REGULATORY IMPACT STATEMENT – PROPOSED ENVIRONMENT PROTECTION (SCHEDULED PREMISES) REGULATIONS 2017

Department of Environment, Land, Water and Planning (DELWP)

Environment Protection Authority Victoria (EPA)

Publication 1639, October 2016.

This Regulatory Impact Statement has been prepared in accordance with the requirements of the *Subordinate Legislation Act 1994* and the *Victorian Guide to Regulation*.

In accordance with the *Victorian Guide to Regulation*, the Victorian Government seeks to ensure that regulations are well targeted, effective and appropriate, and that they impose the lowest possible burden on Victorian businesses and the community.

The Regulatory Impact Statement (RIS) process involves an assessment of regulatory proposals and allows members of the community to comment on proposed regulations before they are finalised. Such public input provides valuable information and perspectives, and improves the overall quality of regulations.

This RIS has been prepared to facilitate public consultation on the proposed Environment Protection (Scheduled Premises) Regulations 2017 (proposed 2017 Regulations). A copy of the proposed 2017 Regulations is attached to this RIS.

Public comment or submissions are invited on the Regulatory Impact Statement and the proposed 2017 Regulations. All submissions will be treated as public documents and published on EPA's website unless the submission clearly indicates the submission is confidential.

Please submit comments or submissions by no later than **5pm on Friday 16 December 2016** to:
scheduled.premises@epa.vic.gov.au or to:
Scheduled Premises RIS
c/o Policy and Regulation Unit
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GPO Box 4395
Melbourne Victoria 3001

VICTORIA State Government | Environment, Land, Water and Planning

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Acronyms and abbreviations

APS	Annual Performance Statement
AS	Australian Standard
BOD	biological oxygen demand
CMA	catchment management authority
COD	chemical oxygen demand
C&I	commercial and industrial
CIS	comprehensive impact statement
CRC CARE	The Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
CRTs	cathode ray tube monitors
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DELWP	Department of Environment, Land, Water and Planning
DHHS	Department of Health and Human Services
DISPLAN	State Disaster Plan
EE Act	*Environment Effects Act 1978*
EES	environmental effects statement
EIP	Environment Improvement Plan
EPA	Environment Protection Authority Victoria
EP Act	*Environment Protection Act 1970*
e-waste	electronic waste
EWR	Environmental Water Reserve
HEMP	Health and Environment Management Plan
ISC	Index of Stream Condition 2010
IWR Regulations	Environment Protection (Industrial Waste Resource) Regulations 2009
GHG	greenhouse gas
LCD	liquid crystal display
LED	light-emitting diode
MHFs	major hazard facilities
MoU	memoranda of understanding
MPAAD	major project-assessment approval and delivery

MTPF Act	*Major Transport Projects Facilitation Act 2009*
NEPMs	National Environment Protection Measures
NPI	national pollutant inventory
NPV	net present value
OLED	organic light-emitting diode
PAHs	polycyclic aromatic hydrocarbons
PANs	pollution abatement notices
PBDEs	polybrominated diphenyl ethers
PCBs	polychlorinated biphenyls
PINs	penalty infringement notices
PIW	prescribed industrial waste
$PM_{2.5}$	particulate matter 2.5 micrometres or less in diameter
PM_{10}	particulate matter 10 micrometres or less in diameter
RIS	Regulatory Impact Statement
SEPPs	State environment protection policies
SEPP AAQ	State Environment Protection Policy (Ambient Air Quality)
SEPP AQM	State Environment Protection Policy (Air Quality Management)
SEPP GoV	State Environment Protection Policy (Ground waters of Victoria)
SEPP WoV	State Environment Protection Policy (Waters of Victoria)
SMEs	small and medium enterprises (SMEs)
SPREM	Scheduled Premises Regulations Economic Model
SV	Sustainability Victoria
TSS	total suspended solids
VPPs	Victorian Planning Provisions
VCAT	Victorian Civil and Administrative Tribunal
VCEC	Victorian Competition and Efficiency Commission
VicWater	Victorian Water Industry Association Inc.
VOCs	volatile organic compounds
WHO	World Health Organization
WMPs	waste management policies

Executive summary

What the Regulations do

While all premises are subject to the provisions and the requirements of the *Environment Protection Act 1970* (EP Act) and statutory policies, the Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 ('Scheduled Premises Regulations') enable EPA's fullest form of regulatory oversight.

The Scheduled Premises Regulations define which activities are required to:

- obtain an Environment Protection Authority (EPA) works approval (before premises or plants are built or significantly modified)
- obtain an EPA licence (to operate) and/or
- provide a financial assurance.

The Regulations seek to minimise risks to the environment and human health by applying these requirements to manage the highest risks from pollution and waste. These risks are identified with reference to the environmental standards and beneficial uses prescribed by statutory policy and other government policy settings.

Currently, works approval, licensing and/or financial assurance requirements apply to a diverse range of industry activities, including sewage treatment plants, landfills, composting facilities, intensive animal industry, mines, cement works, printing works and power stations. EPA currently assesses approximately 50 applications relating to works each year and licenses approximately 670 sites across Victoria.

Context for this review

There is currently a heightened level of uncertainty about the overarching policy settings for the Scheduled Premises Regulations. This is because there are currently a number of high priority reviews and other processes occurring that, when completed, will affect which activities warrant a works approval, licensing and/or financial assurance requirement.

In particular, the Independent Inquiry into the EPA has recommended significant changes to 'EPA's toolkit', including the introduction of a general preventative duty, and the Government's response to these recommendations is not yet known.

Given this uncertainty and the need to remake the Scheduled Premises Regulations before they expire in late June 2017, the Department of Environment, Land, Water and Planning (DELWP) and EPA are pursuing a two-stage approach:

- Stage 1 (now) – is considering limited reforms, with a focus on delivering changes to provide certainty to businesses and the community and to improve functionality.
- Stage 2 – a more comprehensive review of the Regulations. This is likely to commence following changes to the EP Act and key State environment protection policies (SEPPs), at which point the overarching policy settings relevant to the Regulations are expected to be clearer. Stage 2 will be the vehicle for implementing any EPA Inquiry recommendations relating to scheduled premises which are supported by the Government in its response to the Inquiry.

Objective

The objective of the Scheduled Premises Regulations is to minimise risks to the environment and human health by targeting the residual risk from those industrial activities which pose a significant risk.

This objective is bounded by the staged approach that has been adopted. Therefore, this Regulatory Impact Statement (RIS) identifies where the Scheduled Premises Regulations tools are an effective mechanism for the appropriate environmental management of premises with the potential for significant environmental harms.

Options considered

In the context of Stage 1 and through being informed by consultation and industry sector research, the following options have been considered:

Option 1: Remake current Regulations

This option involves remaking the existing Regulations without any changes.

Option 2: Limited amendments

This option comprises seven mutually exclusive components or sub-options that can be adopted in addition to remaking the existing regulations (Option 1):

- Option 2A: Introducing application thresholds to allow for the temporary storage of asbestos at an unlicensed premises in specific circumstances.
- Option 2B: Introducing application thresholds to allow for the temporary storage of lower hazard, liquid prescribed industrial waste at an unlicensed premises in specific circumstances.
- Option 2C: Exempting some sewage treatment plants from works approval requirements in specific circumstances.
- Option 2D: Exempting potable treatment plants from works approval requirements.
- Option 2E: Limiting the availability of exemptions for premises that emit $PM_{2.5}$.
- Option 2F: Categorising electronic waste (e-waste) reprocessors under A02 (‘Other waste treatment).
- Option 2G: Categorising glass reprocessors under H05 (‘Glass works’).

Of these, options 2A to2D provide burden reductions relative to the current Regulations and are intended to ensure the Regulations are proportionate and appropriately targeted in their application to premises.

Options 2E to 2G are intended to ensure the regulations are aligned with policy developments and recent research on the environmental and health impacts of certain emissions.

Analysis

The economic impact of the option components has been assessed primarily using a cost-benefit analysis. Where the benefits have not been quantifiable, break-even analysis has been used. Each option has been compared to a no-regulation base case.

The analysis relies upon information contained in EPA's Scheduled Premises Regulations Economic Model (SPREM), which draws on EPA internal data and publicly available information.

Summary of results

For Option 1, the analysis found that remaking the current regulations will result in net benefits of $2.11 billion (net present value (NPV) over 10 years) compared against the base case of no regulations. This comprises:

- $2.48 billion of benefits (present value (PV) over 10 years)
  - 72 per cent from the benefits (that is, reduced health impacts) of reduced air emissions
  - 28 per cent from the benefits of reduced water emissions
  - 1 per cent from benefits of reduced cost of incidents for businesses
- $0.37 billion of costs (PV over 10 years)
  - 41 per cent comprising industry compliance requirements
  - 13 per cent comprising industry works approval requirements
  - 31 per cent comprising industry reporting requirements
  - 14 per cent comprising government costs.

In relation to Option 2, the first four components (Options 2A to 2D) are burden reduction measures. It is estimated that they will provide the following net benefits in the form of cost savings:

- Option 2A: $0.16 million (NPV over 10 years) due to reducing the number of specific classifications required that relate to temporary asbestos storage.
- Option 2B: $0.04 million (NPV over 10 years) due to reducing the number of specific classifications required that relate to the temporary storage of lower-hazard liquid prescribed industrial waste (PIW).
- Option 2C: $0.71 million (NPV over 10 years) due to reducing the number of EPA-granted works approval exemptions by exempting sewage treatment plants in specific circumstances.
- Option 2D: $0.02 million (NPV over 10 years) due to reducing the number of EPA-granted works approvals exemptions by exempting potable treatment plants.

Benefits for Options 2E to 2G were not able to be quantified. Therefore, break-even analysis was undertaken, which produced the following estimates:

- Option 2E: a 16.48 per cent reduction (or an average of 2.31 tonnes per annum per premises) in total emissions from limiting exemptions for emitting $PM_{2.5}$ would be required to offset costs of around $8.4 million (NPV over 10 years). Based on EPA's analysis of the effectiveness of operational controls at relevant premises, this level of reduction in emissions is regarded as likely.

- Option 2F: a 17.59 per cent reduction (or an average of 1.81 tonnes per annum per premises) in total emissions from e-waste reprocessors would be required to offset costs of around $8.5 million (NPV over 10 years). Based on EPA's analysis of the opportunities to reduce fugitive emissions at e-waste reprocessing facilities, this level of reduction in fugitive emissions is regarded as reasonable. This assessment is regarded as conservative, as it does not account for the benefits that works approvals and licences are expected to provide in relation to emissions of brominated flame retardants. In combination, it is likely that Option 2F will provide a net benefit.
- Option 2G: a 0.64 per cent reduction (or an average of 4.11 tonnes per annum per premises) in total emissions from glass reprocessors would be required to offset costs of around $2.8 million (NPV over 10 years). Based on EPA's analysis of the opportunities to reduce fugitive emissions at glass reprocessing facilities, this level of reduction in fugitive emissions is regarded as likely.

The results of the cost-benefit analysis are summarised in Tables ES1 and ES2:

Table ES1: Summary analysis results for quantifiable options shown as a net present value over 10 years ($million)

	Option 1	Option 2A	Option 2B	Option 2C	Option 2D	Option 2 (A-D)#
Benefits	2,477.3	0.0	0.0	0.0	0.0	2,477.3
Costs	367.9	-0.2	-0.0	-0.7	-0.0	367.0
Net benefits	**2,109.4**	**0.2**	**0.0**	**0.7**	**0.0**	**2,110.4**

Source: EPA SPREM
#: Includes the benefits and costs of Option 1 – remaking the current Regulations.

Table ES2: Summary break-even analysis results for options 2E to 2G shown as a net present value over 10 years

	Option 2E	Option 2F	Option 2G
Costs ($millions NPV over 10 years)	**8.37**	**9.40**	**2.79**
Required emission reduction to break-even (%)	**16.48%**	**17.59%**	**0.64%**
Required emission reduction to break-even (tonnes per premises pa)	**2.31**	**1.81**	**4.11**

Source: EPA SPREM.

Preferred option

The preferred option is to remake the current Regulations and implement all components of Option 2 (that is, 2A to 2G) as they are all expected to generate net benefits.

It is also proposed to:

- clarify the descriptions and/or thresholds in the Regulations relating to organic waste processing (previously composting), intensive animal industry and beverage manufacturing
- make minor and administrative changes to the Regulations in relation to the emergency storage of biomedical waste, energy from waste facilities, livestock saleyards and holding pens, fish farms, rendering facilities, contaminated soil facilities, seafood processing premises and printing facilities.

1 Background

1.1 Introduction

The Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 (the Scheduled Premises Regulations) will sunset on 26 June 2017. The Department of Environment, Land, Water and Planning (DELWP) and the Environment Protection Authority Victoria (EPA) are reviewing the Scheduled Premises Regulations prior to their sunset.

DELWP and EPA released a discussion paper[1] in November 2015 to seek feedback on options for the review of the Scheduled Premises Regulations. Thirty-eight written submissions and survey responses were received. A summary of the key themes raised in stakeholder responses was published on the EPA's website[2] in April 2016, together with non-confidential stakeholder submissions and survey responses.

The development of this Regulatory Impact Statement (RIS) and the proposed new version of the Environment Protection (Scheduled Premises) Regulations 2017 (the proposed 2017 Regulations)[3] were informed by feedback on the discussion paper, industry sector research, the EPA SPREM and EPA's experience in regulating activities with potential risks to human health and the environment.

This RIS includes an assessment of the benefits and costs of the proposed 2017 Regulations and has been prepared to facilitate public consultation on them. Public input is sought to provide information and perspectives which can improve the overall quality of the final Regulations. In accordance with the *Victorian Guide to Regulation*, the Victorian Government seeks to ensure that regulations are well targeted, effective, appropriate, and impose the lowest possible burden on Victorian businesses and the community. The Independent Inquiry into the EPA also stated that the EPA's tools, and how it applies them, should not add to the regulatory burden unnecessarily – but should manage risks efficiently and effectively.

A critical task of Victoria's environment protection framework is to ensure that premises which conduct activities and operations posing significant environmental risks are managed and monitored effectively. The EP Act establishes works approvals, licences and financial assurances as regulatory tools for this purpose, while the Scheduled Premises Regulations define the types of premises that are subject to one or more of these tools.

Works approvals are designed to ensure that development proposals adequately address potential environmental risks before construction begins. Where required, licences are issued once works have been satisfactorily completed. Licences are designed to complement works approvals by ensuring that operations continue to be conducted in line with the intended designs and environmentally sound practices are maintained at those premises. Consistent with the EP Act, industries that are scheduled include those whose operations:

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[1] DELWP and EPA Victoria, *Scheduled Premises Regulations Review – discussion paper*, 2015.
[2] DELWP and EPA Victoria, *Scheduled Premises Regulations Review – summary of comments,* 2015, http://www.epa.vic.gov.au/our-work/setting-standards/scheduled-premises-regulations-review
[3] The proposed 2017 Regulations are set out in Appendix L.

- discharge, or deposit waste to the environment;
- emit noise;
- reprocess, treat, store, contain, dispose of or handle waste or substances which are a danger or potential danger to the quality of the environment;
- create a state of potential danger to the environment.

