

Managing Landfills

VICTORIA

Victorian
Auditor-General

Managing Landfills

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The Hon. Bruce Atkinson MLC
President
Legislative Council
Parliament House
Melbourne

The Hon. Christine Fyffe MP
Speaker
Legislative Assembly
Parliament House
Melbourne

Dear Presiding Officers

Under the provisions of section 16AB of the *Audit Act 1994*, I transmit my report on the audit *Managing Landfills*.

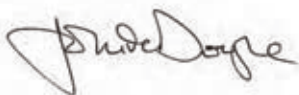
The audit assessed whether the Environment Protection Authority (EPA) and local councils, as landfill owners, are complying with their responsibilities for the construction, operation and management of municipal landfills. It examined EPA's administration of the regulatory framework and four councils' operation and management of both active and closed landfills and their compliance with the regulatory framework requirements.

I found that EPA has developed a better practice risk-based approach to its role as a regulator, resulting in a significant improvement in the regulation and oversight of landfill performance. There are still, however, some shortfalls in the implementation of this approach that require further work.

The four audited councils have made significant efforts to comply with the regulatory reforms. As a result, the management of the highest risks associated with generation of gas and contaminated water at landfills has significantly improved. However, further work is required to better manage localised risks to the environment and community amenity from landfills. These risks are associated with poor management of some daily operational activities and rehabilitation and after-care practices. Both EPA and councils have been slow to implement key initiatives to address these localised risks at older landfill sites.

I have made several recommendations aimed at addressing these issues. I am encouraged by the commitment of EPA and the four audited councils to respond to these recommendations.

Yours faithfully



John Doyle
Auditor-General

3 September 2014

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Auditor-General's comments



John Doyle
Auditor-General

This audit formed part of a series investigating the regulation and management of waste in Victoria. Previously my office has examined the management of hazardous waste, solid municipal waste and contaminated sites, all of which identified significant issues with waste management in Victoria. The findings of these audits contributed to major reforms in this area, including the release of the 2013 *Getting Full Value: the Victorian Waste and Resource Recovery Policy* and the reform of the Environment Protection Authority (EPA) into a modern risk-based regulator.

Landfills continue to remain an important part of Victoria's waste management infrastructure as currently all wastes cannot be practically re-used or recycled, and our forecast population growth will mean waste generation will continue to increase. Landfills operate within a highly regulated framework of primary and subordinate legislation, and guidelines. This is to ensure they are sited, designed, managed and rehabilitated upon closure to minimise any environmental, amenity and health risks and any future financial cost to the state and local governments associated with poorly managed and rehabilitated sites.

EPA is responsible for overseeing landfill owners' compliance with this framework, and it has implemented a better practice risk-based regulation model as part of its reform process to become an effective modern regulator. This has resulted in a significant improvement in its regulation and oversight of landfill performance. The efforts of the four audited councils to comply with the regulatory framework requirements for their municipal landfills have also significantly improved. Together, these improvements have resulted in the effective management of major risks posed by the generation of contaminated water and gas emissions at landfills.

However, localised risks to the environment and surrounding community amenity are not being managed as effectively—particularly at older sites. Both EPA and councils have been slow to implement key initiatives to address these risks. This is in part due to the complexity and costs associated with addressing these issues, shortfalls in the implementation of EPA's risk-based approach, complex and at times unclear guidance materials, and a lack of clarity about roles and responsibilities associated with closed landfills.

I have made a number of recommendations to address these issues, which pleasingly EPA and the examined councils have accepted. My recommendations reinforce the need for EPA to develop a more integrated and systematic approach to overseeing landfills and translate its risk-based approach to all of its regulatory activities, as well as clarifying its guidance to landfill owners. Councils need to better prioritise and implement their landfill management actions to address all their landfill responsibilities in a timely and efficient manner.

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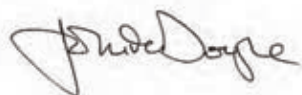
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EPA's challenges in developing and delivering risk-based regulation are not unique. The issues identified in this report are similar to those my office has found in other audits of regulators—*Recreational Maritime Safety* (2014), *Occupational Health and Safety Risk in Public Hospitals* (2013) and *Effectiveness of Compliance Activities: Departments of Primary Industries and Sustainability and Environment* (2012). Many of the recommendations in these reports will be relevant to other regulators in their quest to effectively encourage compliance and mitigate the risk of harm. In my *Annual Plan 2014–15* I foreshadowed my intention to examine the management of regulator performance.

I would like to thank the staff of EPA, Ballarat City Council, Hume City Council, East Gippsland Shire Council and Wyndham City Council for their assistance and cooperation during this audit.

I look forward to receiving updates from them in implementing the recommendations.

A handwritten signature in dark ink, appearing to read 'John Doyle', is centered on the page. The signature is fluid and cursive, with the first name 'John' and last name 'Doyle' clearly distinguishable.

John Doyle
Auditor-General
September 2014

Audit summary

Landfills can pose significant risks to the environment, human health and local community amenity if they are not well sited, constructed, managed and rehabilitated after the landfill closes. Good management requires landfill risks to be identified, assessed and managed in a timely and cost effective manner during both its open and closed phases.

Active landfills are those that currently accept waste. Closed landfills are those that received wastes in the past but no longer do. Older active or closed landfills can pose risks that are a legacy of being sited and built to the standards that were accepted as good practice at that time, but were less stringent than the standards that have applied since 2010.

The Environment Protection Authority (EPA) regulates and oversees the performance of landfills. All landfills must comply with the requirements of the *Environment Protection Act 1970* so as not to pollute the environment. Higher-risk landfills are actively regulated by EPA through a licence or notice. Lower-risk landfills are not as actively regulated through a licence or notice, but still must comply with environment protection laws and government landfill policies.

EPA undertook an extensive review of its regulatory approach following an incident at the Brookland Greens Estate in the City of Casey in 2008 where residents living in proximity to a closed landfill were exposed to unacceptable levels of potentially explosive gases generated by the site. Subsequent internal and external reviews found EPA's regulation and oversight of landfills to be inadequate and this reflected organisation-wide shortcomings in its regulatory approach. To address this, EPA identified and implemented a range of regulatory reforms to its management and oversight of pollution—landfills being one element.

The objective of this audit was to determine whether landfills in Victoria are being appropriately regulated, constructed, managed and rehabilitated after this reform process so as not to pose an unacceptable risk to the environment, human health and local amenity.

The audit examined the effectiveness of EPA's oversight of landfill performance of both active and closed landfills. It also reviewed the efforts of four councils—Ballarat City Council, East Gippsland Shire Council, Hume City Council and Wyndham City Council—to comply with their responsibilities and requirements under the range of legislation, policies and best practice environment management guidelines for the siting, construction, operation and management of landfills. The audit also assessed 62 responses received from the remaining 75 councils to a questionnaire on landfill management.

Conclusions

EPA has developed a better practice risk-based framework and approach for the management and oversight of landfills. However, for this framework and approach to be fully effective and to be effectively understood and implemented by councils as landfill owners, a number of shortfalls in its implementation need to be addressed.

EPA's oversight and councils' management of the highest risks associated with gas and contaminated water generation at landfills has significantly improved as a result of EPA's reforms, and councils' efforts to comply with these. This is particularly the case for landfills and parts of landfills that have been constructed since 2010. However, further work is still required by councils to better manage the operational, rehabilitation and after-care practices at landfills and by EPA to oversee compliance with these requirements.

Councils have improved their landfill management since 2010 but have been slow to embrace—and have not fully understood—all their landfill management responsibilities around operational, rehabilitation and after-care issues. EPA has also been slow to implement key initiatives to drive environmental improvements around landfill legacy risks from sites constructed prior to 2010. Some of this slowness is understandable given the technical complexities and costs associated with addressing legacy risks that have been inherited as a result of less stringent standards, unclear responsibilities and poor management and oversight in the past.

EPA's reforms have significantly improved its oversight of active and highest-risk closed landfills due to improvements to its landfill licensing system, supporting guidance, and compliance and enforcement approach. However, there are inadequacies in its implementation:

- EPA has not effectively translated its risk-based approach to overseeing landfill performance into its environmental auditing and compliance reporting systems. As a result, landfill owners are required to report all licence noncompliances, irrespective of the severity or lack of impact, and audit recommendations to address risks are not prioritised.
- EPA's standard landfill licence conditions are not targeted to site-specific risks and are therefore not as effective in driving improvement in performance as they should be.
- EPA's reforms have also contributed to a lack of certainty around approval processes for landfill owners, which in turn has led to unnecessary costs and time delays.
- EPA has communicated its landfill performance requirements through multiple policies and guidance materials that are complex, not well integrated and at times ambiguous. As such, they are not clearly understood by landfill owners. This has compounded councils' slow approach to embracing all their landfill duties and responsibilities.

EPA has made its compliance and enforcement approach more targeted, active and transparent. Improvements are still required, however, to ensure actions to deter landfill noncompliance are consistently applied.

It is vital that EPA, its appointed environmental auditors, and councils—as landfill owners—work together to address these issues. They will need to introduce regular review and feedback processes to continually review progress, raise issues and educate each other in relation to the constraints each party operates under.

Findings

Audited councils

The four audited councils met EPA's required standards for how new landfill sites and new areas within a landfill that accept waste need to be designed and built. They had all increased their landfill resourcing and management activities to do this. They all met EPA's requirement to engage EPA-appointed environmental auditors to audit and review the risks that their licensed landfills pose. These actions have been particularly influential in enabling these councils to effectively identify and manage very high landfill risks at their licensed sites.

The most recent audits of gas and contaminated water—leachate—risks at these sites identified moderate to high risks at four of the five sites. The audits also found these risks had not yet resulted in any significant pollution impacts on the environment or human health. All four councils had some measures in place to manage the risks but the EPA-appointed environmental auditors had identified deficiencies in these measures and recommended further improvements. The councils had all been slow to respond to these recommendations.

Rehabilitation was also inadequate at these councils' licensed landfills, even though it is fundamental to managing leachate and gas risks.

Audited councils identified themselves as 'compliant' with some licence conditions even though they could not demonstrate this and there was evidence that they did not comply—such as in relation to covering waste each day and progressively rehabilitating the sites over time. This indicates they have not effectively prioritised or managed lower to moderate risks to the local environment and the amenity of the neighbouring community.

The audited councils had good knowledge of the risks from older parts of active, licensed landfills that were built before 2010, through the risk assessment and audit system used for the currently-operating landfill sites in which they are situated.

Since EPA introduced the first landfill policy in 1991, landfill owners have also been required to manage the rehabilitation and after-care of closed landfills—including gas and leachate risks—but the four audited councils had not done this efficiently or effectively because they had not comprehensively or systematically assessed and managed the legacy risks posed.

The councils also have not fully understood their roles and responsibilities for managing closed sites, as EPA's policy and guidelines do not clearly articulate responsibilities for identifying older sites and assessing the risks they pose.

Future management of risks

Councils will need to comprehensively identify closed sites and better assess, prioritise and manage legacy risks at both active and closed sites. This will require a high level of in-house landfill knowledge and experience that not all councils have.

Councils will need to uphold their rehabilitation obligations and EPA also needs to more strongly oversee compliance with policy objectives and best practice in this area.

The 62 councils responding to the audit questionnaire, plus the four audited councils, raised concerns about meeting the costs of appropriately assessing and managing the legacy risks at closed landfills and smaller sites exempt from licensing. Few councils indicated they had set aside funds to do this. Councils need to plan to meet anticipated rehabilitation costs.

Environment Protection Authority

Reviews conducted after the Brookland Greens case found EPA's oversight of landfills was poor. To address this, EPA implemented a range of reforms, which have significantly improved its regulation and oversight of landfill performance. These reforms include:

- the requirements imposed by its 2010 *Best Practice Environmental Management—Siting, Design, Operation and Rehabilitation of Landfills* guidelines document, which specifies performance outcomes and measures for managing risks
- a revised landfill licensing system, under which licensees are required to undertake risk assessments, implement monitoring programs that have been verified by an EPA-appointed environmental auditor and undergo regular audits by an EPA-appointed environmental auditor to monitor, assess and review the risks the landfill site poses and their management
- requiring annual performance statement reports from landfill licensees that identify compliance with both licence conditions and any recommendations by an EPA-appointed environmental auditor to address identified issues or potential risks from the site
- EPA's Licensed Operator Risk Assessment—a risk-based model used to prioritise compliance and enforcement activities on licensed sites and allocate EPA resources to the higher-risk sites
- EPA's Annual Compliance Plan, which sets out targeted compliance activities for licensed landfill sites.

However, further improvement is still required to ensure these reforms are fully effective in overseeing landfill performance and to address remaining inadequacies in EPA's approach. This includes the need to:

- translate its risk-based approach to auditing and compliance reporting requirements so that reporting is prioritised based on risk
- ensure target licence conditions address site-specific risks
- identify its high noncompliance risks across all landfill sites and transparently articulate its approach to managing these risks through its annual compliance plan
- improve the clarity of guidance materials used to inform stakeholders of the regulatory requirements and process to meet these
- clarify roles and responsibilities for closed landfills—which are not well understood by councils
- address current information gaps around closed and unlicensed landfill risks and their compliance with policy objectives.

Guidance materials

EPA released its *Closed Landfill Guidelines* in 2012 and its *Landfills exempt from licensing* guideline in 2014. While there is initial evidence that these have and will continue to improve councils' focus on these sites, the roles and responsibilities of councils and the lack of clarity around some aspects of these guidelines still need to be addressed to ensure councils are fully effective in meeting their landfill regulatory responsibilities and duties.

Landfill management requirements and guidance are contained in copious policy and guidance documents but these are not well integrated. The current situation would be improved by EPA preparing a guide explaining the structure and hierarchy of the regulatory requirements—including objectives and outcomes—what processes and duties need to be undertaken to comply with these, and by whom.

Compliance and enforcement

EPA's approach to compliance and enforcement has significantly improved over the past four years. It is now risk based, more targeted, transparent and active. For it to be fully effective, discretionary actions taken by EPA officers to deter noncompliance with licence conditions and operational landfill risks must be more consistent and transparent.

EPA's efforts to meet its compliance plan targets have continuously improved since 2011. In 2012–13 the majority of its targets for landfills were met or exceeded.

Since 2010, EPA has put in place—or is well on the way of having in place—the essential elements of a better practice reporting framework.

It has good systems for measuring, monitoring and internally reporting on its performance in delivering its compliance functions across active licensed landfill sites and compliance with remedial notice requirements for both active and regulated closed landfills. However, its systems for measuring, monitoring and internal reporting of compliance of unlicensed landfills and unregulated closed landfills with policy objectives are not as effective or comprehensive.

This is because EPA has not prioritised these sites as a high risk, and the level of assessment, monitoring and reporting of compliance with policy objectives reflects this. As a consequence, councils also put far less focus and effort into these sites.

