melbourne office. However, the tool has been well received by all steering committee members and councillors. To date, environmental health officers have been using the tool to clarify information received in land capability assessments and applications for septic tanks. It has proved very useful in clarifying information or in fact providing independent reliable information regarding land capability.

Nillumbik Shire Council

Section 3.3.4 - Did local governments enforce septic tank permit conditions?

The report's comments regarding the lack of enforcement procedures by local government is exacerbated by ineffective legislation and a lack of clarity regarding roles and responsibilities are fair.

- *Councils continue to enforce wastewater issues through the nuisance provisions of the Health Act 1958. A review of the legislative framework, in consultation with local government, is essential.*
- *Enforcement of septic tank permit conditions (for example, maintenance requirements) is made more difficult with the current legislation being unclear on the ability to set conditions on Permits to Use. Where the legislation specifies, conditions can be set on Permits to Install.*
- *Septic tank systems that were installed prior to 1988 may not have relevant permits, or permits have been issued that allow the discharge of wastewater off-site. It is these systems that generally cause the most issues.*

Nillumbik Shire Council - continued

- *Presently the EPA does have model conditions for permits but as they may not be relevant for certain site-specific circumstances, local government may amend the conditions without proper guidance.*

Section 3.3.5 - Were septic tank records complete and accurate?

It is agreed that the quality of information recorded by local government regarding septic tanks on individual properties is inconsistent across municipalities depending on prioritisation and resources. A statewide strategy regarding the type of information to be collected and recorded is required to ensure consistency in approach. This is particularly relevant for any ongoing monitoring and compliance programs.

Section 3.3.6 - Were property owners informed of their responsibilities?

It is fair that local governments must be responsible for ensuring that homeowners are aware of their responsibilities. There are countless opportunities for local governments to provide educational material to owners of septic tanks, new property owners, developers, plumbers etc. that are possible within present resources. Nillumbik Shire Council has undertaken a number of projects regarding the provision of information on septic tank management, the sewer backlog strategy and development on unsewered properties. This has been of benefit through a greater understanding of wastewater issues, particularly for homeowner/builders not familiar with the area. New property owners are automatically notified that their property is on a septic tank system.

Recommendations 1, 2, 3, 4, 5, 6 and 7

Agree. Information exchange and consultation are extremely important. Local government must be involved in any proposed legislative reform, as proposed in recommendation 4.

For local government, proactive identification of non-compliant septic systems, and their subsequent upgrades in some areas, may have serious effects on the connection rate in the backlog areas.

Recommendation 8

Partially agree. Agree that local government should be producing a DWMP that is periodically reviewed. Do not agree with penalties for non-compliance.

Nillumbik Shire Council - continued

Recommendation 9

Agree partially. This is essential, but without statewide funding and a review of the legislative framework (recommendation 4) inconsistencies in wastewater management will continue.

Recommendation 10

Agree. This will ensure a more consistent approach across the state.

Recommendation 11

Partially agree. The content of land capability assessments generally does not meet the EPA guidelines. In the present system, the idea that an LCA is an independent document is sometimes compromised by pressure to develop or subdivide.

Recommendations 12, 13, 14, 15 and 16

Agree. A statewide strategy that includes all relevant stakeholders, and ensures a consistent approach to information collection will allow a more accurate picture of backlog numbers and its subsequent reduction.

Wodonga Rural City Council

Wodonga Rural City Council firmly believes that water authorities should have a much greater role in the management of septic tanks. Council considers that:

- water supply is the domain of statutory water boards, together with the Plumbing Industry Commission (PIC)*
- reticulated sewer is also under those water boards and the PIC, and hence*
- septic tank systems (being waste water) also belong with the water board and the PIC.*

Council believes that reference to local government should be deleted from recommendation 4 and, that in recommendation 8, the reference to local government should be replaced with water authority.

Yarra Ranges Shire Council

Council offers the following comments on the report to enable local governments to effectively manage the wastewater issue:

- There needs to be legislative and regulatory reform by the state government to enable local government to manage domestic wastewater through delegated powers under the Environment Protection Act 1970, the Local Government Act 1989 or both, particularly in the realm of retrospective action.*
 - There needs to be legal powers to allow local government to generate sufficient revenue so as to employ appropriate personnel to monitor and enforce action under permits for the numbers of systems already in place.*
 - Clarity is required regarding the respective legislative powers to force connections to existing reticulated sewerage, wherever possible.*
 - State government needs to work with retail water authorities and establish a cost-effective incentive/financial support system to assist landowners to connect where available and manage the financial burden over time.*
 - The backlog programs produced must include all septic tanks identified within the domestic wastewater management plan, to develop local solutions for local communities and act in accordance with the Environment Protection Act's precautionary principle rather than shift prioritisation burden of proof to an already under resourced local government sector.*
 - Alternative technologies and methods to conventional reticulated sewerage for the disposal of wastewater to address prohibitive costs and properties/townships subject to high biodiversity values or topographic constraints.*
 - Further studies need to be undertaken to determine conclusively whether septic tanks are contributing to groundwater, surface water quality issues and changes to soil structure and vegetation loss due to long-term exposure from septic systems; this information should be applied to legislative and technology reforms.*
 - An education campaign for landowners should be implemented to ensure a consistent and effective message is provided. This can then be supported by local government compliance processes to ensure on-ground effectiveness, i.e. an education and enforcement package with state and local government working together.*
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