The proactive nature of the works approval and licensing system is designed to provide assurance that premises with the potential for significant environmental impact are effectively designed, constructed and operated and are complying with the EP Act. In this way, it plays a key role in assuring a high level of environmental protection. It is also designed to provide certainty to companies with respect to site-based compliance requirements.

Financial assurance reduces the risk that the cost of disposal of stockpiled waste, or costs of remediation, site closure and post-closure liabilities are not borne by the community in the event of the occupier of the premises abandoning the site, becoming insolvent or incurring clean-up costs beyond their financial capacity.[4]

Currently there are approximately 670 licensed premises in Victoria covering a range of commercial, industrial and agricultural activities such as waste disposal and treatment, mining and fuel-powered electricity generation. EPA also assesses approximately 50 applications relating to works approvals each year.

The need for consequential amendments to the Environment Protection (Fees) Regulations 2012 (the Fees Regulations) is also being considered as part of this review. The Fees Regulations set fees for works approval applications and annual licence fees so that changes to the Scheduled Premises Regulations can result in amendments to these fees.

[4] EPA Victoria, *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 – Regulatory Impact Statement*, 2007, p. 39.

1.2 Scheduled premises – the regulatory framework

1.2.1 The environment protection framework

Maintaining a healthy environment is fundamental to ensuring the sustainability of our communities and ecosystems and the wellbeing of all Australians. This responsibility is shared across all levels of government: the Commonwealth, state and local.

The Victorian Government, through its environment portfolio agencies, addresses environmental management issues from a state perspective while contributing to and influencing nationally led programs. DELWP oversees policy and program development and implementation in support of the Minister for Energy, Environment and Climate Change. EPA is established under the EP Act and is responsible for regulating pollution and waste. Sustainability Victoria (SV), established under the *Sustainability Victoria Act 2005*, is the lead agency for environment sustainability programs and is responsible, under the EP Act, for long-term statewide waste and resource recovery infrastructure planning. Waste and resource recovery groups are responsible for preparing regional implementation plans under the EP Act for waste and resource recovery infrastructure, and for implementing programs to reduce waste.

There are 79 local government councils in Victoria which play an important role in addressing local environment pollution issues. Councils make and enforce land use planning decisions and regulate some noise and waste issues under the EP Act.

The EP Act

The EP Act underpins the statutory framework for environment protection in Victoria and provides the legislative basis for the Scheduled Premises Regulations. The EP Act establishes EPA's powers, duties and functions. It creates a number of instruments used by EPA to prevent pollution, minimise waste and reduce risks to the environment and human health. Works approvals, licences and financial assurances are established in the EP Act.

Statutory policy

SEPPs define the uses of the environment that Victorians value (beneficial uses) and the environmental quality indicators required to protect these uses. WMPs establish statewide standards and directions for waste management.

Scheduled Premises Regulations

The Scheduled Premises Regulations give effect to the works approval, licensing and financial assurance 'systems' – EPA's fullest form of regulatory oversight. They do this by prescribing the classes of premises that are subject to works approval, licensing and/or financial assurance requirements – that is, as 'scheduled premises'. The application of these requirements is intended to provide a higher level of assurance that effective environmental management is in place for scheduled premises.

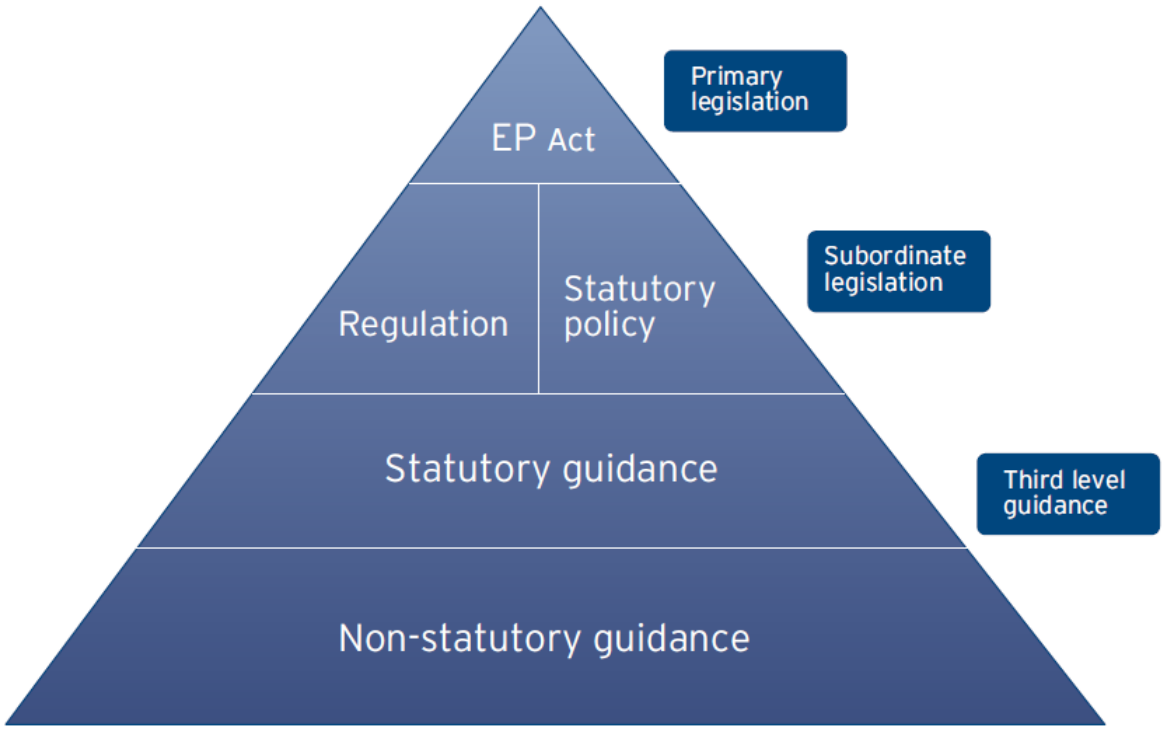

Figure 1: The current regulatory framework under the EP Act

Decisions on which industries should be prescribed as scheduled premises – brought 'within the frame' by the Regulations – are made within the context of the EP Act, SEPPs, WMPs and government policy, as shown in Figure 1. The Government's medium- to long-term strategic directions are set out in SEPPs, WMPs and non-statutory policy and strategy documents. Strategic direction setting, policy and statutory requirements underpin decisions as to which industry activities warrant close regulatory attention – including via the Scheduled Premises Regulations.

Other environment protection tools

'Scheduling' of premises is not the only way to address environmental issues. Within the wider environment protection framework, there are other tools that EPA can use under the EP Act and as part of its regulatory approach. These include education, remedial notices, targeted enforcement campaigns, partnerships and agreements. Therefore, any decisions regarding the application of works approval or licence requirements must also consider EPA's broader regulatory approach and strategies for monitoring and managing risks from industrial premises.

The Independent Inquiry into the EPA

The Final Report of the Independent Inquiry into the EPA was released in May 2016.[5] The Report recommends significant changes to the EP Act, SEPPs and to EPA's regulatory tools. The Government's response to the Report is expected to be released later in 2016. Depending on the approach taken in this response, the proposed changes have significant medium and long-term implications for the Scheduled Premises Regulations. The recommendations most relevant to the Scheduled Premises Regulations are discussed in Appendix A.

Implementation of Inquiry recommendations would likely:

- strengthen the environment protection framework through a new modernised Environment Protection Act and a new approach to setting standards (replacing SEPPs and WMPs)
- change the residual risks of some industrial premises through the introduction of new tools, in particular:
    - a general duty to minimise the risks of harm to human health and the environment from pollution and waste; and
    - an accompanying registration scheme based on WorkSafe's dangerous good notification
- change the assumptions about the circumstances in which it is optimal to use the tools in the Scheduled Premises Regulations, as it has recommended expanding the use of works approvals and licences for all activities with significant impacts on human health or the environment, regardless of the type of hazard posed
- introduce fixed terms for new licences, a statutory mechanism for regular licence reviews and a new post-closure licence category for landfills and high-risk contaminating activities.

Related statutory requirements

Many existing environmental issues are already covered by industry co- or self-regulation, or other Victorian legislation that regulate activities with significant environmental and human health risks, such as the Victorian *Planning and Environment Act 1987*, *Occupational Health and Safety Act 2004,* and *Dangerous Goods Act 1985*.

Section 2 describes how related Victorian legislative schemes interact with the Scheduled Premises Regulations.

Victoria's environment protection framework also interacts with standards and policies set through national processes. The Commonwealth *National Environment Protection Council Act 1994* and complementary state and territory legislation enable the setting of National Environment Protection Measures (NEPMs) by the National Environment Protection Council. NEPMs have been made for:

- Air Toxics
- Ambient Air Quality

[5] To view the Final Report and for further information, see http://delwp.vic.gov.au/environment-and-wildlife/epa-inquiry.

- Assessment for Site Contamination
- Diesel Vehicle Emissions
- Movement of Controlled Waste
- National Pollutant Inventory
- Used Packaging.

In Victoria, NEPMs are implemented through statutory instruments, ensuring legislative backing for national standards. Compliance with these standards must then be considered by EPA when issuing works approvals or licences or when taking other regulatory actions.

All premises in Victoria are subject to the provisions and requirements of the EP Act and other statutory requirements, including SEPPs and WMPs.

1.2.2 Trends in scheduled categories

Since their introduction, the Scheduled Premises Regulations have been amended and remade on a number of occasions. These changes have resulted in significant reductions in the number of scheduled premises, reflecting the improved environmental performance of some industry sectors and the reduced risk associated with their operation.

Number of licensed premises over time

In the late 1970s, there were in excess of 10,000 environment protection licences in Victoria, at a time when licensing was the key tool to control emissions from industrial processes. By the early 1980s, just prior to the introduction of the Scheduled Premises Regulations, there were 4,000 to 5,000 licences in Victoria. In 1984, the original Scheduled Premises Regulations were introduced, designating premises subject to works approval and licensing requirements. The aim of introducing the Scheduled Premises Regulations was to ensure that works approval and licensing processes were only required for premises with the potential for significant environmental impact and which would benefit from a site-specific approach.

The Scheduled Premises Regulations were remade in 1994 (and amended in 1996) and 2007. The number of premises subject to works approval and licensing following the 1994/1996 reviews was around 1,400, dropping to approximately 1,000 by 2006. The 2007 review reduced a further 164 licences. As well as continuing to refine its focus on the highest-risk activities, the 2007 remake sought to improve the structure and definitions in order to make them simpler and more streamlined, and thereby make it easier for industry to understand and comply with environmental requirements.

The changing nature of environmental problems from large-point source pollution to smaller and diffuse sources was identified over 30 years ago. Rather than seek to extend and expand the use of licensing, over time complementary tools have been developed to address the diversification of smaller environmental harms, and also to support improved adoption of environmental management systems and waste minimisation.

The use of complementary tools such as PANs and clean up notices can provide a more cost-effective approach for ensuring compliance at lower-risk premises.

This has reflected the growth and maturity of EPA's regulatory approach, a greater focus on minimising regulatory burdens and the changing nature of the problems needing to be addressed. With the many established, large-point source polluters in the 1970s, a strong 'command and control' approach to regulation (through licensing) provided significant gains in environmental quality. The 1980s saw the introduction of greater preventative tools (works approvals, SEPPs and WMPs) to limit the extent of future legacy problems. The 1990s and early 2000s brought a significant advancement in regulatory approach, seeking to encourage higher performance and acknowledge different behavioural considerations in delivering change.

In addition to the development of alternate instruments, new technology and management systems have been adopted to improve environmental performance along with complementary joint regulator controls and incentives. For example, local government through the Victorian Planning Provisions (VPPs), WorkSafe with the management of dangerous goods and major hazard facilities and government agencies such as SV, waste and resource recovery groups and the Department of Economic Development, Jobs, Transport and Resources (DEDJTR). The role of licensing, and subsequently works approvals has responded to these developments and has often taken a narrower and more focused role with large operations, those with significant emissions to the environment, or areas where the other instruments under the EP Act are not effective or other regulators do not have a mandate to operate.

1.3 The need for regulation

For sunsetting regulations, the 'base case' for assessing the proposed regulations and viable alternatives is that the regulations sunset, or cease to operate. The base case for this RIS encompasses the current environment protection framework without the Scheduled Premises Regulations.

Without the Scheduled Premises Regulations, it is expected that there would be an increase in the emission of pollutants to air and water over time, as well as an increase in the frequency and consequences of pollution incidents from the inadequate management of environmental risks[6]. This is due to the removal of EPA's ability to use works approvals, licences, and financial assurances to ensure the appropriate design, monitoring and management of premises with significant environmental risk.

There would be a number of implications from allowing the Scheduled Premises Regulations to expire:

- Formerly scheduled premises would no longer be licensed by EPA.
- Chief Executive Officers or Managing Directors of companies operating currently licensed sites would no longer be required to take responsibility for public declarations of compliance, and there would be no public records of declared non-compliance rates (through Annual Performance Statements).
- Sites or projects would no longer be subject to the works approval process, losing a preventative mechanism that influences the design of high-risk premises to reduce environmental risk.

[6] In response to a question in the scheduled premises regulations review discussion paper, most respondents thought that emission levels and pollution events would increase if works approvals, licences and financial assurances were no longer required.

- Scheduled premises would no longer be required to collect the landfill levy, pay the environment protection levy or hold a financial assurance. The price incentive that these levies create to reduce waste would be removed and the loss of revenue to the State of Victoria would be significant.

An increase in emissions of pollutants to air and water and/or an increase in the frequency and severity of pollution events would significantly and detrimentally affect the environment and human health. These effects are outlined in detail in section 3.

In the absence of the Scheduled Premises Regulations, industrial premises would remain subject to general pollution controls and sanctions under the EP Act (see section 1.2). Some environment protection would also occur as a result of other legislation and regulations, such as the *Occupational Health and Safety Act 2004* and the VPPs. However, relying on these general pollution controls and controls under other legislation would result in a piecemeal and incomplete framework for high-risk premises compared with the current permissioning system. In the absence of these Regulations, compliance with licensed emission limits would be expected to decay over time.

1.4 Scope of the review

Decisions on which industrial industries should be 'scheduled' are made within the context of achieving environmental standards and other priorities as set by SEPPs, WMPs, and government policy.