Recommendations

Number	Recommendation	Page
That councils:		
1.	identify, prioritise and address all of their landfill responsibilities and obligations under the <i>Environment Protection Act 1970</i> , the <i>2004 Waste Management Policy (Siting, Design and Management of Landfills)</i> and associated guidelines, including: <ul style="list-style-type: none"> operating and progressively rehabilitating active sites assessing and managing risks at closed sites planning to meet anticipated rehabilitation and after-care costs 	26
2.	build their in-house landfill knowledge and skills so that they can work with Environment Protection Authority-appointed environmental auditors and landfill experts to effectively prioritise and address risks	26
3.	consolidate the recommendations from environmental audits and other external and internal reviews across all landfills, and develop and implement risk-based priorities and time lines for addressing them	26
4.	improve their internal controls over landfill management through their internal risk and audit systems and landfill inspection processes	26
5.	work with the Environment Protection Authority and the waste and resource recovery groups to identify closed landfills, assess their risks and prioritise actions at a regional scale to address these.	26

Recommendations – *continued*

Number	Recommendation	Page
That the Environment Protection Authority:		
6.	works with the Department of Environment and Primary Industries and waste portfolio partners to develop options for the Minister for Environment and Climate Change to use the landfill levy for the timely rehabilitation of high-risk landfills	26
7.	further develops its current landfill plan into a comprehensive strategy that integrates all its landfill plans and activities, and is underpinned by a detailed resourcing and implementation plan	44
8.	reviews its landfill information to determine and prioritise the key noncompliance and emerging risks for targeted action, and identifies these in its annual compliance plan, supported by measures and outcomes to assess the effectiveness of its actions	44
9.	reviews the efficacy of current landfill licence conditions and develops additional risk-based conditions where required for inclusion on a site-by-site basis	44
10.	implements risk-based compliance and auditing reporting requirements, which include risk-based prioritisation requirements and reporting based on likelihood and severity of impact	44
11.	uses a peer review panel of landfill experts to advise it on complex landfill approvals, with clear terms of reference	44
12.	improves landfill guidance by: <ul style="list-style-type: none"> • preparing a landfill guide explaining the structure and hierarchy of the regulatory requirements for all landfill-related processes and how all the relevant landfill guidelines and processes integrate • clarifying that it is councils' role to identify all closed landfill sites within their municipalities and register this information with the Environment Protection Authority and describing risk assessment requirements for unregulated closed landfills • improving best practice environmental management guidance in consultation with all stakeholders 	44
13.	works with the Metropolitan Waste and Resource Recovery Group to develop an appropriate planning process/tool to ensure the Environment Protection Authority's involvement in any rezoning or application process across Victoria where development adjacent to active or closed landfills may be involved	44
14.	develops a public register of landfills	44
15.	reviews its standard operating procedures for issuing remedies to require documented reasons as to what remedy is applied and why.	44

Submissions and comments received

In addition to progressive engagement during the course of the audit, in accordance with section 16(3) of the *Audit Act 1994* a copy of this report, or part of this report, was provided to the Environment Protection Authority, Ballarat City Council, East Gippsland Shire Council, Hume City Council and Wyndham City Council with a request for submissions or comments.

Agency views have been considered in reaching our audit conclusions and are represented to the extent relevant and warranted in preparing this report. Their full section 16(3) submissions and comments are included in Appendix A.

1 Background

1.1 Landfills

Landfills are an important part of Victoria's waste management infrastructure. While disposal of materials to landfill is the least preferred option for waste management, landfills will continue to be required to manage those wastes that cannot practically be removed from the waste stream.

Prior to the 1970s there was no overarching environmental protection legislation or regulatory framework to control what materials were disposed of to landfills or design and operation standards for landfills. The result is that there are landfills across metropolitan and rural areas that have accepted materials that are potentially hazardous to the environment and human health, which were not constructed to today's good practice standards. This was evidenced in 2008 when residents living in close proximity to a closed landfill were exposed to unacceptable levels of gas generated from the site—the Brookland Greens case—and were later successful in obtaining a multimillion dollar class action settlement against the City of Casey and the Environment Protection Authority (EPA).

EPA commenced a significant reform process in 2010 following the Ombudsman's inquiry into the Brookland Greens case, VAGO's 2010 report on the management of hazardous waste and EPA's own internal review of its compliance and enforcement approach in 2010. This led to EPA adopting a risk-based and responsive regulatory model with the intent of focusing compliance activities and follow up on the highest risk sites and activities to achieve significant environmental improvements. The aim was then to translate this approach to its oversight of landfill performance. This resulted in amendments to the landfill regulatory framework and supporting tools. It also contributed to a renewed emphasis by EPA on ensuring landfill operators and owners comply with the regulatory framework requirements.

1.1.1 Risks posed by landfills

Active and closed landfills can pose a wide range of risks to the environment, human health and amenity based on their siting, design, operation and management. The sources and levels of risk posed by landfills change with the age of the landfill, the phases of the landfill lifecycle, its siting and construction standards, the type of waste accepted and the management controls in place.

EPA ranks landfill risk based on two key factors—sites that pose the greatest risk of harm to the environment and those that pose the highest risk of noncompliance against regulatory requirements. It assesses this by gathering a range of information and measuring it against the following criteria:

- **site activities**—the type of site activities and the level of risk they pose to human health and the environment
- **proximity to sensitive receptors around the site**—such as groundwater, surface waters and residential areas
- **emissions and waste**—the type and amount of waste accepted at the site
- **site management**—the management systems and investment in environmental management
- **compliance rating**—the number and severity of noncompliances against regulatory requirements identified at that site
- **community engagement**—the ability of a site to work with its local community and listen to any concerns.

Environmental risks

Environmental risks from landfill sites generally result from contaminated water leaching into the soil, groundwater and surface water. Contaminated water is generated from the mixture of waste breaking down with surface water that comes into contact with it. This mixture is known as leachate. Leachate seepage from landfills can lead to soil, groundwater and surface water impacts. High levels of landfill gas can impact vegetation and atmospheric concentration of greenhouse gases—depending on the type and concentration of gas generated.

Human health risks

The most significant risk to human health posed by landfills is the migration of landfill gas underground from the landfill to structures and enclosed spaces on site or adjacent to the landfill. It is possible for this gas to accumulate in these structures and spaces, where there may be a risk of asphyxiation or explosion under particular conditions. Surface emissions of gas can affect local communities due to odour. Strong responses to odour can affect an individual's sense of wellbeing. The risks posed by landfill gas largely depend on the type of gas emitted, its concentration, mobility and the level of exposure. Adverse health effects from exposure to landfill gas are rare.

Health risks may also occur where individuals are exposed to dangerous materials accepted at the landfill—such as asbestos—if their acceptance and disposal is poorly managed.

Amenity risks

Odours generated from poor landfill management practices can impact on the amenity of nearby residences. Poor daily waste cover and leachate management can also result in odours. Poor on-site litter management can impact nearby residences and affect the aesthetic values of an area.

Legacy risks

Older landfill sites also pose risks that need to be managed. These risks are the legacy from those sites or cells—see below—sited and built to the accepted standards of the day, which were less stringent than standards required post-2010. Legacy risks arise mostly from closed landfills, but may also arise from older cells at active licensed and unlicensed sites. Landfills can continue to pose legacy risks for 30 years or more.

To minimise landfill risks, good landfill management should result in the:

- maximum capture and use—or other management—of landfill gas emissions to minimise adverse impacts to air quality and human health
- mitigation of leachate to minimise adverse impacts to surface waters, groundwater and the gas collection system
- mitigation of odours to minimise adverse impacts to air quality and local community amenity
- control of vermin, wind-blown litter and dust, to minimise adverse impacts on the local community
- appropriate monitoring, rehabilitation and after-care of the site to minimise long-term environmental and human health impacts following its closure.

1.1.2 Types and number of landfills

Landfill capacity can vary considerably—from sites that are over 100 hectares and receive several hundred thousand tonnes of waste annually, to small sites only a few metres long and deep, which receive only 50 tonnes a year. This audit has examined the two main phases of the landfill lifecycle—the active phase and the closed phase.

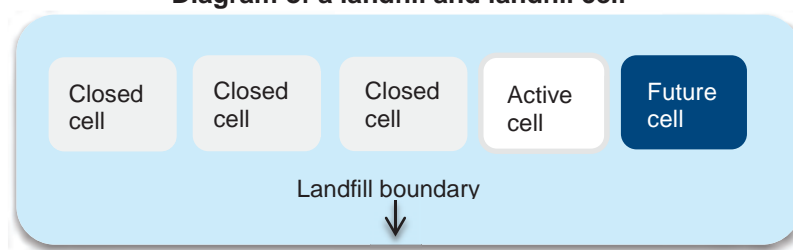
Large cell being built adjacent to cell already filled.

Photograph courtesy of the Environment Protection Authority.



Active landfills, those that currently accept waste may be licensed by EPA, or if they serve a population of less than 5 000, be exempt from licensing—referred to as unlicensed in this report. Active landfill sites are generally divided into landfill cells—defined areas within a landfill that accept waste. Figure 1A is a diagram of such a system. Generally, only one cell is filled at a time and once full the cell is closed and a new cell comes on line. There is a regulatory requirement to progressively rehabilitate landfill sites as cells close.

Figure 1A
Diagram of a landfill and landfill cell



Source: Victorian Auditor-General's Office.

Closed landfills are those landfills that have received waste in the past, but no longer do so. There are also two types of closed landfills—regulated and unregulated. Regulated sites are those that were licensed by EPA or brought to EPA's attention as a high-risk site and now either have a licence or remedial notice issued under the *Environment Protection Act 1970* (EP Act). For this audit, unregulated sites are defined as those sites not actively regulated by EPA through either a licence or notice. However, all landfill sites are required to comply with the provisions of the EP Act and the relevant landfill policies.

EPA's data, presented in Figure 1B, indicates there are over 100 active landfills in Victoria, in both council and private ownership, and at least 245 closed landfills, with the majority having closed at least 10 years ago.

Figure 1B
Summary of the numbers and types of landfills currently known to EPA

Landfill status	Description	Total	Council owned	Privately owned
Active	Currently accept wastes	107	72	35
Licensed	Has a licence controlling the waste that can be received and how pollution must be managed	71	37	34
Unlicensed	Exempt from licensing as it serves a population of 5 000 or fewer	36	35	1
Closed	No longer receives wastes	245	n/a	n/a
Regulated	Was licensed when active	88	66	22
Unregulated	Was exempt from licensing when active and EPA has not issued it with a remedial notice	157 ^(a)	n/a	n/a

(a) This number includes landfills in metropolitan Melbourne only.

Note: n/a = information not available.

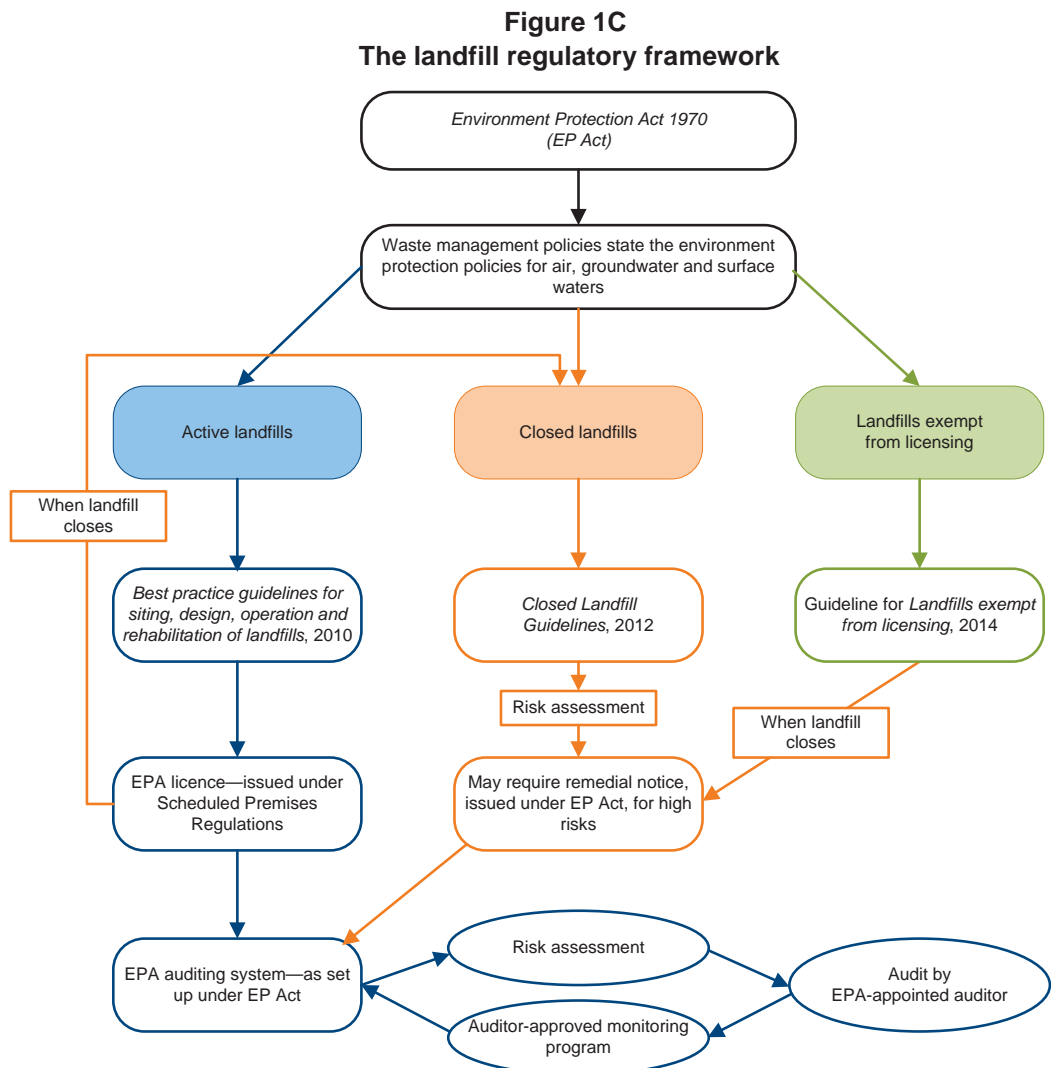
Source: Victorian Auditor-General's Office.

1.2 The regulatory framework to manage risks from landfills

1.2.1 Regulating landfill sites

The siting, management and rehabilitation of landfills requires a high level of design and management to ensure that the environment is protected and community aspirations are met.

Landfill sites are regulated through the EP Act, and a range of complementary policies, guidelines and regulatory tools, including licences and remedial notices that outline conditions that a landfill owner/operator must adhere to. This system of policies, guidelines and tools is referred to in this audit as the regulatory framework for landfills. Figure 1C is a diagram of this framework.



Source: Victorian Auditor-General's Office.

In 2010, EPA requirements for environmental management of landfills changed as part of the licence reform program. These changes led to landfill licences being less prescriptive and clearly identified that the responsibility to better identify, monitor and manage the environmental impacts of landfill operations belonged to the licence holders, not EPA.

This clarification of responsibility included the requirement for licence holders to obtain environmental assessments, and audits of landfill management to be undertaken by appropriately qualified consultants and environmental auditors appointed under the EP Act—EPA appointed environmental auditors. The environmental monitoring and auditing component of landfill management comprises four main processes:

- risk assessment
- environmental monitoring program
- environmental audit program, which assesses the risk of environmental harm from the site and activities at the site
- annual licence performance statements from the licence holder to EPA, detailing compliance with licence conditions.

Landfills accepting municipal wastes and low level contaminated soils must generally meet better practice requirements. EPA provides guidance on how to demonstrate this through the development and implementation of a range of guidelines for landfills.

These include:

- the 2010 guideline *Best Practice Environmental Management—Siting, Design, Operation and Rehabilitation of Landfills* (the Landfill BPEM)
- the 2012 *Closed Landfill Guidelines*
- the 2014 guideline for *Landfills exempt from licensing*.