There are currently a number of high-priority reviews and other processes examining the policy and legislative settings that the Scheduled Premises Regulations need to be informed by:

- The Independent Inquiry into the EPA (see section 1.2.1)
- Climate Change Act Review – The Independent Review Committee's Final Report was tabled in Parliament in February 2016. The Final Report recommended that EPA should have a role in regulating greenhouse gas (GHG) emissions. Statutory changes would be required before licences and works approvals can specifically target GHG (potentially leading to changes to scheduled premises and thresholds). The Government's response to the Climate Change Act Review was released in June 2016.[7] The Government's response committed the Victorian Government to releasing a Climate Change Framework in late 2016. This Framework will set a target for 2020 as the first interim emissions reduction target for Victoria, mitigation and adaptation priorities and provide the policy foundation for delivering on the legislative changes resulting from the review.[8] The Framework is expected to clarify what role, if any, EPA and the Scheduled Premises Regulations will play in contributing to emissions reduction targets.
- Animal Industries Advisory Committee (Planning and Agriculture) – An advisory committee was appointed under the *Planning and Environment Act 1987* to consider how the planning system can support the establishment and expansion of productive, competitive and market-responsive animal industries in Victoria,

[7] For more information about the Review and to view the Final Report and the government response, see, http://delwp.vic.gov.au/environment-and-wildlife/climate-change/2015-review-of-climate-change-act.
[8] DELWP, *Victorian Government response to the Independent Review of the Climate Change Act 2010*, May 2016, p.18.

balancing environmental outcomes and community expectations. The committee reported to the Victorian Planning and Agriculture Ministers in April 2016 on how to address issues with the increasing intensification of agriculture (including where the planning system interfaces with Scheduled Premises Regulations). The committee's final report and the Government's response have not yet been publicly released.[9]

- Major Hazards Facilities Advisory Committee (Planning) – An advisory committee was appointed by the Minister for Planning to provide advice on how land use buffers around major hazard facilities (MHFs) are determined and implemented. The committee submitted its report in mid-2016; the report and the Government's response have not yet been publicly released.[10]
- Hazardous Waste Policy Position – DELWP is leading the development of a Hazardous Waste Policy Position which could have implications for scheduled categories and thresholds. The policy position is expected to be finalised in 2017.
- Water and Noise SEPP reviews – Updated environmental quality standards for water and noise will impact on which industries should be subject to works approvals and licences (and so included in Scheduled Premises Regulations). These SEPP reviews are expected to be completed in 2018.[11]

While it is not unusual to have related review processes occurring concurrently, there is currently a heightened level of uncertainty about the overarching policy settings for the Scheduled Premises Regulations. The greatest source of uncertainty arises from the recommendations of the Independent Inquiry into the EPA.

Given this uncertainty and the need to remake the Scheduled Premises Regulations prior to their sunset, a staged reform process is being pursued:

- Stage 1 (as reflected in this RIS) – is considering limited reforms with a focus on delivering changes to provide certainty to businesses and the community and to optimise functionality.
- Stage 2 – a more comprehensive review of the Scheduled Premises Regulations. This is likely to commence following changes to the EP Act and key statutory instruments, at which point the overarching policy settings relevant to the scheduled premises regulations are expected to be clearer. Stage 2 will be the vehicle for implementing any EPA Inquiry recommendations relating to scheduled premises which are supported by the Government.

[9] Further information is available at http://www.dtpli.vic.gov.au/planning/panels-and-committees/current-panels-and-committees/animal-industries-advisory-committee
[10] Further information is available at http://www.dtpli.vic.gov.au/planning/panels-and-committees/current-panels-and-committees/major-hazard-facilities-advisory-committee
[11] Further information on the review of the Noise SEPPs is available at http://www.epa.vic.gov.au/our-work/setting-standards/environmental-standards-reform/noise. Further information on the review of Water SEPPs is available at http://www.delwp.vic.gov.au/water/rivers,-estuaries-and-wetlands/state-environment-protection-policy-waters-review.

2 The role of the Scheduled Premises Regulations

2.1 Introduction

This section looks at the role, use and application of the Scheduled Premises Regulations tools – works approvals, licences and financial assurances. It considers the situations in which these tools are appropriate and effective and how the tools work with or complement other tools and approaches available to EPA and other regulators. The approach taken interstate and overseas to permit activities with potential adverse environmental impacts is also considered.

As noted in section 1.2.1, all businesses and premises are subject to the EP Act and must comply with its provisions and are liable to penalties if they do not. EPA can issue directions to remedy pollution or take enforcement action at any premises, whether scheduled or not, where it believes environmental standards have been breached.[12]

Works approvals and licences can only apply to 'scheduled premises' as defined by the Scheduled Premises Regulations. Sections 2.2.2 (Works approvals) and 2.2.3 (Licences) below provide further information on these tools.

Industry classification and size provide the main basis for scheduling. However, significant sources of specific air pollutants also provide the basis for scheduling. Consistent with section 19A of the EP Act, premises which are scheduled include those whose operations:

- discharge, or deposit waste to the environment
- emit noise
- reprocess, treat, store, contain, dispose of or handle waste or substances which are a danger or potential danger to the quality of the environment
- create a state of potential danger to the environment.

Under the current regulatory framework, the use of the Scheduled Premises Regulations tools is effective in situations where:

- the activity poses a significant hazard to the environment and human health
- there are emissions discharged to air and water environments
- the industry activity or subject is inherently complex (providing the greatest opportunity to influence the design and operations to minimise environmental harm)
- there is limited capacity and incentives to otherwise manage environmental risks
- statutory policy or other government direction provides a strong and stable basis for applying the Scheduled Premises Regulations tools.

[12] For example, in March 2016 EPA charged a number of companies with air pollution offences under the *Environment Protection Act 1970* following a comprehensive investigation into the 2014 Hazelwood mine fire: http://www.epa.vic.gov.au/about-us/news-centre/news-and-updates/news/2016/march/15/charges-laid-following-epa-investigation-into-hazelwood-mine-fire

2.2 The Scheduled Premises Regulations tools

2.2.1 Basis for assessing works approvals and licences

Legislation

The EP Act requires EPA to have regard to the following environment protection principles, including when it makes decisions relating to works approvals, licences and financial assurances (for example, in determining appropriate licence conditions):

- integration of economic, social and environmental considerations
- the precautionary principle
- intergenerational equity
- conservation of biological diversity and ecological integrity
- improved valuation, pricing and incentive mechanisms
- shared responsibility
- product stewardship
- integrated environmental management
- enforcement
- accountability.[13]

EPA's approach to applying these principles to works approval and licensing decisions is set out in the *Application of Environment Protection Principles to EPA's Approvals Processes.*[14]

The EP Act also sets out specific requirements that must be met for the granting of a works approval and licences and the provision of financial assurances.[15]

Statutory policy

As required by section 20C of the EP Act, works approvals and licences must be assessed on the basis of compliance with SEPPs and WMPs. The assessment includes a consideration of the nature of the technology proposed and whether the works will continue to maintain the policy objectives and beneficial uses set out in SEPPs and WMPs. The use of works approvals and licences is therefore confined to activities where there are relevant standards set in SEPPs or WMPs or, in some cases, where an alternative form of standard is appropriate. An example of an alternative standard is the Victorian Fire Services' guidelines for the storage of waste tyres.

The following SEPPs most commonly inform works approvals and licensing requirements:

- For air discharges, the relevant policy is SEPP (Air Quality Management). The SEPP sets standards for six common pollutants that are applied under the EP Act, including through works approvals and licensing. The SEPP (Ambient Air Quality) sets ambient air standards.

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[13] EP Act s1A(3).
[14] EPA Victoria, *Application of Environment Protection Principles to EPA's Approvals Processes* – EPA publication 1565, 2014.
[15] EP Act ss 19B and 20 set out the processes for the granting of works approvals and licences.

- For water, there are a number of catchment-specific policies with an umbrella policy, the SEPP (Waters of Victoria), which sets the framework for protecting and rehabilitating Victoria's surface water environments. The SEPP (Groundwaters of Victoria) provides an integrated framework of environment protection goals for groundwater.

Other relevant policies for works approvals and licensing requirements include:

- SEPP (Prevention and Management of Contamination of Land)
- SEPP (Control of Music Noise from Public Premises) and SEPP (Control of Noise from Commerce, Industry and Trade)
- WMP (Siting, Design and Management of Landfills).

Statutory policies underpin the management of risks and impacts from industrial activities in Victoria. Statutory policies provide:

- certainty for assessing officers and industry - SEPP and WMP requirements provide guidance on minimum standards, and the basis for when more stringent requirements might apply
- added flexibility - some policies make provisions for exemptions from some requirements and specify the basis for exemptions, provided environmental objectives are not compromised
- policy instruments – SEPPs and WMPs can establish requirements that oblige industry to keep improving its practices through continuous improvement concepts such as 'best practice' (less formal instruments such as best practice guidelines and protocols for environmental management can have indirect policy backing through SEPPs and WMPs).

Changes in statutory policies can also result in changes to the Scheduled Premises Regulations. For example, the recent tightening of standards for $PM_{2.5}$ emissions in SEPP (Ambient Air Quality) has been reflected in the proposed 2017 Regulations by reducing exemptions for $PM_{2.5}$ emissions from new sources.

Waste and resource recovery plans

EPA may refuse an application for a works approval or licence for a waste management facility if the operations of the facility could be inconsistent with the Statewide Waste and Resource Recovery Infrastructure Plan and the relevant Regional Waste and Resource Recovery Plan.[16] An application for a works approval for a new landfill must be refused under the EP Act if it is not included in the landfill schedule of the relevant Regional Waste and Resource Recovery Plan.[17]

Climate Change Act

Section 14 of the *Climate Change Act 2010* requires EPA to consider the potential impacts of climate change and the potential contribution to Victoria's GHG emissions for certain decisions, including works approval and licensing decisions.

[16] EP Act s50C(1).
[17] EP Act s50C(2).

The duty does not amend the EP Act and does not alter EPA's existing powers and obligations as set out in the EP Act. Rather, it requires EPA to specifically consider climate change impacts when making works approval and licensing decisions.

2.2.2 Works approvals

Works approvals ensure that development proposals adequately address potential environmental risks before construction begins. Works approvals involve EPA granting approval of the design of a facility prior to construction, or major modifications, to ensure that the design will deliver environmental outcomes that meet the requirements of the EP Act and relevant SEPPs, WMPs or other relevant statutory requirements. The activities subject to works approval requirements are set out in schedule 1 to the Scheduled Premises Regulations.

Identification of potential environmental risks at the design stage of a proposal allows companies to avoid such risks and prevent environmental damage. It also avoids costly retrofitting, minimising costs once they begin operating and the need for subsequent regulatory intervention to resolve environmental problems.

The works approval process has statutory time requirements for completion of the various steps, and allows for the applicant and third parties (in limited circumstances) to seek external review of the decision at VCAT.[18] Works approvals involve a formal public consultation stage to allow for input by the public, as well as statutory triggers for input from the responsible planning authority, the Department of Health and Human Services (DHHS), and the Minister responsible for administering the *Mineral Resources (Sustainable Development) Act 1990*. Works approvals may be conditional on planning approvals being issued, and the approval cannot be issued if the DHHS objects on the basis of public health.[19]

The EP Act requires that EPA makes a decision on works approval applications within four months of receiving a complete application.[20]

[18] EP Act s33, 33B.
[19] EP Act s19B.
[20] EP Act s19B(7).

Case study: The works approval assessment process

In 2013, EPA received a works approval application to develop a landfill at a former quarry. The proposal was to backfill an old quarry with municipal solid waste.

EPA comprehensively examined the application in line with the EP Act, the WMP (Siting, Design and Management of Landfills), EPA best practice guidelines and Victoria's broader waste policy and strategic direction.

More than 850 submissions were received during the works approval consultation period. As part of EPA's normal assessment process, issues were referred to other Victorian agencies, authorities and departments for assessment and comment. Issues raised by the proposal included potential fire hazards and impacts on flora and fauna. Additional information was also sought from the applicant.

EPA determined that the landfill proposal did not comply with a number of threshold requirements in the WMP relating to groundwater, construction design and management.

The works approval application process is a robust process, designed to consider different aspects of the potential environmental impacts of a proposed activity. In this case, EPA's assessment of the proposal against the requirements of the EP Act and relevant statutory policy resulted in the application being refused.

2.2.3 Licences

The primary role of licences is to ensure ongoing operations that pose a substantial environmental risk are kept environmentally acceptable. This is reflected in section 20(1) of the EP Act, which restricts what an occupier of a scheduled premises may do unless they are licensed to do so.

When licences were introduced in 1973, they were used to bring polluting industries into compliance with legislative requirements and to manage ongoing emissions to ensure pollution was prevented or avoided. For the licensee, the licence provided security against enforcement action for pollution where the licensee could demonstrate that emissions were in accordance with the licence. In addition, the licensing process helped ensure ongoing management of emissions and provided opportunities for stakeholder involvement.

Today, licences continue to be a valuable statutory tool, requiring licensees to undertake action or keep within emission limits. Unlike a self-regulation or industry-regulation approach, licences involve EPA playing an intermediary role between the community and the licensee, seeking to deliver the expectations of the community by enforcing emission limits.

The relationship between works approvals and licences is also an important factor to consider. A licence is usually the last link in the environmental approval 'chain', with environmental acceptability determined in the works approval process that precedes the licence application.

While licences are perpetual, they can be amended or have new conditions attached[21], often when the understanding of environmental risks or impacts has changed or when policy objectives have changed. When a SEPP or WMP is declared or varied, EPA is required to amend licences, as required, so that they remain consistent with the statutory policy.[22]

Licences are not the primary or sole instrument for delivering reductions in pollution beyond the original set limits, or for driving continual improvement. Licences play a strong role in supporting the use of a range of other instruments to remedy pollution impacts (PANs, directions), and can incentivise voluntary improvements (for example, to achieve fee reductions or reduced inspection frequency, and via accredited licences. The majority of current EPA licences still have the same emission limits as were included in the original licence.[23]

2.2.4 Works approval and licence exemptions

Both the EP Act and the Scheduled Premises Regulations provide grounds for works approval and licence exemptions.

The EP Act allows some proposed activities at existing scheduled premises to be exempt from the requirement to obtain a works approval.[24] If the proposed works do not adversely affect the quality of any segment of the environment (air, water, land, groundwater, noise) or the interests of any person other than the applicant, EPA may grant an exemption. The applicant must provide sufficient information to EPA to demonstrate that an exemption under the EP Act should be granted.[25]

The Scheduled Premises Regulations provide for both general exemptions for certain types of activities, emissions or wastes, as well as exemptions that apply only to specific scheduled categories. Generally, these exemptions apply where the activity meets the requirements of the exemption, without the need for EPA approval – that is, industry can self-assess their applicability.

Approval of an exemption under the Regulations is required in some circumstances where there is a need to consider the adequacy of the system for managing emissions or waste. Regulation 11(d) provides that a works approval or licence is not required 'with respect to discharges or deposits to land or water from ... an effluent reuse scheme or activity which meets discharge, deposit and operating specifications acceptable to the Authority'.

Similarly, Regulation 12(c) states that a works approval or licence is not required for 'a biosolids reuse scheme or activity which meets deposit and operating specifications acceptable to the Authority'. These exemption processes provide a more flexible alternative to the process of a obtaining a works approval and licence, while still ensuring that EPA is comfortable with the systems in place to manage the risks. Proponents seeking an exemption must submit an Environment Improvement Plan (EIP) or a Health

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[21] EP Act s20(9)(b) and (c).
[22] EP Act s20C(4) and (5).
[23] EPA Victoria, *Approvals Review Draft Report - EPA publication 1501*, 2012 p.42.
[24] EP Act s19(4), (5) and (6).
[25] EPA Victoria, *Works approvals exemptions*, http://www.epa.vic.gov.au/business-and-industry/guidelines/licensing-and-works-approvals/works-approval-exemptions

and Environment Management Plan (HEMP), in line with EPA's guidance on biosolids and water reuse.

2.2.5 Financial assurances

The EP Act enables provision of financial assurance by the occupier of certain scheduled premises. These premises are prescribed by the Scheduled Premises Regulations. EPA requires financial assurances for the following activities:

- PIW management
- landfills
- bulk storage
- container washing
- contaminated sites (onsite soil containment).

Financial assurance reduces the risk that the cost of disposal of stockpiled waste, costs of remediation, site closure and post-closure liabilities are not borne by the community in the event of the occupier abandoning the site, becoming insolvent or incurring clean-up costs beyond their financial capacity.[26]

Under current reforms, financial assurances for PIW management will be calculated based on the cost of disposing of the maximum amount of PIW permitted to be held onsite.[27] This is a shift away from the previous calculation method, which also included the costs of a site audit and remediation.

Financial assurances now focus primarily on known, quantifiable costs that are not insurable. The cost of rehabilitating and caring for a landfill, and the costs of disposing of stockpiled waste are examples of quantifiable, non-insurable costs. A contingent component is also included for operational landfills, based on the experience that a number of possible contingent events at landfills are not generally insurable. These changes impact the way financial assurances are calculated; they do not impact on the types of premises for which financial assurances are an appropriate tool for preventing clean-up costs being borne by the community in the event of business failure.

2.2.6 Works approval and licensing fees

The EP Act authorises EPA to collect fees for administering works approval applications and the licensing system. The level of fees payable is set out in the Environment Protection (Fees) Regulations 2012. The fees are designed to recover the costs associated with EPA assessing works approval applications and issuing and managing licences.

Works approval fees are dependent on the value of the proposed value of the works. Works approvals require payment of an application fee that amounts to the greater of either 1 per cent of the estimated cost; or 81.83 fee units ($1,140.71 in 2016-2017).[28] The

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[26] EPA Victoria, *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 – Regulatory Impact Statement,* 2007, p. 39.
[27] EPA Victoria, *Financial assurances for licences and works approvals – EPA position* – EPA publication 1594, 2016.
[28] Environment Protection (Fees) Regulations 2012, r.6.

total cost of works is used as a proxy for the amount of time required for EPA's assessment of an application.

Licence fees are determined by the type of activities conducted at the premises and the volume and types of any environmental discharges. They have two elements: a base fee and a component fee. The base fee is determined by industrial category to reflect EPA's time and effort in administering the licence. In this way it reflects the environmental issues associated with managing that category of licensee. The component fee is a function of the licensed emission limits or the amount of waste that can be accepted under a licence and reflects the emitter pays principle.

The changes proposed in this RIS do not impact the level of fees (other than one change to reflect current practice). Fee levels will need to be reconsidered during Stage 2, as part of a more comprehensive review of the Scheduled Premises Regulations.

2.2.7 Landfill levies

The landfill levy system was introduced in Victoria in 1992 in metropolitan and provincial centres and extended to the whole of Victoria in 1996. The PIW landfill levy system was introduced in Victoria in 1998 with the aim of providing a financial incentive to minimise the generation of PIW, sending a signal to industry that the Government supports efforts to develop alternatives to landfill disposal.

Any premises licensed to accept waste or PIW must collect a levy for each tonne of waste that is deposited onto land at the premises.[29] Levies apply to municipal, commercial and industrial wastes disposed to licensed landfills in Victoria. As such, without the Scheduled Premises Regulations, which define the premises requiring a landfill licence, the landfill levy would not be payable. The landfill levy structure reflects the difference in the magnitude of environmental risk posed by the different waste streams, and also seeks to accommodate regional differences.

The Scheduled Premises Regulations exempt council-operated landfills serving less than 5,000 people from the need to hold a licence, thereby exempting these landfills from the requirement to collect landfill levies. Exempt landfills manage a small proportion of the state's waste, with most accepting less than 10,000 tonnes per year.[30] The number of exempt landfills is expected to continue to decrease in favour of larger regional landfills.[31] Exempt landfills are expected to comply with EPA guidance (*Landfills exempt from licensing* guidelines) to demonstrate compliance with the WMP (Siting, Design and Management of Landfills).

2.2.8 Environment protection levy

The environment protection levy is payable by scheduled premises which store, process, treat, dispose of or otherwise handle PIW. This is prescribed in the Scheduled Premises Regulations – as such, without the Regulations, this levy would not be payable. The levy is calculated as 3 per cent of the annual licence fee.[32] Unlike works approval and licence

[29] EP Act s50S(1) and (2).
[30] Sustainability Victoria, *Statewide Waste and Resource Recovery Infrastructure Plan,* 2015, p. 71.
[31] Sustainability Victoria, p. 73.
[32] EP Act s70.

fees which go to consolidated revenue, EPA retains revenue from the environment protection levy for its operations.

2.3 EPA tools and approaches

EPA's Compliance and Enforcement Policy[33] describes the regulatory approach adopted by EPA. EPA undertakes a range of activities on behalf of the Victorian community to achieve compliance with the EP Act, Regulations and other environment protection laws. This includes a mix of methods, some of which seek industry action on a voluntary basis, with other tools compelling action. EPA's broad regulatory approach is shown in Figure 2.

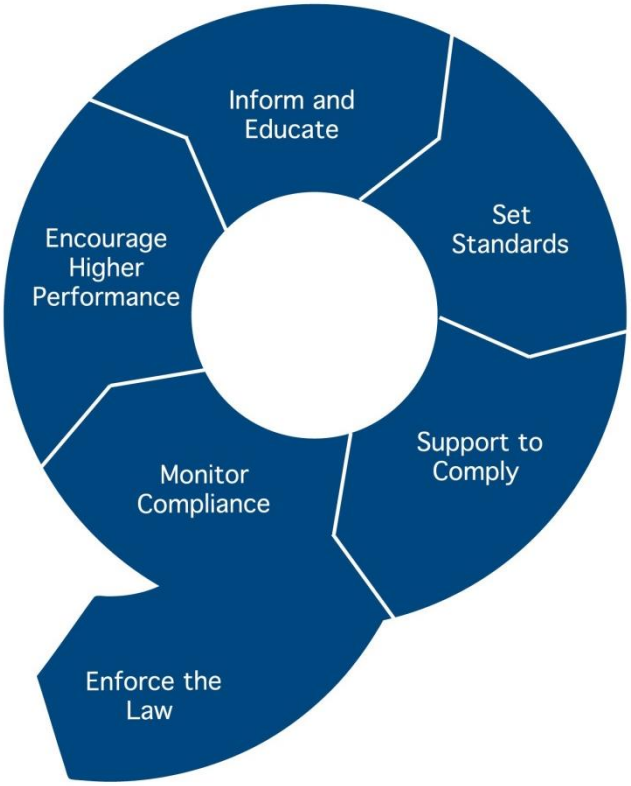

Figure 2: EPA's regulatory approach

While the requirements for industry are set out in the EP Act, Regulations and policies, a licence is a convenient document that specifies these requirements and provides assurance to the Victorian community that industry is managing their operations appropriately. The administration of works approvals and licensing is specifically included in EPA's statutory powers and is integral to the operation of the EP Act.

EPA has a range of other Regulations, tools and approaches it can use to regulate activities with the potential for adverse environmental impacts. For example, the Environment Protection (Industrial Waste Resource) Regulations 2009 (the IWR Regulations) apply specific requirements to the handling, management and disposal of hazardous waste. The controls applied under the IWR Regulations to activities which

[33] EPA Victoria, *Compliance and Enforcement Policy* – EPA publication 1388, 2011.

handle hazardous waste are a critical factor in determining whether that type of activity would benefit from the application of the Scheduled Premises Regulations tools. For example, the IWR Regulations establish a permit system for the transport of hazardous waste whereas, in some other jurisdictions such as New South Wales and South Australia, hazardous waste transporters are licensed.

Measures that promote compliance with environmental requirements and even encourage environmental performance beyond minimum requirements can be effective and reduce the need for enforcement. These measures include providing education and information; providing technical advice; issuing best practice guidelines; the promotion of environmental audits; the encouragement of EIPs; and the implementation of voluntary arrangements.

Where non-compliance occurs, EPA's first priority is to control the risk and prevent further harm. In accordance with the Compliance and Enforcement Policy, this can include providing compliance advice or, where the non-compliance cannot be addressed in the presence of an EPA officer, issuing a remedial notice requiring action to be taken.

Pollution abatement notices (PANs) are an example of a remedial notice. PANs are used to control a process or activity at any premises (other than noise from residential premises) where the resultant discharge has caused or is likely to cause pollution, including unreasonable noise. While PANs are a powerful tool, they are generally reactive and not effective in preventing pollution in the first place.

Independent of any decision to take action to remedy non-compliance, EPA may instigate action to punish an alleged offender for non-compliance. Measures such as warnings, infringement notices, prosecutions, licence suspension or revocation, and injunctions can be used to enforce the EP Act. The decision as to which enforcement measure is appropriate is a matter of judgement to be made on a case-by-case basis in accordance with EPA's Compliance and Enforcement Policy.

2.4 Joint regulators and other regulatory schemes

A number of other Victorian legislative schemes establish controls that regulate some activities with potential adverse environmental impacts. If the environmental impacts of an activity are adequately addressed under another legislative scheme, there is no need for duplication under the EP Act and the Scheduled Premises Regulations. This section looks at other relevant Victorian legislative schemes and how they interact with the Scheduled Premises Regulations.

2.4.1 Major projects

Most 'major projects' require impact assessment under the *Environment Effects Act 1978* (the EE Act) or the *Major Transport Projects Facilitation Act 2009* (the MTPF Act).

If a works approval is jointly advertised with an environmental effects statement (EES), the EE Act makes provision for an extension of the time within which EPA must make a determination – that is, until after the Minister for Planning has reached their assessment. This is so EPA can have regard to the Minister for Planning's assessment in making its

determination. Under this scenario, where the EPA decision is in broad agreement with the EES recommendation, there are no third-party appeal rights to VCAT.[34]

Under the MTPF Act, the works approval is issued by the Minister for Planning, who must have regard to advice from EPA. The works approval application is made as part of a comprehensive impact statement (CIS) process, which is coordinated by DELWP. The works approval decision is made once the CIS is complete, so the CIS can inform the works approval assessment.

2.4.2 Land use planning

The *Planning and Environment Act 1987* and Victoria Planning Provisions (VPPs) establish the State's land-use planning framework. The purpose of land-use planning is to balance the present and future interests of all Victorians in the use, development and protection of land.

From 2007 to 2014, EPA received 4,863 planning referrals from responsible authorities. Nineteen per cent of the referrals to EPA related to planning scheme amendments and re-zoning. EPA assists planning and responsible authorities to determine appropriate separation distances and land use compatibility, in particular between industry and sensitive uses.

Where both a works approval and an amendment to a planning scheme are required, the EP Act provides scope for joint advertising of the proposal to streamline the approval processes (including limits on applicant[35] and third-party[36] VCAT reviews).

EPA contributes to decisions about planning permits for the use and development of land. Planning permits which must be referred to EPA (statutory referrals) account for 14 per cent of all EPA referrals.

EPA's advice must be followed for planning permit decisions where EPA is a determining referral authority. EPA is a determining referral authority for:

- use or development that also requires a works approval, licence or licence amendment
- use of land for industry or a warehouse where the buffer distance is not met
- use or development of land as a quarry if the land is intended to become a landfill in the future.[37]

EPA must be given notice of planning permits for certain new or expanded broiler farms.[38]

There are many other planning permits where responsible authorities seek EPA's advice and guidance (non-statutory referrals). Non-statutory referrals are numerous (66 per cent of referrals to EPA) and diverse. EPA uses its discretion in deciding whether it will respond to these requests based on the level of risk and EPA's planning principles.[39]

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[34] EP Act s33B(1B).
[35] EP Act s33(3A).
[36] EP Act s33B(1A).
[37] Victoria Planning Provisions, clause 66.
[38] Victoria Planning Provisions, clause 66.
[39] EPA Victoria, *Purpose and role of EPA in land-use planning matters* – publication 1487, 2012.

2.4.3 Occupational health and safety

The *Occupational Health and Safety Act 2004* establishes a framework, administered by WorkSafe, for managing occupational, health and safety risks, with specific licensing requirements for major hazard facilities (MHFs).

MHFs are industrial sites that store, handle or process large quantities of hazardous chemicals and dangerous goods, including petroleum products. There are approximately 45 MHFs. Examples include:

- oil refineries
- chemical manufacturing sites
- gas-processing plants
- LPG facilities
- some warehouses and transport depots.

Currently, 24 of the 37 MHFs are licensed under the EP Act to manage their discharges to the environment. EPA and WorkSafe work together to:

- understand the risk profile of each MHF
- communicate risks to MHF operators
- ensure preventative and response measures are adopted at each site to reduce the risk of incidents arising and minimise the environmental impact of any incidents, while avoiding duplication of controls.

2.4.4 Dangerous goods

The *Dangerous Goods Act 1985*, also administered by WorkSafe, sets out the general duties for the manufacture, storage, transport, transfer, sale and use of dangerous goods and the import of explosives into Victoria.

Dangerous goods are substances that are corrosive, flammable, explosive, spontaneously combustible, toxic, oxidising or water-reactive. Petrol, LPG, paints, pesticides and acids are examples of commonly used dangerous goods.

Incidents involving dangerous goods typically result in explosions or fires and have the potential to cause serious or fatal injuries as well as large-scale damage to property and the surrounding environment. Many businesses subject to EPA works approvals and licences use dangerous goods as part of their operations.

2.4.5 Earth resources

Mining and extractive industries are scheduled activities (category C01 in the current Scheduled Premises Regulations) but premises with solely land discharges or deposits are currently exempt from the need for a works approval or licence. In effect, regulatory approvals are the responsibility of DEDJTR under the *Mineral Resources (Sustainable Development) Act 1990* and associated regulations. Under the VPPs, EPA is a determining referral authority when:

- a proposed mine requires a works approval/licence for discharges to water; or
- a proposed quarry is intended to be used later as a landfill.

New mining approvals are generally assessed through the EES process.

2.4.6 Waterways

The *Catchment and Land Protection Act 1994* establishes an integrated catchment management framework to underpin sustainable management of land and water resources. Victoria is divided into 10 catchment regions, each with a catchment

management authority (CMA). Under the *Water Act 1989*, CMAs have management powers over regional waterways, floodplains, drainage and environmental water.

There is a risk that works and activities on or adjacent to waterways may cause environmental damage. The Model Waterways Protection By-law enables CMAs to prevent environmental degradation of waterways, including flora, fauna and habitat, by regulating works and activities on and around waterways. It empowers CMAs to issue permits with conditions to ensure that works and activities that occur on waterways have minimal impact to the environmental condition of waterways.

Industrial activities that occur on waterways may require a CMA permit in addition to an EPA works approval or licence.

2.5 Interstate and international approaches

In 2013, Minter Ellison Lawyers was engaged by EPA to undertake a comparative study of environment protection regulatory regimes, focusing on approaches to licensing, works approval and financial assurance requirements or similar controls.

The report[40] reviewed the eight Australian state and territory regimes, as well as those of the European Union, England and Wales, Northern Ireland, Scotland, United States of America, New Zealand and five provinces of Canada (Ontario, Quebec, British Colombia, New Brunswick and Alberta).

The report found that all 19 jurisdictions, to a greater or lesser extent, employ a risk-based environmental protection regulatory regime, with each jurisdiction employing at least one type of site-based licensing system to control the impact of activities and installations on the environment. More details on the findings of the report are provided in Appendix B.

The number of EPA-licensed premises in Victoria is generally less on a proportionate basis than in other Australian jurisdictions. Currently, EPA Victoria licenses approximately 670 premises. By comparison, there are approximately 2,500 EPA licensed premises in New South Wales, 1,500 in South Australia and 900 in Western Australia.