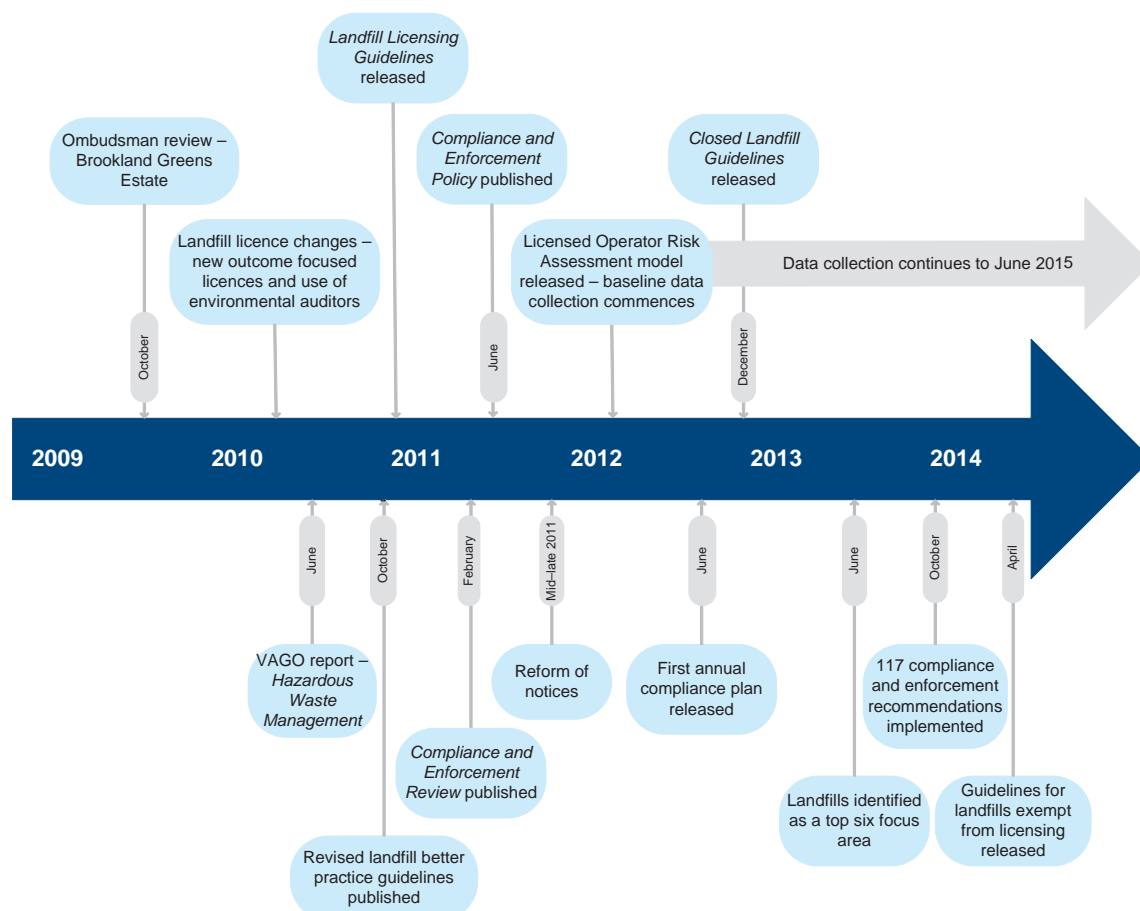
Closed landfills that were licensed by EPA while active must surrender their EPA licence and be regulated through the issue of a remedial notice as required by the *Waste Management Policy (Siting, Design and Management Of Landfills)* 2004 (the landfill policy).

Unlicensed landfills are generally not regulated by either a licence or a remedial notice, but still must comply with landfill policy objectives. However, if they are found to be causing an unacceptable risk to the environment, EPA can issue a notice to address the risk.

EPA monitors compliance through inspections, annual licence performance statements, including statement reviews and audits, and investigations. It also has a range of enforcement tools available to manage landfill noncompliance. These require remedies to fix the problem, for example through written advice or a remedial notice and can also involve sanctions—penalties or punishments—such as an infringement notice, licence suspension or prosecution.

Figure 1D is a time line of changes that EPA has made to landfill guidelines and regulation since 2009.

Figure 1D
Time line of significant changes to landfill regulation and guidelines



Source: Victorian Auditor-General's Office based on information from the Environment Protection Authority.

1.2.2 Regulating development on or adjacent to a landfill

The provisions of the *Planning and Environment Act 1987* (P&E Act) provide the principal mechanisms by which Victoria's broader planning objectives are achieved. Under the P&E Act, councils and the Department of Transport, Planning and Local Infrastructure, on behalf of the Minister for Planning, act as:

- **responsible authorities**—making decisions on planning permit applications, which permit certain land uses or developments
- **planning authorities**—preparing planning scheme amendments, which zone large areas of land to allow for its redevelopment for a different use, such as from an industrial zone to a residential zone.

Sections 12(2)(b) and 60(1)(e) of the P&E Act require a planning authority, when preparing an amendment to the planning scheme, or a responsible authority, when deciding on a planning permit application, to take into account any significant effects that the amendment or permit might have on the environment or the environment might have on the use or development. This includes risks associated with active and closed landfills. The Landfill BPEM also recommends buffer distances to separate landfills from buildings or structures, and requires the responsible planning authority to obtain sufficient information for any proposed new development or rezoning within the buffer to demonstrate it will not be adversely impacted by its proximity to the landfill site.

1.3 Roles and responsibilities

Environment Protection Authority

Landfills are only one sector among many that EPA regulates, and currently landfills comprise approximately 10 per cent of the licensed premises that EPA regulates. However, EPA has identified landfills as one of its six high-risk sectors that require a focused effort.

EPA administers the legislation, policies, best practice guidance, approval and licensing processes for landfills to protect the environment and human health. It does this through a number of mechanisms:

- **Administration of the regulatory framework**—includes implementing waste legislation, and developing and implementing policies and best practice guidelines which govern and guide the design, operation and management of active and closed landfills.
- **Setting financial assurances**—EPA requires financial assurances from landfill operators/owners, in the form of a bank guarantee or a budgetary provision. Financial assurances are intended to provide a guarantee that the costs of remediation, site closure and post-closure liabilities are not borne unfairly by EPA and ultimately the community.
- **Approving and licensing landfills**—an EPA works approval must be obtained before a landfill can be constructed, except for municipal landfills serving a population of fewer than 500 people. Similarly, an EPA licence is required for the operation of all landfills, except for municipal landfills serving a population of fewer than 5 000 people. The licence sets the performance objectives for the operating landfill, defines operating parameters, and outlines monitoring programs to oversee its environmental performance. EPA monitors the owner's compliance with both landfill works approval and licence conditions.
- **Issuing and monitoring compliance with EPA notices**—EPA issues owners of all closed, formerly licensed landfills with a remedial notice that requires a closed landfill to be managed in a manner that does not pose an unacceptable future risk to the environment or human health.

Landfill owners

Councils and private organisations own and operate landfills throughout Victoria. Private organisations own a minority of the landfills but these include some of the largest active landfills. Most landfills that operated prior to the 1980s were owned by councils. Therefore, as landfill owners, councils play a key role in the management of the majority of both active and closed landfill sites across Victoria.

It is the responsibility of the landfill owner to ensure the operation, management and rehabilitation of a landfill site complies with EPA's regulatory framework requirements and the relevant best practice guidelines.

1.4 Audit objective and scope

This audit examines whether EPA's current regulatory approach is appropriately administered, is being complied with and has been effective in providing assurance that landfills are not leading to adverse human health and environmental impacts, both currently and for future generations.

The audit reviewed the activities of EPA and a sample of four councils that own and operate landfills:

- City of Ballarat
- East Gippsland Shire Council
- Hume City Council
- Wyndham City Council.

The councils were selected to provide a range of council sizes and locations and municipal waste landfill types. To complement the information from the four audited councils, we issued a questionnaire to the other 75 councils to collect general information around landfill management practices. We received 62 responses, an 83 per cent response rate.

1.4.1 Audit approach

The audit examined whether:

- EPA effectively administers the regulatory framework for landfills and oversees compliance with it by landfill operators/owners
- active landfills are well operated and managed in accordance with the regulatory framework requirements and guidelines
- closed landfill sites are well managed in accordance with the regulatory framework requirements and guidelines.

1.5 Audit method and cost

The audit was conducted in accordance with the Australian Auditing and Assurance Standards. Pursuant to section 30(3) of the *Audit Act 1994*, unless otherwise indicated any person named in this report are not subject of adverse comment or opinion.

The cost of the audit was \$400 000.

1.6 Structure of the report

Part 2 examines the performance of councils in managing risks for both active and closed landfills, with a focus on risks from landfill gas and leachate.

Part 3 assesses EPA's approach to regulating landfills and overseeing councils' performance, including monitoring and enforcing compliance.

2 Landfill risks to the environment, human health and amenity

At a glance

Background

Landfills can pose a wide range of risks to the environment, human health and amenity. These risks can be minimised through better practice landfill design, operation, management and rehabilitation.

Conclusion

Since 2010, audited councils' identification and management of landfill risks has improved, but they are not yet meeting all their landfill responsibilities. As such, the highest gas and contaminated water risks are being managed effectively, but some lesser gas, water and other risks—which if left unmanaged could escalate—are not.

Findings

- The audited councils have met the Environment Protection Authority's (EPA) new guidelines for landfill design and construction, as well as the risk assessment, monitoring and auditing requirements that EPA has set for higher-risk sites.
- The councils have not adequately managed the lesser but still important risks relating to gas, odours, contaminated water and asbestos—due to poor operational practices—and there is inadequate rehabilitation at active landfills and shortfalls in after-care of closed sites.

Recommendations

That councils:

- identify, prioritise and address all of their landfill responsibilities and obligations, including environmental audit recommendations
- improve their controls over landfill management through their internal risk and audit systems, and landfill inspection processes
- work with EPA and the waste and resource recovery groups to identify closed landfills, assess their risks and prioritise their management.

2.1 Introduction

Landfills can pose a range of risks to the environment, human health and amenity. The sources and the seriousness of these risks can change over time if not managed effectively. For example, gas levels change due to the age, type and quantity of waste deposited and tend to peak in the decade after the landfill closes. Gas may accumulate in enclosed spaces above or below ground, where it could explode under certain conditions, or migrate off-site and cause dieback in vegetation, accumulate in neighbouring buildings or increase greenhouse gases. Uncovered asbestos can pose a range of risks to human health, with the higher risks being to on-site workers exposed to it. Good management requires risks to be identified, regularly assessed, monitored and managed in a timely and cost effective manner.

Public attention is often focused on active landfills and the risks that they pose, but the legacy risks from closed landfills—mostly constructed under the standards considered good practice in the past rather than to the Environment Protection Authority's (EPA) 2010 revised better practice standards—can also be significant. For this reason, EPA requires closed landfills to be rehabilitated and then cared for over a period of up to 30 years or more.

Councils, as landfill owners, are required to identify, assess and regularly review risks at their landfills in line with the requirements set by EPA in its:

- 2004 *Waste Management Policy (Siting, Design and Management Of Landfills)*
- 2010 guideline *Best Practice Environmental Management—Siting, Design, Operation and Rehabilitation of Landfills* (the Landfill BPEM), which introduced more stringent standards for new landfills and superseded its 2001 guidelines
- guidelines for closed landfills and for those exempt from licensing
- landfill licence requirements and guidelines.

The risk rating will depend on how likely it is that an impact will occur, as well as the predicted severity of the impact. EPA's guidance to its appointed environmental auditors suggests classifying risks according to four categories:

- **very high risk**—immediate action required
- **high risk**—management required from senior staff, check monthly
- **moderate risk**—specify required management, check every three months
- **low risk**—manage with standard operating procedures, check annually.

Risks can be rated moderate to very high even though no impact is observed.

This audit focused on the four selected councils' management of risks at active, licensed sites and closed sites. The audit also used information from 62 councils that responded to a questionnaire on landfill management we sent to the other 75 councils.

Landfill gas is the main source of human health risk from landfills and contaminated water leaking from landfills—leachate—is a key environmental risk, so the audit focused on how well these risks are managed.

2.2 Conclusion

Since 2010, the audited councils' identification and management of landfill risks has improved. Their operational audits for licensed landfills and higher risk closed landfills are rigorous and have not identified any very high risks or significant long-term environmental and health impacts.

However, the audited councils are not yet effectively controlling other more moderate risks, which if not addressed could escalate to cause more serious localised impacts, for example through groundwater contamination and/or odour.

Some poor operational management and rehabilitation practices were evident at the four audited councils' licensed landfills, resulting in increased risk of adverse impacts upon the local environment and amenity—mainly through groundwater contamination and odour generation.

The audited councils have not understood or met all their responsibilities for managing closed landfills. They have not addressed the legacy risks posed by gas and leachate contamination in a systematic or timely way. While EPA considers legacy risks posed by these older landfills to be low, the councils' slow progress in identifying and addressing these risks is concerning as some of them have the potential to escalate over time.

2.3 Managing risks from active landfills

EPA requires landfill owners to identify, monitor and if necessary mitigate risks posed by active landfills or landfill cells. It does this by setting regulatory requirements and better practice guidelines through a range of guidance and tools, including:

- **The Landfill BPEM**—specifies performance outcomes and measures for managing risks through landfill siting, design, management and rehabilitation.
- **The landfill licensing system**—requires landfill owners to assess the risks the landfill poses, implement monitoring programs that have been verified by an EPA appointed environmental auditor and have an EPA-appointed auditor regularly audit the risks and their management.
- **The annual licence reports**—require landfill owners to report compliance against licence conditions and report actions to address environmental auditor recommendations.

The source and severity of risks to be managed and the best way to manage them varies between audited landfill sites due to their different characteristics. Figure 2A outlines the characteristics of the licensed landfills.

Figure 2A
Characteristics of licensed landfills at the audited councils

Council	Year landfilling commenced	Waste volume received (tonnes/year)	Size of active cell (hectares)	Estimated remaining lifespan (years)
Ballarat	1996	60 000	4	30
East Gippsland				
• Lakes Entrance	1975	8 000	1	3
• Bairnsdale	2003	16 000	2	20
Hume	1977	30 000	11	15
Wyndham	1976	400 000	10	50

Source: Victorian Auditor-General's Office.

The four audited councils were generally complying with EPA's auditing and monitoring requirements for licensed landfills. The audit and approval documents showed they were also meeting the required guidelines for landfill design and construction specified in the Landfill BPEM for newly constructed cells. These actions have been particularly influential in leading these councils to effectively identify and manage the highest landfill risks from their licensed sites.

However, they are not consistently complying with all their EPA licence requirements or the relevant Landfill BPEM operational measures. As a result they are not yet effectively prioritising or managing lower to moderate risks to the local environment and the amenity of the neighbouring community.

2.3.1 Council risk management approaches

EPA requires licensed landfills to have a landfill risk assessment, which is reviewed annually. All four audited councils had collected comprehensive information through these risk assessments, although Ballarat and East Gippsland had not reviewed theirs annually.

Councils' risk management is then guided by the licence risk assessment and environmental audit and the subsequent recommendations. Licence audits can make upwards of 30 recommendations for some sites. These are not prioritised by the EPA-appointed environmental auditors even though EPA's guidelines suggest this to be good practice. This prioritisation is left to councils, which can be an onerous task due to the number and technical nature of some recommendations and the lack of expert technical knowledge residing within councils. None of the four councils had a risk-based process for prioritising the recommended actions and subsequently their implementation was not always timely or appropriately prioritised. Figure 2B outlines the response of councils to recommendations.