This is partly explained by the different approaches taken to regulating the transport of hazardous waste. Approximately 730 Victorian businesses hold a waste transport permit for the transport of hazardous waste under the IWR Regulations, whereas hazardous waste transporters are licensed by EPA in New South Wales and South Australia, under their equivalent to the Scheduled Premises Regulations.

More fundamentally, Victoria has progressively reduced the number of premises subject to works approvals and licensing over time. This reduction reflects:

- the continual refinement of the focus of works approval and licences to those activities where their use is optimal
- improved environmental performance of certain industries
- the availability of alternative tools to address environmental impacts
- the adoption of new technology and management systems
- a greater awareness of minimising regulatory burdens

[40] Minter Ellison Lawyers, *Comparative research on risk-based approaches to licensing, works approvals and financial assurance requirements*, 2013 (unpublished).

- the changing nature of the environmental problems being addressed.

Implementation of the Government's response to the EPA Inquiry offers an opportunity to review the principles underlying the use of the Scheduled Premises Regulations and therefore the scope of activities that fall within the licensed cohort. This review will occur in Stage 2, which is likely to commence following changes to the EP Act and key statutory instruments.

3 Problem definition

3.1 Environmental harms

While industrial activities play an important role in the economic well-being of Victoria by contributing to sustainable growth, they can also have a significant impact on the environment. Any environmental impact as a result of these activities will ultimately result in some form of cost to society. Often this can be considered in the context of industrial activities emitting pollution or causing harm as a result of incidents, and the cost that this imposes on others.

The largest industrial installations account for a considerable share of total emissions of key atmospheric pollutants and also have other environmental impacts, including emissions to water and land, and the generation of waste. Emissions from industrial installations to air and water, in particular, have been a primary focus of Victorian environment protection legislation and the Scheduled Premises Regulations.

Almost all industrial activities produce some amount of waste that ultimately needs to be managed or discharged to the environment – examples include the burning of fossil fuels by power stations, which releases nitrogen oxides, and the emission of wastewater by paper mills, which comprises dissolved organic matter. A certain level of pollution is therefore an inevitable by-product of many otherwise socially and economically productive and beneficial activities.

3.1.1 Air

Clean air is a basic requirement of human health and wellbeing. Exposure to high levels of air pollution, both outdoor and indoor can cause a variety of adverse health outcomes, some of which can be fatal[41]. It increases the risk of respiratory infections, both acute and chronic respiratory disease, heart disease, stroke and lung cancer. Both short- and long-term exposure to air pollutants have been associated with health impacts. It is estimated that urban outdoor air pollution causes 1.3 million deaths worldwide per year. Children, the elderly and people whose immune systems are already compromised are more susceptible and experience more severe impacts associated with air pollution.[42]

3.1.1.1 Current state of environment in Victoria

'Currently, the main sources of air pollution in Victoria are industry, wood heaters, windblown dust, bushfires, planned burning activities such as fuel reduction burns, and motor vehicles'.[43]

The 2013 state of the environment report for Victoria made the following observations on Victoria's air quality:

- Victoria generally has good air quality (by international standards); however, areas of poor air quality exist and can cause adverse health impacts.
- Particle pollution is the most significant air-quality issue in Victoria.
- Levels of fine particles and ozone do not always meet the objectives set out in Victoria's ambient air-quality SEPP.

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[41] World Health Organization, *Health Topics - Air Pollution* http://www.who.int/topics/air_pollution/en
[42] World Health Organization, *Air pollution,* http://www.who.int/ceh/risks/cehair/en/
[43] Commissioner for Environmental Sustainability Victoria, *Victoria: State of the Environment*, 2013 p.53.

- Odour is a significant issue in Victoria, with around 4,000 complaints made to EPA each year.

3.1.1.2 Potential impacts

Air pollution is contamination of the air environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere. Other than affecting the health of a person through inhalation and exhalation, air pollutants may enter the bloodstream, affecting organs other than the lungs. In addition, some pollutants affect health through contact with the skin and through ingestion of contaminated food and drinks.

Air pollution also has the potential to damage plants and animals through a combination of physical and chemical stress. Pollutants can reduce the growth of crops, compromise yields and make produce unsafe to eat through contamination. Effects on aquatic and terrestrial ecosystems can occur locally or regionally, as in the case of pollutants contributing to acid deposition (for example, acid rain).

Fine $PM_{2.5}$ particles that penetrate deep into lung passageways are the most health-harmful pollutants associated with premature mortality.[44] These are generated from the burning of fossil fuels and as such power plant emissions are a major source. Particular pollutants of major public health concern include particulate matter, carbon monoxide, ozone, nitrogen dioxide and sulfur dioxide.

3.1.1.3 Sources and pathways

As shown in

[44] World Health Organization, *Frequently asked questions: Ambient and household air pollution and health,*http://www.who.int/phe/health_topics/outdoorair/databases/faqs_air_pollution.pdf

Table 3, industrial sources such as power stations, oil refineries, waste incinerators and chemical processing plants pose obvious potential pollution problems.

The day-to-day operation of some industries ultimately produces waste that may be released as general emissions, for example, power stations. Other industries do not produce emissions as part of their day-to-day activities; however, they may have the potential to adversely impact air quality if a catastrophic event such as an explosion were to occur. The likelihood of such events can be reduced and their impacts mitigated by ensuring appropriate design, technology and operation of industry. Therefore, industries and their associated activities may give rise to both routine and non-routine pollutant emissions.

Table 3: Industry sources of air pollutants

Pollutant	Industry/activity
Sulfur dioxide (SO_2)	Coal and oil-fired power stations, industrial boilers, waste incinerators, metal smelters, paper manufacturing
Nitrogen oxides (NO_x: NO, NO_2)	Burning of fossil fuels: coal, oil and gas, petrol and metal refining, manufacturing industries and food processing, coal and oil-fired power stations, industrial boilers, waste incinerators
Carbon monoxide (CO)	Fuel combustion, metal manufacturing, electricity supply, mining (metal ore and coal), food manufacturing, production of chemicals, cement lime, plaster and concrete manufacturing and petroleum refining
Volatile organic compounds (VOCs e.g. benzene)	Paint manufacturing, leakage at service stations
Particulates (dust, smoke, PM_{10}, $PM_{2.5}$)	Coal and oil-fired power stations, industrial boilers, waste incinerators, industrial plants, mining, quarrying, cement manufacturing, construction activities.
Toxic organic micropollutants (PAHs, PCBs, dioxins)	Waste incinerators, coke production, coal combustion
Toxic metals (lead Pb, cadmium Cd)	Metal processing, waste incinerators, oil and coal combustion, battery manufacturing, cement and fertiliser production.
Toxic chemicals (e.g. chlorine Cl, ammonia NH_3, fluoride F)	Chemical plants, metal processing, fertiliser manufacture.
Greenhouse gases (carbon dioxide CO_2, methane CH_4)	Fuel combustion, coal mining, gas leakage, landfill sites
Ozone (O_3)	Secondary pollutant formed from VOCs and nitrogen oxides
Odours	Wastewater treatment plants, landfill sites, chemical plants, oil refineries, food processing, paintworks, plastics manufacturing, rendering

3.1.2 Water

Water resources are of major environmental, social and economic value. Absent, inadequate or inappropriate management of urban, industrial and agricultural wastewater can result in receiving waters becoming dangerously contaminated or chemically polluted. Where water quality becomes degraded, this resource will not only lose its value but also has the potential to impact on public health, ecosystem habitats and industries such as agriculture and fishing. Ultimately the commercial and recreational value of water resources will diminish if water quality is not maintained.

3.1.2.1 Current state of environment in Victoria

Victoria's water environments are diverse and unique. Ranging from small mountain streams, to large lowland rivers, billabongs, lakes, estuaries and coastal waters, they are among Victoria's most valuable assets.

Victoria's rivers, lakes, wetlands, estuaries and coasts are of great environmental and cultural value to all Victorians, especially Indigenous and rural communities. Victoria's

water environments support industry, agriculture, shipping, residential living, fishing and tourism, which in turn support social values and the local, regional, state and Australian economies. These environmental, social and economic values are inherently inter-dependent.

In addition to point-source pollution from domestic and industrial wastewaters, pollution from diffuse sources remains a major cause of poor water quality. The most significant impacts on water quality in Victoria are considered to occur as a result of changes in concentrations of nitrogen, phosphorous, pesticides and heavy metals, or changes in salinity, turbidity, pH and temperature.[45]

The condition of Victoria's water can be assessed by looking at aquatic ecosystems, biodiversity, flow regimes and water quality. The 2013 state of the environment report for Victoria noted the following observations:

- Results from the Index of Stream Condition 2010 (ISC) show that 23 per cent of major rivers and tributaries in Victoria were in good or excellent condition, 43 per cent were in moderate condition and 32 per cent were in poor to very poor condition.
- In many rivers and aquifers, the current Environmental Water Reserve (EWR) is inadequate and vulnerable, placing environmental values at risk.

The 2013 state of the environment report for Victoria noted some significant pressures on aquatic fauna which can be attributed to industry or associated activities, such as:

- inputs of sediment, salt and nutrients, and a broad range of toxic substances such as pesticides
- water release from dams to supply industry and irrigation - as it may not replicate seasonal flows and can have a significant temperature difference - which disrupts the lifecycles of aquatic species (water temperature depression from dam release is known to occur at up to 49 dams in Victoria)
- changes to flow regimes as they place pressure on river, wetland and floodplain ecosystems and their biodiversity.

3.1.2.2 Potential impacts

Water quality can be impacted by pollution from a wide range of human activities, including large and small industries, wastewater treatment plants, urban infrastructure, agriculture, transport, and deliberate or accidental pollution incidents. The majority of industrial activity will use water and therefore discharge to water on a regular basis. It is these discharges that, if not appropriately managed, can have adverse impacts on water quality. Water pollution can involve changes in the concentrations of naturally occurring chemicals (for example, nitrates, phosphates, metals); the input of new synthetic substances (for example, pesticides); changes to sediment loads; and temperature. Excess nutrients can result in algal blooms and fish deaths.

Water discharges from industry can have both positive and negative impacts, for example, the impact of wastewater discharges to inland and marine water bodies can be exacerbated by drought conditions, when low flows reduce the dilution of discharges. However, in other cases, the flow from some wastewater discharges can be an important

[45] Commissioner for Environmental Sustainability Victoria, *Victoria: State of the Environment*, 2013 p.126.

contribution to waterway health, if they are of the right environmental quality and well managed.

3.1.2.3 Sources and pathways

Large quantities of water are used for cooling, rinsing and cleaning in industry, and for irrigation in agriculture. Such pressures place a heavy burden on water resources both in terms of quantity and quality.

Water discharges from industry may occur in a number of ways, for example, daily activities resulting in general emissions/discharges, controlled point source releases, uncontrolled diffuse sources or deliberate or accidental pollution events. Table 4 provides some examples of the potential impacts on water quality from different industries and activities.

The pathway for point source discharges is often obvious and easily identified, making mitigation reasonably straightforward. Mitigation for diffuse pollution is much more difficult as it is caused by a variety of activities that have no specific point of discharge. Water quality is impacted by diffuse pollution as pollutants from a range of sources enter waterways, often as a result of run-off.

Table 4: Potential industry sources of water pollutants

Potential impact	Industry or activity
Thermal pollution	Power station
Eutrophication	Agriculture, Paper pulp mill, sewage treatment plants, wastewater treatment plants
Sediment loading	Paper pulp mill, agriculture, wastewater treatment plants, agriculture
Micro organics, metals and chemical pollution	Paper pulp mill, sewage treatment, agriculture, manufacturing, wastewater treatment plants, chemical storage facilities
Pathogens	Sewage treatment, agriculture, wastewater treatment plants
Oils	Manufacturing, food processing, wastewater treatment plants

3.1.3 Land

Clean, healthy and safe land is essential for the production of food, ensuring the health of wildlife and ecosystems, protecting human health and providing public amenity.

Land degradation can occur as a result of human activities. One form of land degradation that can be attributed to human activity, particularly industrial, is that of land contamination. Activities that contaminate or degrade the quality of soils and land utility, negatively affect food production, livelihoods, and the production and provision of other ecosystem services, as well as potentially putting human health at risk. Contamination is typically caused by industrial activity, agricultural chemicals, or disposal of waste. The generation, treatment and disposal of waste also has the potential to cause environmental impacts, including the pollution of air, water and contamination of land. There is also a need to provide land for landfill sites.

Soil contamination can affect human health through direct contact with affected soils, vapours from the contaminants, and from secondary contamination of water supplies and crops. Human health risks range from minor health problems, such as allergic reactions

and hypersensitivity, to serious health problems, such as cancer, respiratory illness, reproductive problems and birth defects. The risks largely depend on the contaminant and its concentration, the exposure pathway, the level of exposure, and the vulnerability of the exposed population.

3.1.3.1 Current state of environment in Victoria

Previous industrial activity is a significant source of contamination. 'The Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) estimates that 160 000 contaminated sites potentially exist across Australia, containing as many as 75 000 different contaminants.'[46]

Previous land use is an accurate indication of the likelihood of contamination. There are numerous land uses that are considered to pose a high potential for contaminating land. Examples include battery manufacturing and recycling; organic waste processing; gas and electricity generation; the manufacturing of textiles, paper, metal and glass; waste disposal; and printing.[47]

Landfills are an important part of Victoria's waste management infrastructure. 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. Currently in Victoria, total waste generation is estimated to be more than 12 million tonnes per year, with approximately 4 million tonnes going to landfills. By 2043, waste generation is expected to rise to over 20 million tonnes per year with corresponding effects on the demand for management and disposal.[48]

3.1.3.2 Potential impacts

General discharges and emissions of waste may impact the immediate, local or regional environment. Accidental spills or leaks may also impact the site or a wider area due to migration, depending on the contaminant. The life of the contaminant is also relevant, whether the contaminant naturally breaks down relatively quickly or is more persistent and therefore has the opportunity to accumulate.

Depending on the nature and extent of the contamination, and how the site is used, contaminated sites may pose imminent or long-term risks to human health, and the environment. They also may limit the capacity of land and water resources to support future activities and provide some essential ecosystem services. Any site where chemicals or wastes are handled, stored or disposed has the potential to cause contamination.

The costs associated with contamination of land can be significant. In the late 1980s, severely contaminated soil was discovered when a former battery factory at Ardeer was redeveloped for residential purposes. This discovery resulted in the abandonment of new homes and relocation of residents, generating an incalculable social and emotional cost to the local community and a financial cost to the Government of several million dollars. Remediation works associated with major redevelopments, such as the former West

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[46] Conversation with R Naidu, CRC CARE, 2011, State of the Environment 2011 Committee. *Australia State of the Environment* 2011 report. Independent report to the Australian Government Minister for Sustainability, Environment, Water, Population and Communities.
[47] The Department of Sustainability and Environment, *Potentially Contaminated Land, General Practice Note*, 2005, pp.3-4.
[48] Sustainability Victoria, *Snapshot: Statewide Waste and Resource Recovery Infrastructure Plan Victoria* 2015-44.

Melbourne Gasworks or the former Albion Explosives factory, can cost tens of millions of dollars.

3.1.3.3 Sources and pathways

Typically, there are three ways in which contamination may affect sites:

- Contaminants attach to, or are contained within, the soil.
- Contaminants leach from the soil into surface or ground waters, which may be static, or migrating onto or off the site.
- Airborne contaminated gases emanating from contaminants in the soil and groundwater, or atmospheric deposition of contaminants onto land.

The processes of storage, collection, transport, treatment and disposal of wastes all have the potential to contaminate the environment and particularly groundwater due to uncontrolled migration of fluids (leachate) derived from the wastes. In addition to the potential for groundwater pollution at sites where wastes are produced and stored prior to collection, sites associated with the treatment and disposal of wastes, where leachate may be generated include:

- landfills
- scrap yards
- waste collection and processing facilities
- composting facilities.

Pollution of groundwater by leachate produced at landfills is very difficult to remediate. The decomposition of wastes in landfills not only produces leachate but also produces landfill gas, predominantly methane and carbon dioxide which can cause serious health, safety, amenity and environmental impacts. These gases can be emitted from a landfill by a number of pathways including sub-surface geology, leachate migration and the landfill surface.

The environmental risks posed by landfill sites continue for a significant period of time after waste acceptance has ceased. These risks include

- leachate – a liquid formed by rainwater and decomposing waste – contaminating groundwater, stormwater or surface waters
- landfill gas – formed during the decomposition of waste – migrating into the surrounding ground and atmosphere, causing odours
- inappropriate or incomplete capping allowing the infiltration of rainwater to generate large volumes of leachate, which in turn causes landfill gas to escape to the atmosphere
- a lack of appropriate ongoing aftercare management, maintenance, monitoring and reporting which results in an inadequate assessment of risk.

In order to ensure that the risks are appropriately quantified and managed, ongoing monitoring and aftercare is required until such time as the site does not pose a risk to human health or the environment. A term of at least 30 years is common for the duration of active aftercare for closed landfills, although the actual aftercare period will be site-specific and could be significantly longer.

3.1.4 Noise

Noise can be defined as unwanted sound. Noise is a major form of pollution. 'According to the findings of the World Health Organisation, noise is the second largest environmental cause of health problems, just after the impact of air quality (particulate matter).'[49]

Noise can interfere with communication, increase stress and annoyance, and disturb sleep, leading to lack of concentration, irritability and reduced efficiency. It can contribute to stress-related health problems such as high blood pressure. Prolonged exposure to high noise levels can cause deafness or partial hearing loss.

The principal physical factors which influence how much effect a sound will have upon a potentially affected receptor are the level of sound being assessed and the level of other sounds (background) which also affect the receptor.

It is both the increase in noise level above background levels (that is, intrusiveness of a source), as well as the absolute level of noise that are important factors in how a community will respond to noise from industrial sources. People affected are not only local residents but also include people working nearby and users of public places.

In Victoria, industrial noise can have a significant effect on noise-sensitive receivers surrounding the premises. This is becoming more of an issue in locations where the buffers between industry and residential areas are eroding. There are various industrial sources which emit noise; for example, aerators, alarms, blasting, blowers, cattle/pigs, collisions, compactors, compressors, conveyors, debarking, dropping masses, large electric motors, large fans, fragmentors, furnaces, grinders, hammer mills, haul packs, heavy trucks, high-pressure reduction systems, large pumps, percussion, large refrigeration plants, reversing beepers, screening, stationary diesel motors, timber machining, and tracked vehicles.

3.2 Risk-based decision making

There are hundreds of types of industry sectors and industrial activities within Victoria, all of which are subject to the EP Act and must comply with its provisions. However, it is not appropriate for all of these to be scheduled premises requiring works approvals, licences and/or financial assurances, as the Scheduled Premises Regulations are but one method used to achieve compliance with the EP Act and to reduce impacts on the environment and human health.

Decisions on which premises should be prescribed as scheduled premises are made within the context of the EP Act, SEPPs, WMPs, other regulatory schemes and government policy. Currently, scheduled premises are limited to activities of potential significant environmental impact and are defined in the EP Act as premises from which:

i. *waste is, or is likely to be, discharged, emitted or deposited to the air, water or land environment; or*
ii. ***noise or odour**, or is likely to be, **emitted**; or*
iii. ***waste** is, or substances which are a danger or potential danger to the quality of the environment or any segment of the environment are, **reprocessed, treated, stored, contained, disposed of or handled**; or*

[49] European Commission, *Environment, Noise, Health effects of noise*, http://ec.europa.eu/environment/noise/health_effects_en.htm

iv. any activity is conducted which creates a state of potential danger to the quality of the environment or any segment of the environment.[50]

To help identify which industry sectors fit this definition and warrant inclusion in, or exemption from, the proposed 2017 Regulations, an analysis was performed of all industry sectors currently scheduled and a select number of unscheduled industry sectors. The latter were selected through a comparative review of interstate and international jurisdictions, from external stakeholder comments at an industry open house and responses to the discussion paper and through consultation with EPA staff.

3.2.1 Industry analysis

As shown in Figure 3, a comparative rating score for both environmental hazard and controls (regulatory and other means) was developed that acknowledged the optimal situation for the Scheduled Premises Regulations tools, as discussed in section 2.1. Where appropriate, industry sectors were further categorised by industry activity, size of business activities or the receiving environment. The analysis considered industry sectors as a whole (not specific individual sites), and the industry sector's current state (therefore future changes to regulatory controls or advances in technology were not taken into account). The analysis considered the following criteria:

- **Emissions**: the likely volume and potential harm of emissions to air, water, land, and of noise and odour.
- **Site hazard:** the likely volume and potential toxicity of wastes and chemicals stored on a typical site, potential catastrophic impacts, scale of operation, complexity of operation, and monitoring required on a typical site.
- **Capacity for self-management:** the maturity of the sector and industry associations, and the track record / past compliance history.
- **Incentives**: the level of regulatory oversight from EPA and other regulators, and other market drivers supporting management of the noted environmental risks.

Using a combination of quantitative data sources and interviews and workshops with EPA staff across multiple disciplines, scores for each criterion and element were estimated and verified across each industry sector. These scores were then used to identify industry sectors of interest for further investigation. Further details of the criteria are provided in Appendix C.

[50] EP Act s4.

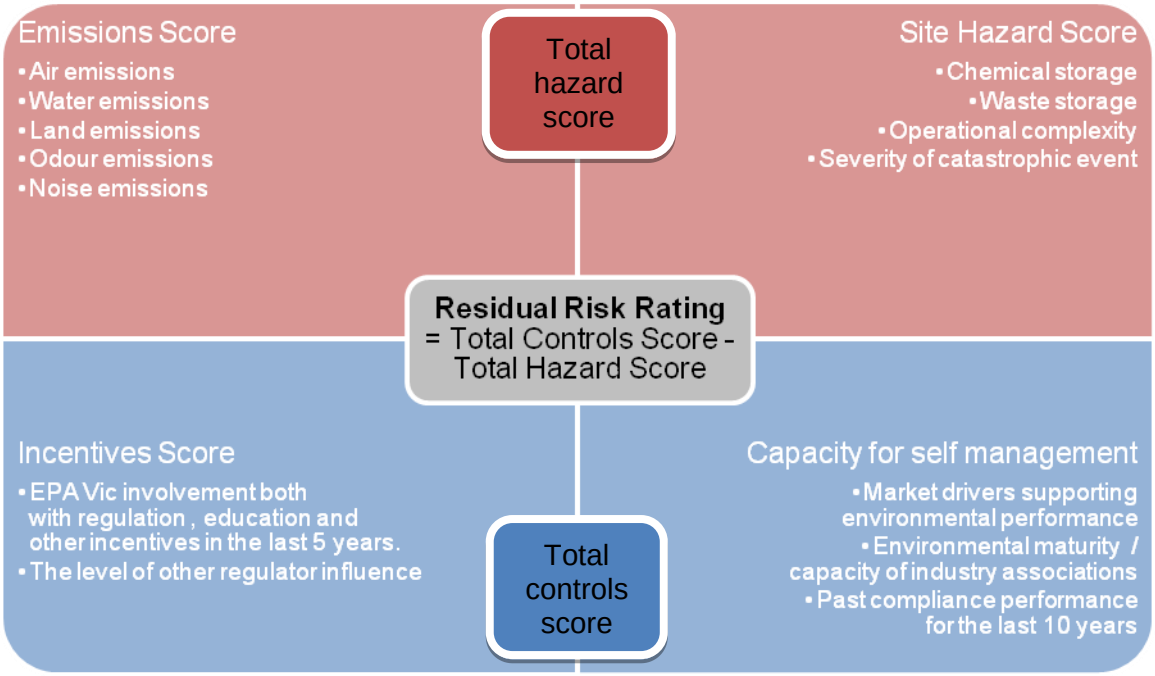

Figure 3: Criteria used to analyse industry sectors

3.2.2 Waste processing analysis

The risk profile and physical characteristics of waste may change as it passes through multiple processes and from one facility to another, before reaching its final destination in either resource recovery or disposal. Therefore, in addition to the initial industry analysis (outlined in section 3.2.1), process mapping was used to track this inherent variability in the cycle of waste management and resource recovery. The major waste source sectors – construction and demolition, commercial and industrial, municipal solid waste and prescribed industrial waste (PIW) – were each analysed. Material types such as metals, glass, and plastics were tracked through each stage of facility handling, allowing for an assessment of risk at key points in the process. At each stage, the type of facility handling the waste was categorised into storage, recovery, reprocessing, disposal or treatment. This identification of facility types allowed for a more in-depth assessment into the risk of causing harm to the environment or human health.

3.2.3 Outcomes

The analysis revealed that it is considered appropriate for the majority of currently scheduled industry activities to continue to be scheduled, due to the combination of multiple, significant risks that they present to the environment and human health. Appendix D summarises the principal reasons for scheduling each category. This includes, for example:

- in relation to coal-fired power stations: the complexity of the operation, waste storage and air and noise emissions
- in relation to chemical manufacturing: the complexity of operation, chemical storage and air and odour emissions
- in relation to landfill sites: the potential for land contamination, odour and gas emissions.[51]

[51] In addition, Appendix E summarises the level of activity in relation to current categories of scheduled premises.

The analysis also identified instances where particular industrial activities or scheduled categories may warrant further clarification or amendment to better align with the intent of the Regulations to only address those aspects that pose significant risks. In some instances, a category, as defined in the current Regulations, encompasses a broad range of activities of varying risk to the environment. This results in an opportunity to alter the category so that it better targets specific activities that are of a higher significance. In other cases, other controls and incentives are now present and considered effective in addressing particular risks. Further details on these instances are provided in the section 4. They include:

- clarifications to – fish farms (B03), beverage manufacturing (D09), composting (A07)
- risk-based reductions to the scheduling of –the temporary storage of some types of PIW (A01), sewage treatment plants (A03) in specific circumstances and potable water treatment plants (K03).

The majority of new or unscheduled activities assessed were not considered to significantly benefit from scheduling (either by works approvals, and/or licensing), when compared to alternate mechanisms and approaches. In many cases, such activities were either beyond the scope for this review, or the approach to works approvals and licensing were not seen to effectively or efficiently resolve the particular nature of risks associated with the activity. In particular, these activities were not considered appropriate where one or several of the following applied:

- the activity does not discharge emissions to air and/or water environments
- the activity or process is routine or standardised (providing little opportunity to influence the design and operations and further minimise environmental harm)
- there are other prominent agencies or regulatory regimes that provide controls or incentives to manage identified environmental risks
- there are no relevant standards in SEPPs, WMPs or other legislative instruments to inform and underpin works approval and licence conditions
- there are limitations under the EP Act
- it would have been beyond the scope of the limited reforms being considered in the current Stage 1 of this Regulation review.

It is acknowledged that the *Independent Inquiry into the Environment Protection Authority* has recommended in its report a change in the approach to licensing and in particular the basis upon which activities are considered suitable for licensing.[52] In implementing the Government's response to the Inquiry's recommendations, further investigation and analysis of these activities will be undertaken. This will occur as preparation for Stage 2 of this review and in coordination with the broader implementation of recommendations of the Inquiry.

It was also identified that some current scheduled category descriptions warrant further clarification to ensure they keep pace with the latest technology, wastes and processes being used in the industry. In some cases, this is predicted to formally introduce new activities into existing scheduled categories. These clarifications are intended to better reflect the original intent and current interpretation – for example, in relation to intensive animal industries (B01), composting (A07) and general emitters to air (via Regulation 10).

[52] Ministerial Advisory Committee, *Independent Inquiry into the Environment Protection Authority*, 2016, recommendation 12.2.

An example of a clarification predicted to increase the number of scheduled businesses is the application of scheduled category A02 (other waste treatment) to the waste and resource recovery sector. Traditionally, this category has focused on the processing of industrial wastes that may result in emissions to air through incineration or thermal degradation of materials. Broader growth in the sector has seen a diversification of processes that crush, shred, chip or change the form of the waste material in some way to enhance its recovery. Analysis identified that these processes would only present a significant hazard when the action of processing would expose a particular component of the material that was hazardous to human health or the environment. This is also discussed further in section 4.

4 Proposed substantive changes

This section analyses each of the industry activities for which it is proposed to make a substantive (or non-administrative) change to the Scheduled Premises Regulations. These are prescribed industrial waste management (scheduled category A01 (and Regulation 12)), other waste treatment (A02 (and H05)), sewage treatment (A03), organic waste processing (A07 (the current summary description is composting)), intensive animal industry (B01), beverage manufacturing (D09) and potable water treatment plants (K03). For each of these activities, this section addresses the industry's profile and trends, the primary risks that are relevant to the role of the Scheduled Premises Regulations, the regulatory and non-regulatory controls in place to address these risks, inter-jurisdictional approaches and, consequently, the reasons for the proposed approach. This section also sets out the rationale for proposed changes to Regulation 10 (exemptions relating to air emissions).

Some of these proposed changes will provide greater clarity for industry (and EPA assessors) in relation to the coverage of the Scheduled Premises Regulations and others will result in a reduction in regulatory burden for industry.

As well as the substantive changes that are set out in this section, it is also proposed to make a number of minor and administrative changes to the Regulations. These are summarised in Appendix H.

4.1 PIW management (A01)

Prescribed industrial wastes (PIWs) are specific wastes from commercial, industrial, or trade activities or from laboratories with hazardous qualities. PIW can vary in both the type of hazard to the environment and human health and the material state. For example, PIW can be solids with hazardous properties like asbestos or contaminated soil, or liquid wastes with less hazardous properties like wash waters or grease trap waste.

4.1.1 Regulatory framework for PIW

Due to its hazardous properties compared to general commercial and industrial waste, PIW requires a higher level of oversight and more stringent requirements for its transport, storage, reuse, reprocessing and disposal.

The main instrument for managing PIW is the Environment Protection (Industrial Waste Resource) Regulations 2009 (IWR Regulations). Through the IWR Regulations, EPA oversees PIW activity by:

- defining and classifying material as PIW or non-PIW
- monitoring the transportation of PIW
- requiring PIWs to be received by an EPA licensed facility
- defining how hazardous wastes can be reused.

Under the current Scheduled Premises Regulations, facilities that store, treat, reprocess, contain or dispose of PIW not generated at the premises are subject to EPA works approval and licensing requirements (scheduled category A01).