Figure 2B
Council responses to licence audit recommendations

Council	2013 audit recommendations
Hume	In March 2013, Hume had 36 audit recommendations for its active licensed site. Twelve were new recommendations and 24 were outstanding from the 2012 and 2010 audits.
Wyndham	The October 2013 audit made 16 recommendations, including 14 new recommendations and two from the 2010 audit that had not been resolved.
Ballarat	The November 2013 audit made 33 recommendations, consisting of 21 new recommendations plus 12 from the 2011 audit that were still outstanding.
East Gippsland	The 2013 audits at the two sites made 25 recommendations combined, including 23 new recommendations plus two that were still outstanding from the 2009 audit.
Council planning to implement the recommendations	
Hume and Wyndham both had consultants develop plans for implementing the recommendations, but these were not prioritised based on the significance of the issues or time lines for completion. Although Hume requested its monitoring consultant to cost the work needed to address the March 2013 recommendations, by June 2014 it still had not finalised plans to address them.	
Ballarat and East Gippsland did not use implementation plans or other risk-based approaches to prioritise this work.	
Since 2012 EPA has issued Ballarat a series of eight remedial notices as a way of directing the council to focus on the highest priority recommendations, which related to leachate and gas management. Ballarat has responded appropriately to these. EPA also issued remedial notices to Wyndham in 2014 related to implementing audit recommendations.	

Source: Victorian Auditor-General's Office.

Operational requirements are set out in the Landfill BPEM to manage the environmental, human health and amenity risks. Licence audits identified several poor operational practices across all five licensed landfills owned by the four audited councils. These included:

- progressive rehabilitation requirements not being met
- insufficient daily covering of general waste or asbestos
- poor odour and litter management
- incomplete management procedures—e.g. for fire management and after-care
- required inspections not conducted or documented.

In addition, none of the four audited councils fully used its organisational risk management system to support its landfill management processes. Only Wyndham used its internal audit system to examine its landfill management processes.

Since 2013, Wyndham and East Gippsland have introduced new arrangements to strengthen their focus and manage landfill risks. These are directed at improving oversight and operational management. Employing staff with landfill expertise or experience has been central to driving this for both councils.

2.3.2 Gas and leachate management

EPA conducted a methane landfill gas assessment at 252 active and closed landfills following the Brookland Greens Estate incident in 2008, when landfill gas threatened neighbouring properties. This assessment and follow up monitoring of potentially high risk sites identified that no landfills had impacted neighbouring communities as a result of landfill gas emissions.

Since then, the Landfill BPEM and licensing guidelines were amended to require regular gas risk assessments and more active gas monitoring and management for licensed landfills to determine the levels of gas present and manage any impact this is having on the environment. The four councils had all increased their landfill resourcing and management activities to do this.

Licence audits for the five licensed sites in the four audited councils conducted in the past 12 months identified medium to high landfill gas risks to human health and the environment at four of the sites, although monitoring showed that these risks had not actually caused major impacts on the environment or human health. The risks were rated higher because the environmental auditors considered that despite the low current impacts, the management measures in place were not sufficient to minimise the likelihood of future impacts. They assessed that this likelihood ranged from probable to likely. Figure 2C shows the risk level identified by the audits and the results of environmental monitoring.

Figure 2C
Landfill gas risks and monitoring results at licensed landfills

Council	Risk that gas could impact on health and environment	Environmental monitoring results
Wyndham	Very high—for land and indoor areas on site Not assessed—for off-site migration	Evidence of pollution that is detrimental to the land at the site No evidence of unacceptable risks in on-site buildings
Ballarat	High—for land and on-site workers High—for off-site buildings Moderate—for neighbouring residents	Gas levels exceeded EPA's limits No gas accumulating in on-site buildings Inconclusive evidence of gas migrating off site, further monitoring required
Hume	Moderate—for land and on-site workers Low—for off-site migration	Gas levels exceeded EPA's limits, although the auditor was uncertain whether the monitoring location was representative. Inconclusive evidence of gas accumulating in on-site buildings or migrating off site, further monitoring required
East Gippsland		
• Lakes Entrance	Moderate—for on-site workers Low—for off-site migration	Landfill gas negligible, no adverse impact No gas accumulating in on-site buildings No gas migrating off-site
• Bairnsdale	None	Gas not measured—no monitoring required until gas risk changes

Source: Victorian Auditor-General's Office, from the licence audit reports completed in the past 12 months.

The licence audits and risk assessments identified that the councils all had measures in place to manage these gas risks, such as monitoring, vents and extraction systems. However, the environmental auditors identified that Ballarat and Wyndham had been slow to introduce effective measures. Figure 2D outlines these examples.

Figure 2D
Case study—examples of gas risk management at licensed landfills

Ballarat

In 2006, the council put bores in to assess gas levels at its licensed landfill but did not use them to monitor gas levels over time. The council's 2011 landfill gas risk assessment identified the gas risks as low but recommended the council monitor gas levels. This monitoring only commenced in 2012, and the gas risk was revised to medium. The 2013 audit assessed some high risks from landfill gas and also identified that the council was not measuring the risk of gas migrating off site, even though the licence required this.

In 2012, the council embarked on a major program of works designed to better monitor and manage the gas risks. EPA issued three remedial notices to the council in 2012 and 2013 to direct the focus of this work. The work is now complete but it may be several months or longer before the benefit in reducing gas risks becomes apparent.

Wyndham

Its 2013 licence audit assessed the gas risks as high and identified that although there was gas management technology in place its use was focused on generating power rather than on mitigating the gas risks. The licence audit identified that the council's Landfill Gas Remediation Action Plan would be critical to managing the gas risks and recommended the council finalise its draft plan by November 2013. However, the finalised plan was not submitted to the EPA until May 2014. The plan's development was hampered by contractual negotiations with the gas management company.

Source: Victorian Auditor-General's Office.

A key source of environmental risk from landfills is from leachate impacting local streams, lakes or groundwater. The volumes generated and the contaminants present vary over time with factors such as the age of the landfill, the type of waste deposited and the amount of rainfall.

EPA has a range of guidance for managing leachate risks. In 2013 it also developed a specific licence condition for landfills and landfill cells built since 2010. This requires owners to extract leachate from landfill cells so that no more than 300 millimetres accumulates at the bottom of the cell. However, this condition is currently only applied to one of the five licensed landfills belonging to the audited councils.

The audited councils' recent licence audits did not identify any high risks posed to surface waters for the five sites, but rated the risk to groundwater as medium to high but the current impact as minimal, as shown in Figure 2E. However, there was insufficient evidence to determine specific impacts at four of the five sites. The environmental auditors assessed the likelihood of future impacts as ranging from rare to likely.

Figure 2E
Groundwater risks and monitoring results at licensed landfills

Council	Risk that leachate could impact on groundwater	Environmental monitoring results
Ballarat	High	Evidence of adverse impact on immediate groundwater—significance of impact was not identified Inconclusive evidence of leachate migrating into nearby aquifers
Wyndham	High	Evidence of adverse impact most likely confined to the site boundaries, further monitoring required.
East Gippsland		
• Lakes Entrance	High	Inconclusive evidence of adverse impact, further monitoring required.
• Bairnsdale	Moderate	No evidence of adverse impact.
Hume	Moderate	No or inconclusive evidence of adverse impact, further monitoring required.

Source: Victorian Auditor-General's Office, from licence audit reports completed in the past 12 months.

The councils all had leachate risk controls, including monitoring as well as barriers and diversion systems to prevent leachate reaching groundwater. The councils all had auditor-verified leachate and groundwater monitoring programs. The monitoring results led the environmental auditors to recommend improvements to the effectiveness of the controls and each council was in the process of responding to these recommendations.

Progressive rehabilitation

EPA's licences require progressive site rehabilitation—where landfill cells are capped once they are filled—to minimise gas emissions and leachate production. This is separate from the daily requirement to cover cells with 300 millimetres of soil. EPA's workshops with landfill owners/operators have emphasised that progressive rehabilitation is integral to managing leachate and gas risks. In its 2012 workshops with landfill owners EPA advised that temporary capping should be 500 millimetres thick, although EPA has not updated the Landfill BPEM to reflect this.

Progressive rehabilitation was inadequate at all of the five active landfills in the audited councils because:

- none used an interim cap that was 500 millimetres thick—although not all councils had attended the workshops and EPA had not provided any formal advice on this requirement to all landfill owners
- they relied on the 300 millimetres daily cover to be sufficient—even though the environmental audits had identified issues with insufficient daily cover at all sites
- the rehabilitation plans that EPA requires for all licensed sites were not up to date, and only Wyndham's demonstrated the detailed planning needed to estimate the appropriate capping requirements.

This is a concern at Ballarat's and East Gippsland's Lakes Entrance sites in particular, given their higher leachate risks and inadequate rehabilitation plans.

These photographs show waste that has been properly covered at the end of the day with a thick cover of soil or similar material to limit litter, vermin and odour emissions, compared to waste that has been poorly covered.

Photographs courtesy of the Environment Protection Authority.



2.3.3 Compliance with regulatory requirements

Since 2010, the four audited councils had all increased their management and monitoring activities to be able to meet EPA's new licence requirements and better practice guidelines.

EPA requires councils, as landfill owners, to report compliance with licence conditions annually and to have monitoring programs and management records to demonstrate this compliance.

In the three years the reports have been in place, there are examples where the four councils have identified themselves as 'compliant' with licence conditions even though they could not demonstrate this. In some cases this was because they did not have sufficient or appropriate evidence, such as inspection results or photographs. In others, an EPA-appointed environmental auditor or an EPA inspection had identified that poor or inadequate practices had been implemented to comply with specific conditions. Where the councils rely on environmental auditors or consultants to assess compliance with licence conditions, these assessments do not always examine all the information available. There are also examples where councils have made definitive compliance statements where the auditor had not.

Most commonly, the councils' unsubstantiated statements of compliance were for licence conditions relating to amenity, type of waste accepted or the daily soil coverage of wastes. For example, the environmental auditors at both Ballarat and Hume identified that landfill management did not meet requirements for inspecting waste types deposited at the tip face and applying daily cover, yet these were not reported as noncompliance. Wyndham and East Gippsland introduced regular inspections and are recording them to be able to demonstrate whether they meet their licence conditions.

2.4 Managing risks from closed landfills

Older landfills—those sites or cells built to the less stringent standards that were accepted as good practice at the time—pose risks that need to be managed. Gas and leachate risks from these landfills can be more complex, time consuming and costly to address due to the siting, design and past management of these sites.

Effective management of the legacy risks posed by older landfills relies on good site knowledge to implement proportionate actions to address the potential severity and likelihood of environmental impacts. These older landfills are mostly closed landfills, but also include older cells at active sites, which are both licensed and unlicensed.

The problems that these older landfills present and the levels of risk that they pose will vary over time. Figure 2F shows examples of problems these older landfills can present. For this reason, EPA's Landfill BPEM and other guidance identify that the time frame for managing landfill rehabilitation and after-care can extend to 30 years or longer.

Figure 2F
Examples of problems posed by landfills built to past standards

Problem	Approximate period of impact after closure ^(a)
Landfill gas generation	10 years
Subsidence	Most likely in the first 10 years but can occur for 30+ years
Leachate production	30+ years
Soil contamination	30+ years
Landfill capping deterioration	30+ years

(a) For a typical landfill receiving putrescible waste.

Source: Victorian Auditor-General's Office.

The audited councils managed the risks posed by older cells in active licensed landfills better than they did the risks from closed sites. This is because councils have accumulated extensive knowledge of the risks, which are managed through the risk assessment and audit processes used for licensed landfills. This section focuses on the management of closed landfills.

The councils have not met their responsibilities for managing legacy risks at their closed landfills. Since EPA introduced the first landfill policy in 1991, landfill owners have been required to manage rehabilitation and after-care issues—including gas and leachate management. The four audited councils have not done this because they have not comprehensively or systematically assessed and then managed these risks. Nor did they fully understand their responsibilities, which EPA has not clearly articulated in its policy and guidelines.

2.4.1 Site identification and assessment

Since it published its first landfill state environment protection policy in 1991, EPA has identified that landfill owners are responsible for all phases of landfill management, from design through to after-care. This applies equally to both active and closed sites. EPA has not, however, assigned responsibility for identifying and recording closed landfills that are not already known.

Despite this, the four councils each had a complete list of council and privately-owned closed landfills—although Hume only completed its list in May 2014, identifying six more sites. The four councils all either had or were in the process of recording their locations on their municipal maps.

Once the sites are identified, the councils need to assess the legacy risks that the closed sites they own may pose, but this has only occurred for some sites. EPA has not provided clear guidance about the type of assessment needed.

Of the four audited councils, three had assessed and prioritised the risks across all their closed landfills but the level of rigour and information in the councils' assessments varied. Ballarat's better, more detailed assessment identified potential hazards, the pathways through which they might take effect and the potential impacts on the environment. The others were higher level and considered only a narrow range of risk factors. Figure 2G outlines the risk assessments undertaken by the audited councils. A lack of detailed risk assessment reduces the ability of councils to understand the risks and appropriately prioritise the management of these sites.

Figure 2G
Council risk assessments across all their closed landfills

Council	High level assessment	Detailed assessment and prioritisation
Ballarat	Yes —in 2009, limited criteria—e.g. waste received, local receptors and rehabilitation method—but did not assess likelihood and consequence <ul style="list-style-type: none"> 10 landfills, closed between the 1930s and 1996 number of high-risk sites not clear^(a) 	Yes —in 2011, considered additional factors such as underlying geology, groundwater depth, likely gas generation and rated according to likelihood and consequence. <ul style="list-style-type: none"> seven high-risk sites
East Gippsland	Yes —in 2011, range of different criteria—e.g. waste received, underlying geology, local receptors—assessed according to high, medium or low hazard potential but did not assess likelihood and consequence <ul style="list-style-type: none"> 46 landfills, closed between the 1940s and 2014 five high-risk sites 	No —in 2011 the council also commissioned an assessment of the five high-risk sites but it did not receive the quality of assessment it sought and is discussing management options for these sites with EPA

Figure 2G
Council risk assessments across all their closed landfills – *continued*

Council	High level assessment	Detailed assessment and prioritisation
Hume	Yes —in 2008, but did not include all sites, used a limited range of criteria and did not assess likelihood and consequence <ul style="list-style-type: none"> 12 landfills, closed between 1970 and 2008 no high-risk sites 	No
Wyndham^(b)	No —the closed sites were mapped in 1984 but not assessed, as most had been closed for over 30 years <ul style="list-style-type: none"> six landfills, closed between 1952 and 1976 	No

(a) Ballarat could not provide a copy of the risk rankings from the original high-level assessment.

(b) Wyndham commenced a process during the audit to assess potential risks from its sites.

Source: Victorian Auditor-General's Office.

We sent a questionnaire to the other 75 councils that were not part of the audit, and 62 councils responded. The questionnaire responses indicated that many other councils are also not conducting robust assessments of legacy risks at closed sites. Of the 22 councils that provided risk assessments of their closed landfills, only eight had conducted detailed, robust assessments of potential legacy risks.

Councils have predominantly assessed their landfill risks in isolation from other councils. The former Gippsland and North East Victorian regional waste management groups conducted regional risk assessments of closed landfills, but the other 11 former regional groups did not. Efficiencies in cost and time could be gained by assessing landfill risks at a regional scale. Councils could work to do this with the new regional waste and resource recovery groups, which were established on 1 August 2014 and replaced the regional waste management groups. This information would also support EPA in building a statewide understanding of landfill risks.

2.4.2 Gas and leachate management

The four audited councils have not adequately assessed or managed the legacy gas and leachate risks at their closed landfills.

Since it released its first landfill policy in 1991 and then through a series of guidance materials, EPA has required councils to manage, rehabilitate and monitor closed landfills as needed to protect residents and the environment. This role has not always been clearly stated for landfills that were already closed, and has not always been clearly understood by councils for all closed landfills.

The 2010 Landfill BPEM was the first policy or guidance document that explicitly identified that councils were responsible for managing landfills that were already closed—whether or not the sites had been regulated by an EPA licence or remedial notice. In 2012, EPA released a specific guideline for landfill owners managing the rehabilitation and after-care of closed landfills that it identifies as being higher risk. The landfills that EPA considers higher risk are primarily those that it licensed when they were active.

This closed landfill site has been rehabilitated as a recreation reserve and is surrounded by residential development. Gas and leachate monitoring bores are in place but not visible in this photograph.

Photograph by the Victorian Auditor-General's Office.



The guideline recommends that landfill owners assess gas and leachate risks in detail and that monitoring and rehabilitation activities include gas and/or leachate management, where warranted.

Of the three audited councils that had assessed risks at closed sites, Ballarat identified high or medium gas or leachate risks at five sites, and Hume at one. East Gippsland had one site with reliable evidence of medium risks. Despite having known of these sites for many years and having known the risks for several years, the councils did not adequately manage the risks:

- **Ballarat**—identified its high-risk sites in 2011, but is only managing the risks at two of the five sites. It did not further investigate the risks at two of its unmanaged sites in 2011 and 2012 as planned.
- **Hume**—did not manage either gas or leachate risks promptly from its site which closed in 2008. In relation to this site:
 - while Hume had been harvesting gas since 1994, it identified high gas risks in 2011 that required monitoring. However, the council did not start monitoring until mid-2013.
 - in 2010 the council identified the current leachate management system as inadequate, but it then took four years to assess and trial management options.

- **East Gippsland**—although the site closed in 2003, the council did not introduce actions to monitor and manage gas or leachate until 2013.
- **Wyndham**—has not managed any of its closed landfills but is now assessing the potential risks they pose. As these have been closed for around 40 years or more, they are likely to pose no or minor gas and leachate risks, but the risks from subsidence and contaminated soil may be higher.

2.5 Future management of risks

There are aspects of the current management of landfill risks that are either lacking or not effective, and need to be improved. There are also emerging issues that EPA and councils need to respond to.

For councils, meeting the new EPA guidelines for closed and unlicensed landfills will require them to comprehensively identify sites and better assess, prioritise and manage legacy risks. To do this effectively will require a high level of in-house landfill knowledge and experience that not all councils have. Some councils have considered sharing the costs of employing a landfill expert with other councils, which could be a cost-effective solution. EPA's proposed online training for landfill operators should also help.

The four audited councils are meeting the costs of bringing active licensed landfills into compliance with the Landfill BPEM guidelines. A third of the 66 councils that responded to the audit questionnaire, or were part of the audit, were concerned about or struggling with the costs of managing closed and active unlicensed landfills to EPA's new guidelines. Information from these councils identified that management and rehabilitation costs vary but can be significant. For example:

- costs from \$4 000 to rehabilitate a small unlicensed site to \$2 million to rehabilitate six closed sites
- costs from \$20 000 to monitor six sites to \$300 000 to manage two closed sites.

Good rehabilitation relies heavily on effective capping. The Landfill BPEM guidelines rely heavily on specific types of clay to achieve this, but clay is in increasingly short supply in Victoria, and is expensive to transport over long distances. EPA should assess the extent of this issue and may need to review its guidelines based on this assessment.

It can be harder for smaller, rural landfills to recover landfill costs through gate fees and rates, because of the slow filling rate and the smaller population of ratepayers.

EPA's 2005 financial and environmental modelling of unlicensed landfills shows that many of these small, rural landfills are largely unviable. It also identified that as management standards would increase over time, the risks may be more appropriately and economically managed by recommending the closure of all unmanned sites at a minimum.

EPA did not develop a strategic program for managing unlicensed landfills, as planned in its 2004 landfill policy, but Sustainability Victoria's *Draft Statewide Waste and Resource Recovery Infrastructure Plan 2013–2043* has this as a priority action. It identifies that the government will support councils to develop options to replace unlicensed landfills with more viable waste management solutions.

A small active, unlicensed landfill before and after rehabilitation has commenced.

Photographs courtesy of East Gippsland Shire Council.



Only four councils responding to the questionnaire had started setting money aside in a rehabilitation reserve fund. These councils identified it will likely be several years before this covers rehabilitation costs required now. This underscores the importance of councils using comprehensive and robust risk assessments to target limited available funds at managing the greatest risks. All councils will also need long-term planning to meet both the current need to raise rehabilitation standards at closed sites and the anticipated longer-term need to rehabilitate active sites.

In 2012, the government made \$3.5 million available to help rural landfill operators transition to meeting its best practice guidelines, but based on EPA's assessment and the responses to the audit questionnaire, this is not sufficient to appropriately manage the risks.

All waste deposited at landfills incur the landfill levy, which is administered by the Victorian Premier and the Minister for Environment and Climate Change. The majority of the levy's revenue is paid into the Sustainability Fund, which has previously been under the management of Sustainability Victoria, but in 2014–15 will transfer to the Department of Environment and Primary Industries. While EPA does not manage the fund, it should work with the Department of Environment and Primary Industries and its waste portfolio partners to develop options for the Minister for Environment and Climate Change to consider for using the landfill levy to help fund the timely rehabilitation of high-risk landfills.

Recommendations

That councils:

1. identify, prioritise and address all of their landfill responsibilities and obligations under the *Environment Protection Act 1970*, the *2004 Waste Management Policy (Siting, Design and Management of Landfills)* and associated guidelines, including:
 - operating and progressively rehabilitating active sites
 - assessing and managing risks at closed sites
 - planning to meet anticipated rehabilitation and after-care costs
2. build their in-house landfill knowledge and skills so that they can work with Environment Protection Authority-appointed environmental auditors and landfill experts to effectively prioritise and address risks
3. consolidate the recommendations from environmental audits and other external and internal reviews across all landfills, and develop and implement risk-based priorities and time lines for addressing them
4. improve their internal controls over landfill management through their internal risk and audit systems and landfill inspection processes
5. work with the Environment Protection Authority and the regional waste and resource recovery groups to identify closed landfills, assess their risks and prioritise actions at a regional scale to address these.

That the Environment Protection Authority:

6. works with the Department of Environment and Primary Industries and waste portfolio partners to explore options for the Minister for Environment and Climate Change to use the landfill levy for the timely rehabilitation of high-risk landfills.
-

3 Regulation and oversight of landfills

At a glance

Background

The Environment Protection Authority's (EPA) objective in regulating and overseeing landfill performance is to achieve compliance with the regulatory requirements, protect the environment, human health and amenity, and drive environmental improvement.

Conclusion

EPA's regulatory framework and approach for overseeing the performance of landfill operators has improved as it has become more risk based, active, targeted and transparent. However, further improvement is still required as there are shortfalls in its current approach and implementation. Therefore, EPA is yet to comprehensively oversee compliance with all its regulatory requirements.

Findings

- EPA's implementation of key landfill reforms has been fragmented and slow, partially due to the absence of a comprehensive overarching strategy and implementation plan.
- Its risk-based approach is not sufficiently embedded in its compliance and audit reporting requirements.
- Guidance to meet landfill requirements needs improvement and further clarification.
- Roles and responsibilities around closed landfills are not well understood by councils.

Recommendations

That EPA:

- develops a comprehensive landfill strategy with a detailed implementation plan
- develops risk-based compliance and audit reporting requirements for landfills
- improves guidance materials and planning controls in consultation with stakeholders.

3.1 Introduction

The 2009 and 2010 external reviews of the Environment Protection Authority (EPA) by the Victorian Ombudsman and the Victorian Auditor-General, and EPA's own subsequent 2010 internal review, found systemic issues associated with EPA's regulatory approach. As a consequence, EPA identified its regulation and oversight of landfills required significant improvement. To address this, it commenced an extensive reform of its regulatory approach, and within this identified and implemented specific reforms to improve its regulation and oversight of landfills.

3.2 Conclusion

As a result of its regulatory reform, EPA's oversight of landfill performance has significantly improved. However, there are still shortfalls in its current implementation and transparency of its risk-based approach to its oversight of landfill performance. Some of these are understandable, given the time needed for these to be embedded into both EPA's and councils' practices, and the complexities and associated costs of addressing landfill legacy risks. However, other shortfalls require further work to ensure EPA's risk-based approach is fully effective in managing landfill risks and impacts.

EPA has developed a sound risk-based framework to target its landfill activities and is in the process of collecting reliable information to inform its approach. It has a systematic and comprehensive process in place to collect information around licensed landfills, but the same comprehensive process is not evident for closed and unlicensed sites.

EPA has not effectively translated its risk-based approach to its licensing, auditing and compliance reporting requirements. As a result, all environmental audit recommendations and licence noncompliance are reported and are given equal importance irrespective of risk and impact. This has led to onerous reporting and review requirements for both EPA and landfill owners, for at times little benefit. Also, some landfill licence conditions are standard and not adequately targeted to site specific risks making compliance with, and enforcement of, some conditions difficult.

The new reforms have contributed to a lack of certainty around the approval process for new landfill cells for landfill owners, which in turn has led to unnecessary cost and time delays. EPA guidance material used to assist environmental consultants, EPA-appointed environmental auditors and landfill owners in complying with the regulatory requirements is copious, and not well integrated or at times understood by all stakeholders.

Historically, roles and responsibilities under the regulatory framework for closed and unlicensed landfills were not clearly understood by councils or enforced by EPA. While new guidelines have improved this situation, there is still confusion around responsibility for the identification of closed landfills and the assessment these sites require.

EPA's approach to compliance monitoring and enforcement has significantly improved over the past four years. However, improvement is still required in consistently applying actions to address and deter landfill noncompliance. Additionally, its processes for monitoring and reporting compliance with policy objectives for unlicensed and closed landfills are not as effective as those for licensed landfills due to the lack of comprehensive information available and the lack of clarity around roles and responsibilities to collect, collate and report this information.

3.3 Environment Protection Authority's approach to overseeing landfill performance

As a result of its comprehensive reform process, EPA has implemented a better practice risk-based and responsive approach to improve its regulation of environmental pollution. It has also identified and implemented a range of specific initiatives and reforms required to improve its oversight of landfills.

These reforms have led to the more effective identification and, therefore, management of high and very high risks associated with active landfills and closed cells at active landfill sites. Guidelines which should lead to better management of risks from closed and unlicensed landfills are also now in place.

However, while better identified due to EPA reforms, the lesser landfill risks that may lead to localised impacts on the environment and surrounding community amenity are still not overseen or managed in a consistent and timely manner. This is because:

- there has been a fragmented and slow approach to implementing key initiatives to address landfill legacy risks
- information used for EPA's assessment of risks posed by all landfill phases and types is not yet comprehensive
- EPA's risk-based approach is not effectively translated to its licence, auditing and compliance reporting requirements
- there is uncertainty surrounding EPA's reformed approval processes for landfills
- guidance to support compliance with the regulatory requirements is not well integrated and is ambiguous in places
- roles and responsibilities under the regulatory framework for closed landfills require clarification.

3.3.1 Slow implementation of key initiatives

The absence of a comprehensive overarching landfill strategy to drive the planning, integration and coordination of EPA's landfill initiatives since 2010 has contributed to the slow and fragmented implementation of a number of key initiatives to address landfill legacy risks—Figure 3A describes this. EPA's slow approach has also stemmed in part from the complex nature of landfill risk management.

Figure 3A
Actions to address landfill legacy risks

Area of action	Description
Financial assurances	A vital tool intended to protect the community from costs associated with remediation, site closure and post-closure liabilities where landfill owners cannot or do not meet these costs. Prior to this audit, EPA had failed to embed an efficient and effective financial assurances model to address this issue. EPA has now finalised the development of a revised financial assurances model and approach to drive the required reforms. However, a number of risk factors that saw EPA fail to embed an appropriate financial assurance model to manage potential landfill clean up liabilities still need to be actively managed.
Closed landfills	EPA did not implement a systematic approach to regulating closed landfills until 2012—four years after the Brookland Greens Estate landfill case. EPA is now systematically reviewing closed landfills. While regulation and management have improved, 50 per cent of the 88 previously regulated closed landfills remain regulated via out-dated tools.
Landfill information	EPA's three-year Spatial Inventory project, initiated in 2011 to map and incorporate information around the construction and location of active and known closed landfills, was a key step in identifying and ranking landfill risk and integrating this information into maps. This project has been significantly delayed and is now due for finalisation in 2015.
Landfill gas risk management	The assessment and management of landfill gas risks lost its impetus after the initial risk assessment of 256 sites in 2009. High-risk sites were identified and managed. Unlicensed and closed sites that were rated as medium risk, such as Hume's Bolinda Road landfill, have not been systematically reviewed and addressed in the same way as licensed landfill sites.
Leachate management	Was identified as a key risk in the 2009 Ombudsman's report, but EPA has not implemented a systematic approach to addressing this risk for all landfill types and phases. While it has identified leachate risks from licensed sites through risk assessments, it has just finalised an operational strategy to investigate the risks from a limited number of metropolitan unlicensed sites—13 out of the 36 active sites—but no rural landfill sites, and has only required the assessment of 50 per cent of closed landfill sites. This audit identified a number of leachate issues associated with closed and rural sites located close to the groundwater table and/or areas of environmental significance.

Source: Victorian Auditor-General's Office.

In 2013, EPA identified landfills as one of its six high-risk sectors that require a strategic focus. This has brought landfills back into focus, after the initial focus in 2009–10 lost momentum due to EPA's whole-of-organisation reform process. As a result, EPA has recently approved a strategic plan for landfills to improve the integration, coordination and implementation of its key landfill reforms and initiatives. However, not all key initiatives and activities are identified in the plan, and it is not yet underpinned by a comprehensive implementation plan.

Encroachment issues around landfills

The Brookland Greens Estate case highlighted the risks associated with encroachment of residential development into landfill 'buffer' areas as a result of landfill gas impacts. A buffer is the area recommended between the landfill boundary and the nearest development to protect the amenity, health and safety of people.

As a result of the Brookland Greens case, EPA clarified the suggested buffer distance of 500 metres for operating and closed landfill sites in the *Best Practice Environmental Management—Siting, Design, Operation and Rehabilitation of Landfills* (the Landfill BPEM). However, the processes associated with determining and implementing appropriate buffers around active and closed landfill sites are inconsistently interpreted and applied by council planning authorities. As a result, there is limited assurance that EPA's buffer guidelines are acting as a safeguard against human health and amenity risks posed by landfills.

A closed landfill, with development adjacent to the landfill boundary on two sides.

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Fugrot.

Map data copyright 2014
Google.



The four councils audited also varied in how they addressed planning applications adjacent to landfills, due to different interpretations of EPA's guidelines and planning tools. Examples of areas of differing interpretation included:

- whether they should identify all closed landfills and make this information available to planners
- if and what type of an environmental assessment is required to assess the impact of a landfill to a proposed development on or adjacent to a landfill
- when or if a planning application is referred to EPA for comment, as it is not a formal referral authority under the planning system for many planning decisions near landfills.

This has resulted in development encroaching into landfill buffer zones, leading to impacts on the amenity of surrounding communities. In other cases, it has resulted in sites being prematurely approved for development without adequate assessment and, where required, clean-up. Often these costs are also inappropriately assigned to the approved developers.