4.1.2 Categorisation of waste

The IWR Regulations group industrial wastes by risk profile to ensure that each is appropriately handled, stored, treated, transported and disposed of. They divide industrial waste into two broad groups: PIWs and non-PIWs.

As shown in Figure 4, PIW is a waste or a mixture of wastes containing contaminants or hazardous properties listed under Schedule 2 of the IWR Regulations as Category A, B or C. These categories describe contaminant and leachable thresholds for solid industrial waste and contaminated soil. Category A waste is the most hazardous. Wastes can also be Category A based on dangerous goods characteristics (for example, explosive or corrosive). Less hazardous wastes below the Category C thresholds are managed as non-PIW industrial wastes. Industrial liquid waste is Category A PIW, except for trade waste, and industrial wastewater managed in accordance with specifications acceptable to EPA. Asbestos and soil contaminated with asbestos is Category C PIW.

Lower-risk industrial wastes listed in Schedule 1 of the IWR Regulations are not PIW and are exempt from the strict controls that apply to PIW. These wastes include asphalt, cardboard and paper, commercial food waste, glass, plastic and timber. The IWR Regulations also enable EPA to classify or reclassify waste as either PIW or non-PIW. The IWR Regulations also allow for material to be exempt from PIW regulatory requirements when it is being used for a direct beneficial reuse or secondary beneficial reuse.

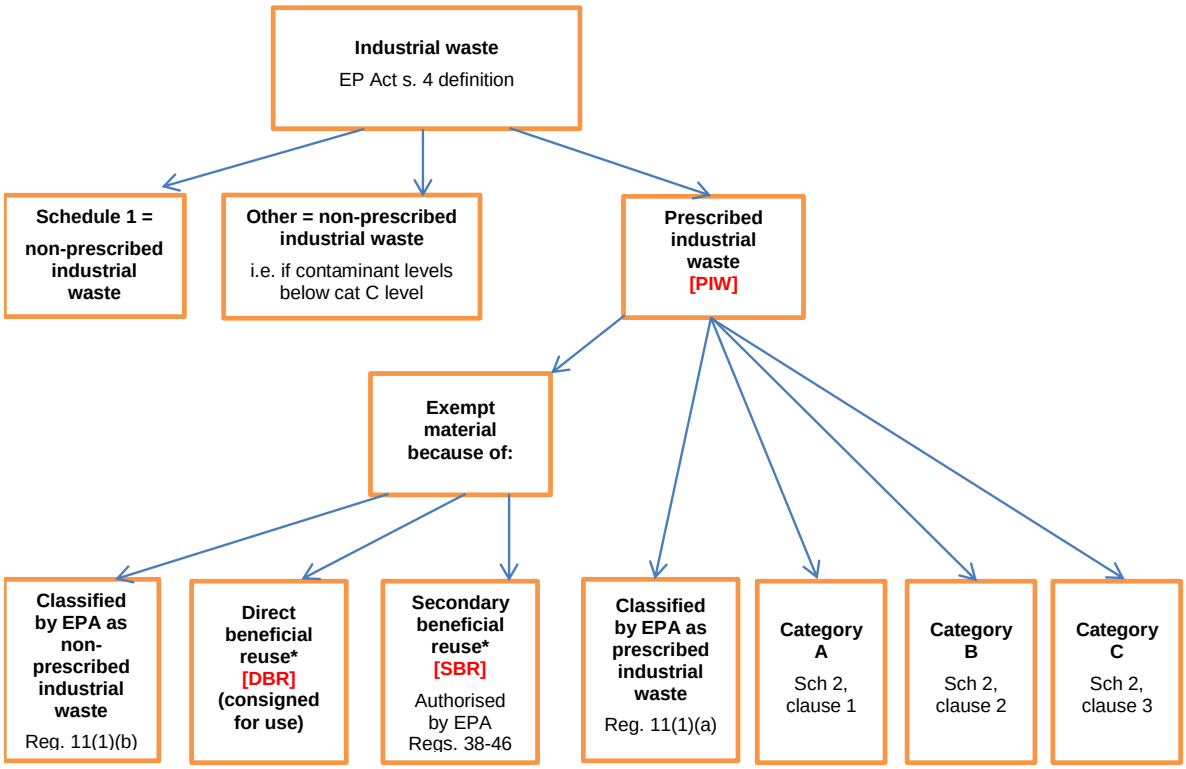

Figure 4: How PIW is defined by the IWR Regulations

4.1.3 Transport and storage of PIW

Under the IWR Regulations and section 53 of the EP Act, transport of PIW requires an EPA-permitted vehicle and transport certificates that track that material from generation to its final destination in reuse, energy recovery, or disposal.

The current Scheduled Premises Regulations (category A01 – PIW management) requires sites receiving and storing PIW not generated at the premises to obtain an EPA works approval and licence. As at mid-2016, there were 125 PIW management facilities with EPA licences in Victoria.[53] These include PIW treatment facilities (both to reduce hazard to allow for other uses and to destroy PIW), some landfills, reprocessors, long-term storage facilities, composters, consolidation facilities and specialised transfer stations.

Due to the specialist knowledge and care needed to ensure hazards to human health and the environment are adequately managed, it is appropriate that there are currently very limited exemptions to works approval and licensing requirements for facilities receiving and storing PIW.[54]

Through examination of recent classifications made under the IWR Regulations, and consultation with industry and joint regulators, issues relating to the regulation of temporary storage of asbestos and lower-risk liquid wastes have been identified. These two issues are discussed below.

4.1.4 Temporary storage of asbestos waste

Asbestos was used mainly before 1980 in the production of asbestos cement sheeting and piping. When disturbed, asbestos produces a dust that contains asbestos fibres. Fibres breathed into the lungs can cause a range of health impacts including asbestosis, lung cancer and mesothelioma.[55]

Asbestos from an industrial source is a PIW. The steps involved in removing asbestos and transporting it to a landfill that is licensed by EPA to receive PIW are shown in figure 5.

Figure 5: Steps involved in disposal of asbestos

WorkSafe is the lead agency for occupational health and safety requirements for the identification, management and removal of asbestos in the workplace. Once it is removed, EPA is responsible for regulating the commercial transport of industrial asbestos (which includes removal of domestic asbestos by a commercial contractor). As asbestos waste from an industrial source is PIW, its transport requires an EPA-permitted vehicle and transport certificates and EPA has oversight of disposal to landfill.

Under the current Scheduled Premises Regulations, premises receiving asbestos waste from industrial sources require an EPA works approval, licence and financial assurance (as scheduled premises category A01 – PIW management). As noted (in section 4.1.2),

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[53] Approximately half of the premises with a category A01 – PIW management licence are also licensed under a second scheduled category; see Appendix E.
[54] The current scheduled premises regulations (Regulation 12(a)) provides an exemption for the storage of biomedical wastes in specific circumstances.
[55] EPA Victoria, *Asbestos*, http://www.epa.vic.gov.au/your-environment/waste/asbestos

the IWR Regulations enable EPA to reclassify material as non-PIW. EPA has used these provisions[56] to issue specific classifications to individual companies (telecommunication, water and gas utilities) handling asbestos waste. These classifications enable the company to temporarily store non-friable asbestos at specific consolidation sites, subject to management conditions being met, and exempt the sites from works approval, licensing and financial assurance requirements.

Both EPA and the Australian Asbestos Safety and Eradication Agency (ASEA) agree that, unlike most wastes, the best place for asbestos waste is a landfill licensed to receive PIW, where it can be safely removed from the environment for the long term.[57] As the number of landfills is forecast to fall, the need for temporary storage facilities for asbestos waste is likely to increase, particularly in regional areas.

Transfer stations are an obvious choice to meet this need, given that they collect, consolidate, temporarily store, sort and recover waste before transfer for disposal or use elsewhere;[58] are in some cases already licensed to receive PIW; and are greater in number and more evenly distributed than landfills. However, transfer station operators are often reluctant to accept asbestos, as it requires higher levels of training and more rigorous occupational health and safety procedures.[59] This presents practical challenges for businesses handling small amounts of asbestos in regional and remote areas, such as in far South Western and South Eastern Victoria. Anecdotal evidence suggests that small amounts of asbestos are being temporarily stored at unlicensed premises and that illegal dumping of asbestos is occurring.[60]

EPA acknowledges that the disposal of small amounts of asbestos directly to landfill on the day of generation – for example, by utilities obtaining the material through minor maintenance or installation processes – is sometimes impractical, particularly in regional Victoria. Allowing the short-term storage of asbestos at a depot so it can be consolidated before it is transferred to landfill is desirable from a practicality point of view, but the activity needs to take place in an appropriate location and be appropriately managed.

4.1.4.1 Interstate comparisons

In 2015, the ASEA commissioned a study of the disposal infrastructure, volumes and levies associated with asbestos around Australia.[61] It reported that in all states and territories, transfer stations require jurisdictional environmental regulatory approval to accept commercial loads of asbestos. However, Tasmania is the only jurisdiction that actively encourages transfer stations to accept asbestos, and it is only encouraged from domestic sources and under strict conditions. All other states and territories discourage the double handling of asbestos via transfer stations en route to landfill.

The Northern Territory has a novel approach, allowing the temporary storage (for less than one year) of asbestos at licensed temporary storage facilities (rather than transfer stations) under very strict conditions.[62] An asbestos action plan must be developed that considers

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[56] IRW Regulations s11(1)(c).
[57] J. Picken and P. Randell, *Asbestos waste in Australia - report 03-2016*, prepared for the Australian Government Asbestos Safety and Eradication Agency, 2015 p.33.
[58] The Department of Planning and Community Development, *Advisory Note 28, Amendment VC69 – Waste Transfer and Materials Recycling Facilities*, 2010 p.2.
[59] Picken and Randell, p. 33.
[60] D. Childs, *Interview with Danny Childs*, 'Breakfast with Sheridan Stewart', ABC Mildura Swan Hill, Air Date: 19 May 2016, 06:30:00.
[61] Picken and Randell p.1.
[62] Northern Territory Environment Protection Authority, *Asbestos Disposal in the Northern Territory*, https://ntepa.nt.gov.au/__data/assets/pdf_file/0008/284687/asbestos_disposal_in_the_northern_territory.pdf

aspects such as access, maximum storage time, final disposal destination, safe storage requirements (for example, that the asbestos is securely wrapped in plastic) and security at the facility.

4.1.4.2 Other controls (for example, planning)

The *Occupational Health and Safety Act 2004* and the Occupational Health and Safety Regulations 2007 outline responsibilities and duties for managing asbestos in workplaces. The WorkSafe Compliance Code Managing Asbestos in Workplaces[63] provides practical guidance on how to meet those obligations. The compliance code provides advice on how to comply with employer's duty to contain or dispose of asbestos waste, including recommendations on the use and labelling of asbestos waste bags and temporary storage of asbestos to ensure that the asbestos is secured to prevent unauthorised access.

Under the VPPs, planning authorities (usually local governments) assess permit applications for the use of land as a transfer station or for the temporary storage of industrial wastes. If the proposed transfer station is within 100 metres of a sensitive receptor or the proposed site for the temporary storage of industrial waste within 300 metres of a sensitive receptor, then the planning authority must refer the application to EPA as a determining referral authority.[64]

4.1.4.3 Conclusions and proposed approach

To provide adequate controls of asbestos prior to its disposal to landfill that are both proportionate to the risk presented and pragmatic, it is proposed to amend Regulation 12 of the Scheduled Premises Regulations (general exemption relating to waste) to allow for the temporary storage of asbestos without requiring a works approval or licence (under scheduled category A01), subject to conditions specifying:

- the type and maximum quantity of asbestos that may be stored
- a maximum timeframe for the temporary storage
- the type of facility at which it can be stored.

Specifically, the proposed new clause under Regulation 12 will provide an exemption from works approval and licensing requirements in relation to:

'(d) temporary storage of less than 10 cubic metres of double wrapped, non-friable asbestos for a period of no more than 60 days on land─

(i) permitted under a planning scheme made under the **Planning and Environment Act 1987** for use as a transfer station and which is allowed to accept asbestos; or

(ii) used as a depot by, or for the purposes of, a public utility and which is 100 metres or more from sensitive land uses, including residential premises, health services, child care centres and education centres;'[65]

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[63] WorkSafe Victoria, *Managing Asbestos in Workplaces*, 2008.

[64] Victorian Planning Provisions, clauses 66.02-7 and 52.10, The 100-metre threshold applies to transfer stations that will not be receiving organic wastes. All planning permit applications for transfer stations that will receive organic waste require referral to EPA as a determining referral authority.

[65] In relation to public utility depots, a locational constraint has been included so that, as with transfer stations, there will be an EPA assessment (either of a works approval and licence application or a specific classification application) if the site is less than 100 metres from a sensitive land use.

This approach recognises that the temporary storage of asbestos at transfer stations and public utility depots must, as workplaces, comply with occupational health and safety laws. Requiring a works approval or licence for the temporary storage of asbestos at such locations is not an effective or proportionate mechanism for reducing any residual risks of this activity.

Proposed Regulation 12(d) will have the benefit of reducing the number of specific classifications under the IWR Regulations, avoiding application costs for industry (utilities) and assessment costs for EPA. It also removes one of the impediments to transfer stations accepting asbestos, if it has planning permission to do so and it complies with occupational health and safety laws. If the asbestos is from an industrial source and therefore PIW, the risks associated with its transport – to the temporary storage site and from the temporary storage site to a landfill – will be controlled through the IWR Regulation requirements for an EPA-permitted vehicle and transport certificates.

4.1.5 Temporary storage of less hazardous industrial liquid wastes

Industrial liquid waste is the liquid waste generated by commercial and industrial processes. The largest generators of liquid waste in Australia are manufacturing, restaurants, health services, and the automotive industry.[66] Small amounts of industrial liquid waste are also generated by businesses such as mobile fast food vans and utility maintenance operations.

Examples of industrial liquid waste are tannery wastes containing chromium, wastewaters containing hydrocarbons, waste solvents, industrial waste oils, animal effluent, and low-hazard liquid wastes such as inert sludge and drinks that do not meet product standards.

The risks associated with industrial liquid waste are highly variable and depend on:

- the processes in which the waste was created
- the characteristics of the liquid, such as chemical composition, temperature and pH
- the concentration of contaminants
- the volumes being handled
- the surfaces that the liquid comes in contact with and the receiving environment.

It is imperative that hazardous liquid waste is well managed to ensure that it does not enter the environment. Generally, liquid waste spills of any type are much harder to clean up than solid waste and can result in the immediate contamination of land or damage to waterways.

The demand for liquid waste treatment and disposal facilities is driven by the generation of wastes upstream and regulatory requirements. Liquid waste treatment and disposal is a growing industry and was estimated to account for 13.6 per cent of the waste treatment and disposal industry revenue in Australia in 2014-15.[67]

4.1.5.1 Waste Management Policy (Siting, Design and Management of Landfills) 2004

The Waste Management Policy (Siting, Design and Management of Landfills) prohibits the disposal of liquid wastes to landfill.[68]

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[66] A. Allday, *Waste Treatment and Disposal Services in Australia - IBISWorld Industry Report D2921*, IBISWorld 2015, p.13.
[67] Allday p.14.
[68] Waste Management Policy, *Siting, Design and Management of Landfills - 2004*, clause 19(6)(b), 2004.