Clause 52.10 of the Victorian planning scheme details threshold distances for uses that have the potential to adversely impact on local amenity. However, while some resource recovery activities undertaken at council landfill sites are referenced under this clause, landfills are not. This omission and the absence of an efficient method to obtain EPA comment on planning scheme amendments or applications for residential developments near landfills pose significant issues in managing encroachment issues around landfills.

In November 2013, the government approved funding to the Metropolitan Waste and Resource Recovery Group to lead a four-year, \$1.5 million program to protect landfill sites and adjacent development through the development and use of appropriate buffers and planning tools. Its implementation is being supported by a cross-agency industry action group, including EPA. The project will also work with regional waste management groups and councils to identify sites of regional significance and develop appropriate tools for protecting buffers around these sites. The program will also work with regional waste management groups and councils to identify sites of regional significance and develop appropriate tools for protecting buffers around these sites.

This project should explore ways to address these issues by developing appropriate planning processes/tools to manage encroachment issues and ensure EPA's involvement in any planning process where development adjacent to active or closed landfills may be involved.

While this project should lead to improved outcomes for known landfills and future adjacent development, it will not address the planning issues associated with the development of land on or adjacent to closed landfills that are not currently identified. To achieve this, all closed landfills would need to be identified by councils and included on a public register managed by EPA to inform planning and development decisions.

3.3.2 Shortfalls in the implementation of the Environment Protection Authority's risk-based approach

An effective risk regulation model is based on a sound understanding of risk to prioritise regulatory and compliance activities and effort. It also requires that risk be considered through all parts of the regulatory model, tools and guidance material.

Sound understanding of risk

EPA's risk-based approach to prioritise its compliance efforts is not yet based on comprehensive knowledge of risks posed by all landfill types and phases. EPA has prioritised—and is in the process of gathering of information around—licensed landfill sites based on risk. However, there is still no systematic and comprehensive process in place to address information gaps around all 36 unlicensed sites and closed sites that have not been regulated by EPA. Currently:

- Twenty out of 36 unlicensed sites have been assessed. There is a further process in place to assess 19 sites between 2014 and 2015, but it is not clear why these sites have been chosen, whether they include the previous 20 sites and what form the assessment will take.
- It has a list of 245 closed metropolitan sites, but this does not include all of the 12 closed sites in the Hume municipality, nor any of the eight in Wyndham.
- It does not have a comprehensive list of non-metropolitan closed sites, which are likely to number over 150, given that 63 councils responding to the audit questionnaire had a total of 387 closed landfills.

The lack of information around old closed landfill sites and those that have not been regulated by EPA is a result of inadequate clarity and understanding in the past around their identification and assessment. This lack of information means there is a significant gap in the effective oversight and management of risks posed by landfills, as outlined in the examples in Figure 3B. EPA needs to make clear whose role it is to collect, collate and register this information.

Figure 3B
Closed landfill risks—two case studies

Situation	Detailed description
Dwellings built on a former landfill site sink into the ground—Yarraville.	In 1973, around 40 housing units built on a former landfill began to sink into the ground and crack. The dwellings were abandoned and the residents compensated. Following environmental audits and other studies, the main landfill area was deemed suitable to be redeveloped for parkland while only small parts of the site were considered safe for residential redevelopment.
Land adjacent to a known landfill and earmarked for development turns out to be part of the landfill—Ballarat.	In 2012, initial work started on a proposed residential development adjacent to a landfill that had closed in 1981 and been developed into a park and sporting ground. Landfill material was found outside the known landfill boundary which formed part of the land to be developed. The developer took council to court—settled with council paying developer damages and buying the land.

Source: Victorian Auditor-General's Office.

Translation of the Environment Protection Authority's risk-based approach

While EPA has adopted a better practice risk-based model and approach to overseeing the performance of landfills, improvements are still required to improve the transparency of this approach and to translate and embed its risk-based intent into its licence compliance and auditing reporting requirements and its licence conditions.

Identification of high risks

EPA has identified that landfills require a key strategic focus due to their inherent high risks to the environment and local amenity, and it has also identified a number of priority landfill sites for a focused effort to improve their environmental performance. However, it has not identified high noncompliance risks across all landfills that require this same active and targeted approach in order to minimise risk to the local environment and amenity.

Whilst EPA has a robust process to collect information to monitor and report landfill noncompliance across all sites, this information is not being regularly analysed and reviewed to identify and monitor the high risks, and to prioritise these for a targeted effort. It also has not regularly reviewed this information and data to determine how effective its risk controls—i.e. licence conditions—are in managing risk and driving compliance with the regulatory requirements.

This has contributed to:

- all noncompliance being given equal status in terms of risk and therefore no prioritisation to address high risks over low risks
- onerous reporting requirements for landfill owners, who are required to report all landfill noncompliance and actions irrespective of the risk and impact to the environment, human health and amenity
- unrealistic expectations of communities surrounding landfills that all risks and noncompliances can be addressed equally and effectively at any point in time.

Identifying high noncompliance risks would allow EPA to target its resources to areas of highest risk with lower risk core compliance responsibilities being addressed through less resource intensive actions to promote compliance—including guidance, education and sporadic inspections. It will also provide enhanced direction for landfill owners in relation to where to focus effort and capital in addressing landfill risks—in an environment where the cost to remedy all risk and actual noncompliance far exceeds the capital available. It will also improve the consistency of, and enhance certainty for, EPA-appointed environmental auditors in prioritising audit recommendations.

Compliance reporting requirements

EPA's compliance reporting requirements in its landfill licence and annual licence statements are not risk based. All licence noncompliances must be reported both immediately and annually to EPA, irrespective of the severity of impact to the environment, amenity and/or human health. Figure 3C outlines licence noncompliance by the four audited councils.

Figure 3C
Case study—licence noncompliance and severity of impacts

The licence audits and annual performance statements showed the four audited councils were all noncompliant with at least one and up to five of their licence conditions, but the associated reporting of these provided limited to no indication of the severity of impact to the environment, human health or amenity.

Noncompliance was evident in relation to landfill gas concentrations at the boundaries of the site, leachate management, groundwater impacts, waste acceptance, litter and odour beyond the boundaries of the landfill site and the required daily cover of the wastes.

This noncompliance ranged in risk from low—litter beyond the premises boundary—to high—poor asbestos management.

Source: Victorian Auditor-General's Office.

Overall, current noncompliance reporting requirements have led to:

- all noncompliances being given equal importance, irrespective of likelihood and severity of impact
- ad hoc feedback by EPA on actions to address noncompliance in annual licence statements and on licence action plans addressing audit recommendations, in terms of their adequacy to address risks and noncompliance
- unwarranted time and business compliance costs—as onerous compliance reporting requirements impose unnecessary burdens on landfill owners.

Basing the requirement to report noncompliance on risk likelihood and severity of impact would reduce the current onerous landfill noncompliance reporting requirements, for which, in many cases, there is little environmental benefit.

Audit reporting requirements

Licence audit reporting requirements do not adequately reflect EPA's risk-based approach. This has contributed to the slow implementation of actions to address landfill risks and noncompliance by landfill owners. Currently as evidenced in our review of the audited councils' environmental audit reports:

- the majority of audit recommendations are poorly linked to risks
- audit recommendations are not consistently prioritised based on risk
- landfill owner licence action plans to address audit recommendations are not prioritised by risk.

This is partially a result of poor or unclear guidance around licence audit reporting requirements. There is no clear statement requiring audit recommendations or associated reporting by landfill owners, through licence action plans, to be prioritised according to risk. Risk prioritisation is only inferred in EPA's guidelines for the preparation of environmental audit reports by EPA-appointed environmental auditors, and it is not specified as a better practice measure in EPA's landfill licensing guidelines for landfill licence holders.

Landfill licence conditions

Effective licensing, compliance monitoring and reporting against licence conditions requires licence conditions that are easily understood and enforced, readily complied with and that effectively target the highest noncompliance risks. EPA currently has the same landfill licence conditions for all landfills irrespective of site-specific high noncompliance risks. Current licence conditions for asbestos and groundwater are not easily understood by landfill owners or enforced by EPA officers.

The current licence condition requiring no contamination of groundwater is appropriate to manage this risk from landfills sited and constructed after 2010, but not for those sited and constructed prior to 2010 where groundwater contamination has already occurred as a result of legacy issues. For some of these landfills where groundwater contamination has occurred, the risk to or impact on current use of this groundwater is minimal, because it is not polluted—i.e. there is no negative impact on the beneficial use of this resource. As such, EPA does not require contamination to be cleaned up, only monitored to assess any increase in risk and impact in relation to the audited councils—as described in Figure 3D.

EPA's approach is that where licence conditions do not cover site-specific risks, a notice can be issued to 'supplement' the licence conditions to manage these risks. However, this is not done consistently, particularly in relation to groundwater risks.

Figure 3D

Case study—compliance with the groundwater licence condition

All five licensed landfills owned by the four councils audited were built before 2010 but also have new cells built after 2010. Three out of the five did not comply with the licence requirement to not contaminate groundwater, and risk assessments rated the potential environmental impact of this noncompliance as medium for one site and high for two. All sites have implemented actions to monitor and work towards reducing their impact on groundwater, but these actions are unlikely to ever result in compliance with this condition.

Source: Victorian Auditor-General's Office.

EPA's groundwater policy acknowledges this approach as it allows for a higher tolerance around historic groundwater contamination where appropriate risk controls are in place, through the definition of pollution rather than contamination. Reflection of this approach in a licence condition for landfills where the appropriate risk controls are in place would allow landfill owners to comply with a risk-based groundwater licence condition, by ensuring there is no pollution or increased risk to groundwater beneficial uses. It would also allow EPA-appointed environmental auditors and landfill owners to more transparently determine and report whether the risk and/or impact of the landfill to groundwater is escalating. This would also limit ongoing noncompliance reporting against a licence condition that is not achievable and not driving improved environmental performance.

The UK Environment Agency model for regulating landfills takes a more targeted approach by adopting site-specific risk-based conditions supported by a comprehensive environmental impact assessment. EPA already requires a comprehensive risk assessment as part of its licence requirements, but does not amend standard licence conditions based on this assessment.

Some landfills are licensed to accept asbestos waste, but licence conditions do not address the specific management of this waste, which if managed inappropriately can pose a significant risk to the health of on-site workers. This audit identified significant and ongoing noncompliance of asbestos management with EPA's better practice standards and its asbestos guideline.

3.3.3 Clarity and certainty around regulatory requirements

Clarity of guidance material

EPA's 2011 *Compliance and Enforcement Policy* recognises the importance of businesses and individuals understanding the law and their obligations. To achieve this, EPA should have clear guidance material to clarify and interpret the standards and duties required of landfill owners.

Landfill requirements are founded around multiple policies and systems, the language and terminology used in the framework is complex and/or technical, and the guidance material used to inform stakeholders of the processes to comply with these requirements is at times ambiguous. Guidance around the landfill approval processes, design, construction, and management and licensing, which includes auditing, monitoring and reporting requirements is copious, but not well integrated—for example, the landfill policy is supported by over 15 guidelines, with at least eight specific to landfills and waste management. EPA's hierarchy of laws, policies, objectives, outcomes, measures and guidelines is not clear or well-articulated for landfills—for example, the Landfill BPEM is a guideline but as it is referenced by the landfill policy, much of its content becomes requirements rather than guidelines.

The current framework makes it difficult for landfill owners to fully understand much less carry out their regulatory responsibilities. This at times has contributed to poor and/or ongoing noncompliance with the regulatory requirements—for example with asbestos management, as outlined in Figure 3E.

Figure 3E
Lack of clarity on asbestos management requirements

There are no specific licence conditions for the management of asbestos. This results in a lack of clarity and understanding for landfill owners on how to best manage asbestos.

The 2010 Landfill BPEM states that, where sites are licensed to accept asbestos, the landfill operator must comply with the licence acceptance criterion. However, the licence acceptance criterion does not specifically address asbestos management—it only addresses the types of wastes allowed at the landfill.

There is no specific licence condition to address the management of asbestos at landfills. However, the licence requires compliance with the Landfill BPEM. The Landfill BPEM states that site operators must ensure that asbestos disposal is carried out in accordance with EPA's guideline for asbestos management.

Source: Victorian Auditor-General's Office.

The current situation would be improved by EPA preparing a guide explaining the structure and hierarchy of the framework—including requirements, objectives and outcomes—and what processes and duties need to be undertaken to comply with these and by whom.

Certainty of approval processes

Good attributes of a better practice regulatory framework include both flexibility and certainty, supported by and with access to authoritative advice and decision-making criteria that provide certainty around approval processes.

EPA attempts to provide certainty for landfill owners by identifying 'deemed to comply' measures that if implemented will meet the outcomes in its Landfill BPEM. Its framework is also flexible as it allows landfill owners the scope to adopt least-cost innovative approaches to meet the set performance outcomes. However, the onus of proof is then shifted to the landfill owner who must prove these measures will comply with the required outcomes.

The four councils audited as well as 13 councils responding to the audit questionnaire identified issues around the certainty of EPA's approval processes for the design and construction of landfills due to:

- a lack of clarity around the standards, criteria, judgements and guidance EPA uses to assess the adequacy of alternative measures to meet the outcomes of the Landfill BPEM
- the inconsistent quality of the work undertaken by environmental consultants, which leads to EPA-appointed environmental auditors requiring additional work to satisfy their obligations
- the approval process applied by EPA causing project delays.

This has led to uncertainty for landfill owners and increases in the cost and time associated with landfill approval processes. This has made planning and budgeting difficult for councils, especially within council budgeting constraints, as discussed in the case study in Figure 3F.

Figure 3F
Additional costs and time delays

The design of a new landfill cell for council was prepared by a consultant and submitted to an EPA-appointed auditor in early 2011. After negotiations between council, consultants, the EPA-appointed auditor and EPA, the application was approved in March 2012. In addition to the time delays, processes to obtain overall approval led to considerable cost increases:

- the estimated costs for design and construction reports were \$25 000, but have cost \$59 000 to date
- the quality assurance testing cost proposal was \$95 000 and actual costs to date have been \$130 000
- audit costs were estimated at \$23 000 but the actual cost was \$37 000
- consultant audit costs for the proposed leachate pond were set at \$24 000 but actual costs were \$40 000.

A new landfill cell design was developed by the consultant and audited by an EPA-appointed auditor. The loop of enquiry and further testing and design requirements between the two parties and EPA was ongoing for 12 months, with an impact of \$30 000 for additional testing and approximately \$30 000 for additional design costs above the original fees quoted by design consultant. Additional work and delays were attributed to auditor and EPA requirements for a range of issues, including:

- testing of the liner for compatibility with leachate—six-week test—in Queensland
- testing of the liner in the USA
- details of existing cells and leachate controls that EPA had previously approved
- new treatments for capping on existing cells that EPA had previously approved.

Source: Victorian Auditor-General's Office.

Councils indicated they needed clearer technical guidance on a range of issues within the Landfill BPEM to assist consultants and help them understand and comply with the required outcomes and objectives. Issues that lacked clarity included:

- ongoing monitoring requirements for closed landfill cells
- monitoring of fugitive gas emissions
- construction standards for liners, leachate and gas bores
- landfill gas action levels.

EPA is in the process of amending the Landfill BPEM. As part of this process, it should work with landfill owners, EPA-appointed environmental auditors and consultants to identify and address clarity and uncertainty issues within the Landfill BPEM and associated approval processes.

EPA has not addressed the Ombudsman's 2010 recommendation to convene an independent panel to improve the efficiency and certainty associated with approval processes for complex landfill issues due to the limited number of independent landfill experts in Australia. However, a peer review panel to advise EPA in relation to complex approval processes would provide surety around the approval process and not result in significant conflict of interest issues.

3.3.4 Roles and responsibilities

The management of landfills entails multiple entities working toward the same performance outcomes identified in the landfill policy. For this to be effective, roles and responsibilities must be clearly understood and communicated.

Roles and responsibilities for regulating and managing landfill risks under the landfill policy, the Landfill BPEM and EPA's closed and unlicensed landfill guidelines are not accurately understood by councils that are landfill owners. This has historically resulted in:

- poor leadership and responsibility for ensuring landfills that are not subject to a licence or notice—unregulated landfills—comply with the landfill policy
- councils not understanding their responsibilities for unlicensed and closed landfills
- little accountability and incentive to address the problems around unregulated and closed landfills
- lack of resource commitment by councils to address the problems around unregulated landfills.

EPA has attempted to clarify roles and responsibilities around unlicensed and closed landfills by releasing new guidance material in 2012 and 2014 respectively, but ambiguities still exist around roles and responsibilities:

- **The identification and assessment of closed landfills**—the guidance does not clearly assign responsibility for identifying, assessing and mapping all types of closed landfills. Therefore, neither EPA nor councils has adequately done this
- **Regulation of unlicensed landfills**—EPA explained that it was the responsibility of the regional waste management groups to oversee the performance of these sites in consultation with councils. There was no evidence that this was happening and this role was also unknown to the audited councils.

3.4 Compliance

EPA's approach to compliance and enforcement has significantly improved over the past four years. For it to be fully consistent, enforcement around low to moderate landfill risks and associated noncompliance must be followed up in a more consistent manner.

3.4.1 Compliance activities

EPA is now far more active in undertaking compliance activities targeted to the areas of highest risk to the environment and human health than it was prior to 2010. It has done this by implementing new and reformed better practice systems, processes and tools, including:

- an improved inspection program, which is more comprehensive, evidence-based and targeted
- transparent annual performance statements for licensed landfills
- a more transparent and stronger compliance and enforcement policy and supporting annual compliance plans
- more comprehensive policies, guidance and standard operating procedures for compliance and enforcement activities
- specific compliance outcomes, indicators and targets in internal and external reports.

EPA's approach to ensure the principles and outcomes of its *Compliance and Enforcement Policy* are met is outlined in its *5 Year Plan 2011–2016*. The delivery of these compliance outcomes are further articulated and detailed through its annual compliance plans, which set compliance activity targets supported by a range of measurable indicators.

EPA's performance in meeting its compliance plan targets has continuously improved since 2011. In 2012–13, the majority of its targets for landfills were met or exceeded.

EPA's compliance performance reporting

A comprehensive performance reporting framework is integral to good governance. It is a mechanism for obtaining assurance that the regulator has done what it said it would and demonstrates its effectiveness in achieving compliance with legislation and corporate outcomes.

Since 2010, EPA has put in place, or is well on the way to having in place, the essential elements of a better practice reporting framework—which are detailed in Figure 3G.

Figure 3G
EPA's new better practice reporting framework

Element	Better reporting practices
Compliance performance information	Assembling complete and accurate quantitative and qualitative information through a new licensee risk assessment model, annual performance statements for licensed sites and assessments of compliance with all remedial notices.
Compliance performance measures	Introduced outcomes, measures and indicators providing relevant, appropriate and fair representation of performance—such as level of compliance with notice conditions, level of compliance with licence conditions and outcomes.
Information management	Developed an integrated database to manage compliance and enforcement information.
Compliance performance assessment and reporting	Performance information is analysed against performance measures to assess the program/service against appropriateness, effectiveness and efficiency. Findings are then effectively reported internally and externally through a comprehensive reporting approach.

Source: Victorian Auditor-General's Office.

EPA has good systems for measuring, monitoring and internally reporting on its performance in delivering its compliance functions across active licensed landfill sites and compliance with remedial notice requirements for both active and regulated closed landfills. Its systems for measuring, monitoring and internal reporting of unlicensed landfills and closed landfills compliance with the landfill policy are not as effective or comprehensive. This is because EPA has not prioritised these sites as a high risk and the level of assessment, monitoring and reporting with the landfill policy reflects this.

Consequently, councils also put far less focus and effort into these sites. Councils are not required to report to EPA around the compliance of these sites with policy. However, EPA's 2011 *Compliance and Enforcement Review* questioned the adequacy of its approach around unlicensed sites.

To improve councils' focus, EPA released its *Closed Landfill Guidelines* in 2012 and its guidelines for *Landfills exempt from licensing* in 2014. While this has improved the focus on these sites, the lack of clarity around roles and responsibilities and aspects of these guidelines still require addressing to improve councils ability to assess and ensure compliance of these sites with the landfill policy. Additionally, councils need to apply the same level of responsibility for the compliance of these sites with policy as they do for EPA-regulated sites.

EPA has a project to assess the performance of closed regulated landfills against the landfill policy, but this project does not address all EPA-identified closed landfills or unregulated closed landfills owned by councils. Therefore, the extent of compliance of all closed landfills with policy is not known by EPA or councils.

While EPA has prioritised both unlicensed and closed landfills as lower-risk sites, past evidence indicates that these sites can pose significant risk to the environment, health and stability of land when development occurs in their vicinity. Therefore, it is important that the compliance of these sites with the landfill policy objectives is assessed.

Small unmanned, unlicensed landfill consisting of a single trench.

Photograph courtesy of East Gippsland Shire Council.



Annual licence statements

This audit's analysis of annual licence statements in 2012–13 against EPA's inspection reports showed noncompliance around asbestos management and that daily cover requirements were not accurately reported. This indicates two issues:

- inaccurate compliance reporting on annual performance statements, although this does not appear intentional by licence holders
- poor analysis of all available information by EPA to check the accuracy of annual performance statement reporting.

EPA is unable to apply the hierarchy of sanctions specified in its *Compliance and Enforcement Policy* to deter unintentional false reporting because currently under the *Environment Protection Act 1970* false and misleading reporting on annual performance statements is an indictable offence, punishable only by prosecution.

Enforcement

EPA has implemented a range of processes to improve the consistency of its enforcement activities. This includes its *Compliance and Enforcement Policy*, standard operating procedures, its revised environment protection officer training program and its enforcement review panel to improve governance around the application of sanctions. As a result, EPA's enforcement actions are more active, targeted and consistent. However, improvements are still required to further increase the consistency around the management of low to moderate risks and associated noncompliance.

EPA's enforcement actions are focused around the two key elements of remedies to fix the problem and sanctions—that is, applying a penalty or punishment for breaking the law.

While there had been no sanctions applied to the landfills owned by the four audited councils in the past two years, EPA had applied a number of remedies to address low to moderate risks and associated licence noncompliance—such as not keeping appropriate records or managing asbestos and daily cover requirements. Improvement is required around the consistent application of these remedies. Among the four councils audited there were examples of:

- inconsistent implementation of the *Compliance and Enforcement Policy* principle that if an identified risk cannot be fixed in front of an EPA officer, then a notice must be applied
- different decisions about what remedy should be applied for identical licence noncompliance around minor to moderate risks, with no documented rationale or explanation in the inspection notice to justify different approaches—for example, some sites were issued with improvement letters, some with verbal advice and some with notices for uncovered asbestos and inadequate daily cover.

While it is appropriate to allow officer discretion in applying remedies, it is important that documented explanations are provided to justify why one remedy is chosen over the other. There is also currently no review of officer decisions around the consistency of remedies to address risks and noncompliance.

Recommendations

That the Environment Protection Authority:

7. further develops its current landfill plan into a comprehensive strategy that integrates all its landfill plans and activities, and is underpinned by a detailed resourcing and implementation plan
 8. reviews its landfill information to determine and prioritise the key noncompliance and emerging risks for targeted action, and identifies these in its annual compliance plan, supported by measures and outcomes to assess the effectiveness of its actions
 9. reviews the efficacy of current landfill licence conditions and develops additional risk based conditions where required for inclusion on a site-by-site basis
 10. implements risk-based compliance and environmental auditing reporting requirements, which include risk-based prioritisation requirements and reporting based on likelihood and severity of impact
 11. uses a peer review panel of landfill experts to advise it on complex landfill approvals, with clear terms of reference
 12. improves landfill guidance by:
 - preparing an overarching landfill guide explaining the structure and hierarchy of the regulatory requirements for all landfill-related processes and how all the relevant landfill guidelines and processes integrate
 - clarifying that it is councils' role to identify all closed landfill sites within their municipalities and register this information with the Environment Protection Authority and describing risk assessment requirements for unregulated closed landfills
 - improving best practice environmental management guidance in consultation with all stakeholders
 13. works with the Metropolitan Waste and Resource Recovery Group to develop an appropriate planning process/tool to ensure the Environment Protection Authority's involvement in any rezoning or application process across Victoria where development adjacent to active or closed landfills may be involved
 14. develops a public register of landfills
 15. reviews its standard operating procedures for issuing remedies to require documented reasons as to what remedy is applied and why.
-

Appendix A.

Audit Act 1994 section 16— submissions and comments

Introduction

In addition to progressive engagement during the course of the audit, in accordance with section 16(3) of the *Audit Act 1994* a copy of this report, or part of this report, was provided to the Environment Protection Authority, Ballarat City Council, East Gippsland Shire Council, Hume City Council and Wyndham City Council with a request for submissions or comments.

The submissions and comments provided are not subject to audit nor the evidentiary standards required to reach an audit conclusion. Responsibility for the accuracy, fairness and balance of those comments rests solely with the agency head.

Responses were received as follows:

Environment Protection Authority	46
Ballarat City Council	48
East Gippsland Shire Council	50
Hume City Council	52
Wyndham City Council	54

RESPONSE provided by the Chairman, Environment Protection Authority

Our Ref: MA006379

Mr John Doyle
Victorian Auditor General
Level 24, 35 Collins St
MELBOURNE VIC 3000



Dear Mr Doyle

Proposed Performance Audit Report Managing Landfills

Thank you for the opportunity to comment on the proposed performance audit report for managing landfills. We appreciate the insights that external reviews provide and we use them as opportunities to provide greater transparency to our operations and improve our systems and processes.

As you note in your report, poorly managed landfill sites may pose an unacceptable risk to public health and the environment through land, groundwater and surface water contamination, and landfill gas emissions. As many risks are below ground, they may be difficult to identify and take time to materialise. EPA is committed to ensuring landfill operators manage their risks – past, present and future - appropriately.

The report makes ten recommendations for EPA to improve the way we manage Victorian landfills. We accept the recommendations and are committed to implementing all of them. Our specific responses to each of the recommendations are attached.

We also appreciate that the report acknowledges our continuing efforts to transform the way we work, particularly our focus on risk, and we remain committed to our vision of ensuring a healthy environment that supports a liveable and prosperous Victoria.

Thank you again for the opportunity to comment.

Yours sincerely

A handwritten signature in purple ink, appearing to read 'Cheryl Batagol'.

CHERYL BATAGOL
CHAIRMAN

22 /08 /2014

Encl.



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RESPONSE provided by the Chairman, Environment Protection Authority – continued

Number	Recommendation - that the Environment Protection Authority:	EPA's Proposed Action	Agreed Completion Date
6	works with the Department of Environment and Primary Industries and waste portfolio partners to develop options for the Minister for Environment and Climate Change to use the landfill levy for the timely rehabilitation of high-risk landfills	EPA will work with duty-holders and environment portfolio partners to progress the timely rehabilitation of high risk landfills. This will include providing evidence of potential costs and risks to the Minister for Environment and Climate Change, to inform Victorian Government decisions about the allocation of the landfill levy.	30-Jun-16
7	Further develops its current landfill plan into a comprehensive strategy that integrates all its landfill plans and activities, and is underpinned by a detailed resourcing and implementation plan	EPA will develop a comprehensive strategy that demonstrates the links between existing and proposed activities around landfill regulation. EPA will continue progressing specific landfill compliance issues according to the existing operational strategy.	30-Dec-16
8	reviews its landfill information to determine and prioritise the key noncompliance and emerging risks for targeted action, and identifies these in its annual compliance plan, supported by measures and outcomes to assess the effectiveness of its actions	Targeted action based on emerging risks and key noncompliances will be addressed in EPA's Annual Compliance Plan.	30-Jun-15
9	reviews the efficacy of current landfill licence conditions and develops additional risk based conditions where required for inclusion on a site by site basis	EPA's Licence Modernisation Project will include re-assessing all existing landfill licence conditions. Specific conditions identified by VAGO will be developed in the short term.	30-Dec-15
10	implements risk based compliance and auditing reporting requirements, which include risk-based prioritisation requirements and reporting based on likelihood and severity of impact	EPA will update the APS reporting (and associated guidelines) to enable a more transparent and consistent assessment of risk to be completed in the APS in regards to both declared non-compliances and also auditor recommendations. EPA will ensure duty-holders and auditors have adequate guidance and information to be able to complete these requirements. EPA does not intend to change the requirement that all non-compliances are declared publicly in the APS. Online reporting functionality will be improved in 2014/15.	30-Jun-15
11	uses a peer review panel of landfill experts to advise it on complex landfill approvals, with clear terms of reference	EPA will set up an external panel of experts to assist in the administration of the Best Practice Environmental Management guidance. EPA will continue to use independent external expertise in assessing Works Approvals.	30-Jun-15
12	improves landfill guidance by:		
a	Preparing a landfill guide explaining the structure and hierarchy of the regulatory requirements for all landfill related processes and how all the relevant landfill guidelines and processes integrate	An overarching guide to landfill regulatory requirements will be produced.	30-Jun-15
b	Clarifying that it is council's role to identify all closed landfill sites within their municipalities and register this information with the Environment Protection Authority and describing risk assessment requirements for unregulated closed landfills	EPA will communicate with all councils requesting that councils inform EPA of the closed landfill sites within their municipality. EPA will communicate with all councils regarding risk assessment requirements for unregulated closed landfills.	30-Jun-15
c	improving best practice environmental management guidance in consultation with all stakeholders	In the short term, EPA will set up an external panel of experts to assist in the administration of the Best Practice Environmental Management guidance. In the longer term, any review of best practice environmental management guidance will include extensive stakeholder consultation.	30-Jun-16
13	works with the Metropolitan Waste and Resource Recovery Group to develop an appropriate planning process/tool to ensure the Environment Authority's involvement in any rezoning or application process across Victoria where development adjacent to active or closed landfills may be involved.	In association with DEPI, MWRRG and DTPLI, EPA will investigate the development of an appropriate, risk-based mechanism to ensure EPA is involved in planning decisions that may lead to residential development near landfills, either active or closed.	30-Dec-15
14	Develops a public register of landfills	In association with local government and DTPLI EPA will investigate the development of a public register of landfills. EPA notes that this recommendation will be partly addressed by recent amendments to the Environment Protection Act 1970, which require each Waste and Resource Recovery Group in Victoria to prepare a Waste and Resource Recovery Infrastructure Plan. The plan must contain a description of waste and resource recovery infrastructure for the region, and a program for replacing and rehabilitating landfill sites.	30-Dec-15
15	Review its standard operation procedures for issuing remedies, to require documented reasons as to what remedy is applied and why	EPA will review and update its compliance and enforcement Standard Operating Procedures. EPA will produce guidance for the landfill industry explaining the system of remedies used as well as assessment of harm.	30-Dec-15

RESPONSE provided by the Chief Executive Officer, Ballarat City Council

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Date: 20 August 2014

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Your Ref: 30191/01

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Mr John Doyle
Auditor-General
Victorian Auditor-General's Office
Level 24, 35 Collins Street
Melbourne VIC 3000



Dear Mr Doyle

**RE: PROPOSED ACTIONS IN RESPONSE TO THE PROPOSED PERFORMANCE
AUDIT REPORT - MANAGING LANDFILLS**

Thank you for the opportunity to respond to the proposed recommendations of the Draft Audit Report Managing Landfills. The City of Ballarat has reviewed the recommendations and proposed to address them as outlined below.

1. *Identify, prioritise and address all of their landfill responsibilities and obligations under the Environmental Protection Act 1970, the 2004 Waste Management Policy (Siting Designing and Management of Landfills) and associated guidelines, including:*
 - *Operating and progressively rehabilitating active sites*
 - *Assessing and managing risks at closed sites*
 - *Planning to meet anticipated rehabilitation and aftercare costs*
2. *Consolidate the recommendations from environmental auditors and other external and internal reviews across all landfills, and develop and implement risk-based priorities and timelines for addressing them*
3. *Improve their internal risk and audit systems and landfill inspections processes*

COUNCIL RESPONSE

Recommendations 1, 2 and 3 will all be covered by a single review of the management of all operational and former waste facilities under the control of the City of Ballarat, based on all available information. From this review, a comprehensive management plan will be developed which will include a prioritised list of actions for each site and include costings for future management. Actions identified as part of the new management plan will be allocated to staff, as key responsible officers for managing the tasks and ensuring their follow through.

The outcomes and resulting actions of the review, will form part the broader Environmental Risk Management Plan. This plan will feed back into the Council Enterprise Risk Management System. An annual review of these actions will ensure that City of Ballarat are meeting the required obligations outlined under recommendation 1.

This review will be completed by the end of 2015.

RESPONSE provided by the Chief Executive Officer, Ballarat City Council – continued



4. *Build their in-house knowledge and skills so that they can work with Environment Protection Authority appointed environmental auditors and landfill experts to effectively prioritise and address risks*

COUNCIL RESPONSE

The City of Ballarat is currently in the process of employing a new Environmental Services Coordinator. Once this role is filled, the City of Ballarat Environmental Services Team will include:

- City Services Manager (Responsible for the delivery of roads maintenance, parks and gardens and waste and environmental services)
- Environmental Services Coordinator (Coordinator of waste and environmental services)
- Supervisor of Waste Services (including waste collection and assistance managing the operations of both the Smythesdale Landfill and Gillies Street Transfer Station)
- Strategic Waste Officer (project manager for capital waste projects and facilitating relationship with the EPA and external technical support and auditing)
- Waste, Water and Energy Officer (assists in the delivery of waste programs and water management at waste facilities)

This team will be complete by the end of 2014.

5. *Work with the Environmental Protection Authority and the waste and resources recovery groups to identify closed landfills, assess their risks and prioritise actions at a regional scale to address these*

COUNCIL RESPONSE

The City of Ballarat will work with the new Grampian Central West Waste and Resources Recovery Group to develop to the new regional plan and will include a review of former closed landfills in the region. Most former closed landfills should be identified through the review proposed above and managed within Council processes. The new group will recommend engaging with the EPA to advise of the processes for both identifying and assessing and then managing the closed landfill sites.

If you wish to discuss further, please feel free to contact Lauren Burch, Council's Strategic Waste Officer, on 5320 5897.

Yours sincerely

A handwritten signature in black ink, appearing to read "AS", with a long horizontal flourish extending to the right.

Anthony Schinck
Chief Executive Officer

CC: Mayor, Cr Joshua Morris
Eric Braslis, General Manager City Infrastructure

RESPONSE provided by the Mayor, East Gippsland Shire Council

Contact: Chris Waites
Telephone No: (03) 5153 9500
Email: feedback@egipps.vic.gov.au

20 August 2014

Mr John Doyle
Auditor General
Victorian Auditor General's Office
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MELBOURNE VIC 3000



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Dear Mr Doyle

Feedback on Performance Audit Report Managing Landfills

Thank you once again for giving East Gippsland Shire Council the opportunity to provide comments / feedback on the abovementioned report. I appreciate your consideration of Council's submission on issues that were raised in the provisional draft report; and acknowledge the changes made reflects correct information and represents it fairly.

In relation to the recommendations made, East Gippsland Council will ensure and adhere to the following:

- 1) Operate all active landfills responsibly and in accordance with their associated licence conditions under the Environment Protection Act 1970.
 - Council is in the process of closing many of its unlicensed landfill sites and will continue to monitor and identify any potential risks that may arise from these sites.
 - Council's waste unit has prepared a five (5) year capital budget for construction of landfill cells and rehabilitation of closed sites. The budget has been formally adopted by Council. Council has also adopted the 'Waste Facilities and Disposal Strategy 2014' which includes the closure of various landfill sites and conversion to waste transfer stations, rationalising landfills and managing waste sites in a more sustainable manner to reduce financial and environmental risks. Regular environmental monitoring, risk assessments, audits and aftercare monitoring is included in Council's current operational budget.
- 2) East Gippsland Shire Council has a technically and operationally skilled waste department that is liaising regularly with landfill experts in the EPA and associated EPA approved auditors. These discussions are focused on Council's key waste projects, being the construction of new landfill cells and the rehabilitation and aftercare of closed facilities. By the end of 2014, sixteen (16) Council officers from the waste department will have completed either a Certificate III or Certificate IV course in Waste Management.
- 3) Council's waste unit has been effectively and efficiently working with the EPA approved auditor and adhering to their recommendations as required. Council has also recently engaged Cardno Lane Piper for three (3) years to undertake environmental monitoring, audits and risk assessments as per the licence requirements.

Website: www.eastgippsland.vic.gov.au Twitter: @egsc Email: feedback@egipps.vic.gov.au



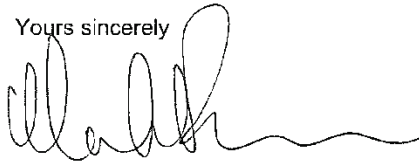
RESPONSE provided by the Mayor, East Gippsland Shire Council – continued

- 4) Council's waste unit has been undertaking comprehensive internal audits to minimise and mitigate any environmental risks. The unit also undertook a comprehensive review of all sites in 2012. The findings and recommendations have been incorporated in the Council-adopted '*Waste Facilities and Disposal Strategy 2014*'.
- 5) Council has been working closely with the EPA and the Regional Waste and Resource Recovery Group to rationalise landfills in the region, identify closed landfills, assess their risks and prioritise actions to mitigate any potential risks from the identified sites.

By the end of 2015, following the proposed rationalisation of its waste facilities; East Gippsland Shire will only have three active landfill sites. This, along with the implementation of the action plan from the '*Waste Facilities and Disposal Strategy 2014*', will allow Council to focus on legislative compliance, mitigate any environmental risks and divert waste from landfills.

Should you require further information or additional feedback in relation to this report and its recommendations, please do not hesitate to contact Council's Director Operations, Chris Waites, or Manager Waste and Assets, Kartik Venkatraman, on 5153 9500.

Yours sincerely

A handwritten signature in black ink, appearing to read 'CR Mark Reeves', with a long horizontal flourish extending to the right.

CR MARK REEVES
Mayor

RESPONSE provided by the Chief Executive Officer, Hume City Council

Our File: HCC05/407
Enquiries: John Monaghan
Telephone: 9205 2214



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Wednesday, 27 August 2014

Mr John Doyle
Auditor-General
Victorian Auditor-General's Office
Level 24, 35 Collins Street
MELBOURNE VIC 3000



Dear Mr Doyle

RE: PROPOSED PERFORMANCE AUDIT REPORT – MANAGING LANDFILLS

In reference to correspondence from your Office date 7th August 2014.

Thank you for the opportunity to provide comment on the proposed report on *Managing Landfills*.

Hume City Council is satisfied that the report provides a fair and reasonable overview of Hume City Council's current position for the management of its active and closed landfills in the Hume municipality.

Council recognises the importance of landfill management and aftercare to ensure that landfills do not pose a threat to the health and safety of the community and the environment. Council's closed landfills were operated and rehabilitated to the standards of the day and in most cases have been redeveloped as active and passive public open space reserves for the benefit of the community.

Council acknowledges that its closed landfills may not meet the more stringent operational and rehabilitation requirements set today by the EPA especially for landfill gas and leachate management. Council intends to undertake a risk based assessment program over the next 12 months to determine the most suitable Aftercare Management requirements for each landfill site.

Council fully supports the recommendations outlined in the report to improve landfill management across Victoria and is pleased to inform that Council has already commenced addressing some of these recommendations. A proposed Action Plan addressing the recommendations for Council is attached, refer Attachment No. 1.

Council strongly considers that EPA Landfill Levy money collected by State Government must be channelled back to Local Government to provide the much needed funding to undertake the risk based assessment program and provision of infrastructure upgrades identified to ensure that the closed landfill

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RESPONSE provided by the Chief Executive Officer, Hume City Council— continued

2

sites comply as far as practicable with current environmental standards and stakeholder expectations in a timely manner.

Should you require any further information, please do not hesitate to contact Council's Manager Infrastructure Planning, Mr John Monaghan, on 9205 2214.

Yours sincerely



**DOMENIC ISOLA
CHIEF EXECUTIVE OFFICER
HUME CITY COUNCIL**

Attachment 1: Proposed Action Plan – Managing Landfills Hume City Council

Recommendation	Council Response	Completion
1. That Council identify, prioritise and address all of their landfill responsibilities and obligations under the <i>Environmental Protection Act 1970</i> , the 2004 landfill Waste Management policy and associated guidelines, including: <ul style="list-style-type: none"> • Operating and progressively rehabilitating active sites. • Assessing and managing risks at closed sites. • Planning to meet anticipated rehabilitation and aftercare costs. 	Council will add Compliance with EPA 1970, 2004 associated Landfill Waste Management Policy Closed and Open Landfills to its Corporate Risk Register to identify and address its responsibilities and obligations.	December 2014
2. That Council build their in-house knowledge and skills so that they can work with Environment Protection Authority approved environmental auditors and landfill experts to effectively prioritise and address risks.	Hume fosters continuous learning in the workplace and fully supports staff to build their knowledge. Hume's in-house Staff has extensive experience in landfill management and has developed excellent rapport with EPA. Specialist consultants are engaged on complex landfill matters.	Ongoing
3. That Council consolidate the recommendations from environmental audits and other external and internal reviews across all landfills, and develop and implement risk-based priorities and timelines for addressing them.	Hume will develop a Prioritised Action Plan to consolidate the recommendations from environmental audits and assign risk based priorities to ensure that they are actioned appropriately.	December 2014
4. That Council improve their internal controls over landfill management through their internal risk and audit systems and landfill inspection process.	Hume's Risk Management System is to be reviewed to improve internal controls for landfill management.	December 2014
5. That Council work with the Environment Protection Authority and the waste and resource recovery groups to identify closed landfills, assess their risks and prioritise actions at a regional scale to address these.	Council has recently prepared a list of known Hume City Council landfill sites and privately owned sites that were issued a licence by Hume. A risk assessment is to be undertaken for each landfill site and the risks are to be consolidated in a Prioritised Action Plan.	December 2014

RESPONSE provided by the Chief Executive Officer, Wyndham City Council



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Your Ref:

Our Ref:

21 August, 2014

Mr John Doyle
Auditor General
Victorian Auditor-General's Office
Level 24
35 Collins Street
MELBOURNE VIC 3000



Dear Mr Doyle,

RE: PROPOSED PERFORMANCE AUDIT REPORT MANAGING LANDFILLS

Council appreciates the opportunity to comment on the report and would like to provide the following response. Overall, Council generally supports the audit findings, with a few comments.

The Wests Road Refuse Disposal Facility (RDF) landfill has been in operation since 1976 and is expected to continue to operate well past 2040. The site includes a mixture of past cells (closed cells), active cells and future cells, and any of these cell areas may receive waste in future as this is a currently active site. This is different to the "closed landfills" being referred to in the report, which are sites that no longer have any activity. As a consequence, in Wyndham's circumstances, there is possibly some confusion between the closed landfills, which are not part of the active facility and predate 1976, and the closed cells in the active facility. There is potential for the misinterpretation of comments about the closed landfills as applicable to the current facility which has closed cells and is managed very differently. This is especially true where the report uses language such 'all four councils'. It would be useful for the report to be clear that the findings with respect to closed landfills do not reflect on the active facility.

We would like to reiterate our support of the strengthening of the planning system and how it can reduce amenity impacts of landfills. In particular referencing Clause 52.10 which applies to all planning schemes in Victoria. This clause details threshold distances for uses with adverse amenity impacts. Landfills are not specifically mentioned in this Clause but some of the resource recovery activities frequently associated with a council landfill are referenced. This omission and the absence of the EPA as a Referral Authority are substantial shortcomings in the planning system.

Council supports the recommendations of the audit and in most instances the recommendations reflect actions that Wyndham has already undertaken or commenced.

In terms of the specific recommendations I can offer the following response to each of the recommendations as numbered in the report:

RESPONSE provided by the Chief Executive Officer, Wyndham City Council – continued

1. Council has one active landfill which is made up of a number of cells. Progressive rehabilitation of the closed cells is ongoing and will continue. This work will be supplemented with the development of a strategic plan for the future development and management of the RDF. All identified closed landfills in Wyndham pre date 1976. Council is in the process of undertaking a risk analysis of these sites and, following the outcome of this work, will review current controls and safeguards as appropriate. Council's budget for the landfill includes a provision for the rehabilitation and aftercare costs.
2. Council is constantly building its in house knowledge and expertise, commensurate with the size and scale of the operation. In addition to the appointment of an experienced manager of the landfill, Council employs two full time, qualified and experienced waste engineers who have been working exclusively on the landfill for six and 12 years respectively. In addition a number of the senior permanent operational staff who oversee and work on the tip face have over 20 years' experience in landfills. In addition, where needed, Council engages consultant expertise to provide technical or specialist advice. This work is normally undertaken in consultation with the EPA and under the supervision and direction of the environmental auditor. Council maintains an on-going contractual arrangement with the appointed environmental auditor.
- 3 and 4. Wyndham has established an internal RDF Management Committee which is made up of members of the executive and senior managers. All environmental audits are reported to this committee as are all other reviews and studies relevant to the landfill. The Committee also considers all other Council works and activities within the immediate vicinity of the landfill. In addition the environmental audits are now being reported to the Council's Audit Committee which includes the enhancement of the current program to prioritise responses/actions and report on progress and timelines. Both of these processes set in place internal controls as well as external review to ensure that risk based priorities and appropriate timelines are developed and reported.
5. Closed Landfill sites have been identified and this information has previously been provided to the EPA. The most recent of these closed landfills was closed in 1975. A risk assessment of the identified sites is planned to be undertaken late in 2014. Council will look at further action depending on the outcome of this risk assessment.

We thank you again for the opportunity to participate through each part of the process. If you require any further information then please contact Michael Ballock, RDF Manager on 9742 0870.

Yours sincerely,



Kerry Thompson
CEO

Auditor-General's reports

Reports tabled during 2014–15

Report title	Date tabled
Technical and Further Education Institutes: Results of the 2013 Audits (2014–15:1)	August 2014
Coordinating Public Transport (2014–15:2)	August 2014
Managing the Environmental Impacts of Transport (2014–15:3)	August 2014
Access to Legal Aid (2014–15:4)	August 2014

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