4.1.5.2 Environment Protection (Industrial Waste Resource) Regulations 2009

Under the IWR Regulations, industrial liquid waste is Category A PIW, except for:

- trade waste
- industrial wastewater managed in accordance with specifications acceptable to EPA
- liquid waste exempt through EPA classifications or beneficial reuse provisions.

Where the liquid waste is PIW, it must be directed to a facility licensed under the Scheduled Premises Regulations (as scheduled category A01) to accept PIW (as discussed below).

The IWR Regulations require liquid PIW to be transported in a permitted vehicle and for waste transport certificates to be accurately completed. The IWR Regulations recognise that some liquid PIWs are less hazardous than others. As such, the requirements for the transporting vehicle (including signage) vary depending on the type of PIW involved, in line with dangerous goods legislation.[69] For example, liquid wastes with lower risks during transport – such as some waste oils, fish wastewaters, beverage processing wastes and inert sludge – can be transported in a permitted vehicle displaying a 'non-hazardous waste 30XY' information panel.

As noted (in section 4.1.1), the IWR Regulations enable EPA to classify or reclassify waste as non-PIW.[70] EPA receives various requests from businesses to re-classify lower-risk liquid waste to non-PIW. This includes applications from utilities seeking to consolidate small volumes of residual waste oil at designated unlicensed sites, before transferring it to a licensed facility. As infrastructure maintenance activities occur over a large geographic area, small volumes of waste oil can be recovered at multiple remote locations during any time of the day. Currently, unless EPA issues a specific classification under the IWR Regulations, utilities are required to transport the material, often long distances in multiple vehicles, to a licensed facility (rather than to a local depot).

Similarly, if a company needs to temporarily store a commercial quantity of drinks that do not meet product standards, then the Regulations require it to either store the product at an EPA-licensed site (A01) or apply for, and obtain, an EPA reclassification of the material as non-PIW.

4.1.5.3 Scheduled Premises Regulations

As noted (in section 4.1.1), the current Scheduled Premises Regulations require premises receiving and storing liquid PIW (not generated on the premises) to obtain an EPA works approval and licence (as scheduled category A01). This includes intermediary sites, as well as treatment facilities and some composting facilities.

Scheduled category A01 does not differentiate requirements for high-hazard liquid PIW and those with less hazardous properties. If a liquid waste is PIW, then it must be stored or handled at A01 scheduled premises, irrespective of the volume or type of liquid PIW involved.[71]

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[69] IWR Regulations, Regulation 15 and Schedule 4, and EPA Victoria, *Industrial Waste Resource Guidelines*, EPA publication IWRG822.2, 2010.

[70] The IWR Regulations, which provide for EPA classifications, will be reviewed before they expire in 2019.

[71] The current scheduled premises regulations (Regulation 12(a)) provide an exemption for the storage of biomedical wastes in specific circumstances.

4.1.5.4 Interstate comparisons

In other states and territories, licensing requirements relating to industrial liquid wastes are not defined on the basis of a broad category of low-risk industrial liquid wastes. Instead, exemptions from licensing requirements are provided for specific liquids – for example, South Australia does not license waste or recycling depots that accept less than 5,000 litres per year of specific waste oils for the purpose of reuse.[72] Alternatively, an industry's whole waste stream may be exempted, irrespective of whether its waste is in liquid, slurry or solid form – as in Queensland and in Western Australia. In Western Australia, a premises accepting a controlled waste that is a liquid for storage, reprocessing, treatment or irrigation must be scheduled if it is accepting more than 100 tonnes per year.[73]

New South Wales' Regulation provides the most detailed exemptions from licensing in relation to the storage of liquid waste. The volume that a processor is allowed to store without a licence is related to the hazardous properties of the liquid waste. Processors of liquid waste can store up to 200 litres or 200 tonnes of hazardous, non-clinical wastes, or 2,000 litres of waste oils without being scheduled. Waste storage facilities in New South Wales can handle up to 60 tonnes of low-hazard drilling muds, grease trap waste or waste oil at any time or 5 tonnes (5,000 litres) of other liquid wastes at any time without requiring an EPA NSW licence.[74]

4.1.5.5 Conclusions and proposed approach

The requirement for lower-risk industrial liquid waste to be stored at an EPA-licensed A01 facility (because it is PIW), or the alternative requirement for a business to obtain a specific classification (under the IWR Regulations) to enable storage at an unlicensed site, is unnecessarily onerous in certain circumstances.

It is reasonable for the Scheduled Premises Regulations to provide for an 'automatic' exemption from works approval and licensing requirements to allow for the temporary storage of lower-risk industrial liquid waste, within defined parameters, prior to it being transported to a licensed PIW management facility.

The use of United Nations (UN) numbers is an accepted method of identifying lower-risk industrial liquid waste and is in line with other Victorian regulation.[75]

It is proposed to include a general exemption from works approval and licensing requirements in Regulation 12 of the scheduled premises regulations, in relation to the:

'(e) temporary storage of 1000 litres or less of liquid prescribed industrial waste not generated at the premises where the substance is listed with UN number 30XY, for a period of no more than 60 days.'

4.2 Other waste treatment (A02)

4.2.1 Category description

Scheduled category A01 covers premises that handle PIW not generated at the premises. Scheduled category A02 is intended to cover the treatment of non-PIW waste in situations

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[72] *Environment Protection Act 1993 (South Australia)* schedule 1.
[73] *Environmental Protection Regulations 1987 (Western Australia)* schedule 1.
[74] *Protection of the Environment Operations Act 1997 (New South Wales)* schedule 1.
[75] United Nations (UN) numbers are universally recognised four-digit numbers identifying or describing various dangerous goods. They are designated by the United Nations and are adopted in the Australian Dangerous Goods Code (ADG Code) and Victorian dangerous goods regulations.

where the higher level of assurance provided by licensing and works approvals is warranted.

The current description of A02 is 'waste treatment works engaged in the immobilisation, thermal degradation, incineration or other treatment of waste'. Historically, the application of A02 has focused only on incineration, as the wording 'or other treatment' of waste has caused confusion to both industry and EPA as to the intent and breadth of the category. Scheduled category A02 has consequently been applied in a conservative manner – as at June 2016, there are four licences for scheduled category A02.

Consistent with the Stage 1 approach to this RIS, the meaning of 'or other treatment' of waste in the description of A02 should be clarified.

4.2.2 Methodology for identifying 'or other treatment' of waste

Pathway mapping was undertaken for each non-PIW waste to map activities throughout the supply chain. This mapping identified non-scheduled activities that could be categorised as 'other treatment' of waste within the supply chain, and considered the environmental and human health risks of those activities.

4.2.2.1 Transfer stations

Transfer stations for the purposes of this RIS are facilities in which materials are temporarily stored before a recycling or disposal operation, most likely conducted offsite. Although reprocessing activities may occur on the same premises, their potential impacts are addressed separately. Transfer stations or drop-off locations make up a large proportion of waste facilities, with 267 standalone transfer stations and drop-off locations in Victoria.[76]

The risks of transfer stations handling and managing prescribed or hazardous wastes are currently mitigated through scheduling under category A01. Aside from transfer stations that handle and manage PIW, other transfer station facilities mainly handle waste of a domestic origin and industrial waste that is solid inert by nature, such as concrete, bricks and timber.

These facilities present a risk where stockpiles become unmanageably large or where on-ground management of waste is poor. EPA data reveals that non-compliance at these facilities is primarily due to inadequate containment of waste on the facility, rather than offsite impacts.

As transfer stations do not produce direct emissions to air or water, or routinely undertake the processing or treatment of hazardous wastes, the main benefits from scheduling would be derived from EPA's involvement in the locating and design of the facility (rather than ongoing operating requirements). However, given EPA is a determining referral authority for Victorian Planning System permit applications (for use of land as a transfer station where it will accept organic waste or be less than 100 metres from a sensitive land use) scheduling would result in duplication.

Scheduling would also be unlikely to assist in preventing the abandonment and dumping of illegal waste. Privately run transfer facilities, such as skip bin operators and low-value recovery facilities, are more likely than other transfer stations to abandon waste. In these

[76] Sustainability Victoria, *Statewide Waste and Resource Recovery Infrastructure Plan,* 2015, p.67.

instances, EPA remedial notices and sanctions are likely to be more appropriate for providing redress and a level of deterrence than licensing.

For the purposes of Stage 1 of the review, the existing controls are sufficient to support the effective location and design of new transfer stations. EPA currently possesses the necessary powers to undertake effective compliance monitoring and enforcement against the provisions of the EP Act, in addition to local government enforcement of planning permit conditions.

4.2.2.2 Reprocessing facilities

A second cohort of waste management facilities falling within the ambit of 'other treatment of waste' includes reprocessors of waste streams. *Reprocessing* is defined as changing the physical structure or properties of a waste material to allow for further use.

Reprocessors generally have a higher risk than other waste-handling facilities of causing damage to the environment through their manual dismantling, mechanical processing, biological processing, shredding and thermal treatment of waste materials. These activities can result in waste materials transforming into a more hazardous form and problematic by-products entering the environment. Additionally, while transfer stations may experience stockpile management pressures, reprocessors are particularly sensitive, given that they carry the extra burden of needing to actively reprocess feedstock and on-sell the resulting product - which may be highly flammable – at a profit.

As reprocessors generally have a higher risk of causing damage to the environment, further analysis was undertaken to assess the risks of reprocessing different forms of waste materials. Reprocessing activities were cross-referenced against EPA compliance data to identify and prioritise categories by material. Desktop research complemented this data to develop profiles assessing current and expected risk by material, separation technique and inventory and management practice. This analysis found that electronic waste (e-waste) and glass reprocessing present higher risks than the reprocessing of wood, concrete, paper and plastics, and are therefore regarded as priority activities for the purposes of this review.

EPA interaction and non-compliance data reveals that glass reprocessors have required significant EPA attention in recent years. E-waste reprocessors accept a diverse range of used electronic products containing hazardous materials when consolidated and concentrated through a physical process, increasing the risk of offsite impact to air quality and contamination of land, surface and groundwater. Glass reprocessors also have impacts across multiple environmental segments with a substantive risk of offsite impacts from fine and coarse particle emissions and odour from the processing and storage of glass fines. Glass fines can also have undesirable impacts on surface waters if allowed to enter waterways.

4.2.3 E-waste reprocessing

E-waste is growing up to three times faster than general municipal waste in Australia,[77] increasing pressure on waste management infrastructure and the environment.

[77] Australian Bureau of Statistics, *Media Alert: Environment Snapshot: recycling up, but e-waste a looming issue,* 10 November 2006, http://www.abs.gov.au/ausstats/abs@.nsf/mediareleasesbytitle/FB2F33C170E4987DCA2572210077D0FA

E-waste is defined as any end-of-life equipment which is dependent on electric currents or electromagnetic fields in order to work properly.

E-waste reprocessing is defined as changing the physical structure or properties of e-waste material to allow for further use. It involves a series of steps including the separation of components through manual and mechanical techniques. Reprocessors typically use at least one of the following techniques:

- *Automated shredding followed by manual picking* – mechanical shredding of e-waste for size reduction and separation of saleable ferrous and non-ferrous metals, with manual downstream picking operations to recover components. This process is usually used to recover components from items which are not cost-effective to manually sort or items where the components cannot be manually removed. It results in damage to around 20 per cent of the components processed, meaning that hazardous elements are potentially exposed.[78]

- *Manual segregation, automation followed by manual picking* - manual removal of mandatory items requiring recovery (for example, batteries). Spinning and smashing of the remaining e-waste into smaller components followed by magnetic separation of ferrous and non-ferrous metals; and finally manual picking lines. This technique again increases the risk of damage to components.[79]

- *Automated end-to-end* – one Victorian reprocessor uses 'Blu Box' technology to separate hazardous particles (for example, mercury) and other raw materials for further processing.[80] The Blu Box equipment crushes liquid crystal display (LCD), light-emitting diode (LED), plasma and organic light-emitting diode (OLED) screens and some other e-waste in a negative pressure, contained environment.[81] However, the same reprocessor continues to rely on manual methods to dismantle e-waste not accepted by Blu Box, such as cathode ray tube (CRT) monitors.

Of the 108 kilotonnes of e-waste generated in Victoria in 2014, 56 per cent was reprocessed by an e-waste processor or a metal recycler.[82] While the available supply of e-waste for reprocessing is driven by historic electrical good consumption, determinants of demand for reprocessing include:

- the market value for recycled components
- commodity and micro-commodity prices (including precious and rare-earth metals)
- the cost of reprocessing
- the regulatory framework affecting e-waste streams: for example, diversion from landfill.

[78] Waste and Resource Action Program (WRAP) Consulting, *Techniques for Recovering Printed Circuit Boards*, 2006, p.21.
[79] WRAP Consulting p.21.
[80] Randall Environmental Consulting, *E-waste Technology Trends: Where to from here?* prepared for DELWP 2016, p.6.
[81] Blu Box, *Flat panel display recycling*, http://www.blubox.ch/technologies/blubox/blubox-flat-panel-display-recycling
[82] Randall Environmental Consulting, *Victorian E-waste Market Flow Analysis* prepared for DELWP, 2016, Executive Summary iv.

Given that the Victorian Government has committed to banning e-waste from landfill in Victoria,[83] the supply of e-waste for reprocessing is expected to increase.

4.2.3.1 Environmental risks

The primary risks from e-waste reprocessing are the impacts of fugitive air emissions and dust on human health and the environment. Additionally, risky e-waste inventory management practices (for example, stockpiling) may result in soil contamination and increase the likelihood of fire. As some persistent organic pollutants, dioxins and polycyclic aromatic hydrocarbons (PAHs) are released as combustion by-products of e-waste, the consequences of fires at e-waste reprocessing facilities would be substantial.[84]

E-waste risk profiles vary by category, recovery and reprocessing technique and inventory and infrastructure management standards. Hazardous chemical elements (see Table 5) are found in higher concentrations in the following e-waste categories:

- IT and telecommunications equipment (excluding monitors)
- CRT monitors and TVs
- flat panel monitors and TVs
- photovoltaic panels
- lighting.

[83] DELWP, *Managing e-waste in Victoria – Starting the conversation*, 2015, p.3.
[84] K. Grant et al, 'Health consequences of exposure to e-waste: a systematic review', *Lancet Global Health*, Vol 1, 2013, p.352.

Table 5: Hazardous e-waste elements and persistent organic pollutants[85]

E-waste category	Sub-category	Element	Persistent organic pollutants (POPs)	Ecological source of exposure
IT and telecommunications equipment (excluding monitors)	Printed circuit boards (including capacitors, semi-conductors, resistors and inductors)	Lead, cadmium, mercury, beryllium barium	Brominated flame retardants	Air, dust, food (POP), water, and soil
	Batteries	Nickel, lithium, lead		Air, soil, water, and food (plants)
	Power supply boxes	Beryllium		Air, food, and water
Cathode ray tube (CRT) monitors and TVs	Tubes	Lead, cadmium, mercury, zinc, barium		Air, vapour, water, soil, and food (^bioaccumulative in fish)
Flat panel monitors and TVs	Tubes	Lead, mercury		Air, vapour, water, soil, and food (^bioaccumulative in fish)
Lighting	Fluorescent lamps	Barium, mercury	Possibility of polychlorinated biphenyls (PCBs) in old ballast transformers.	Air, vapour, water, soil, and food (^bioaccumulative in fish)
	Light bulbs	Lead		Air, dust, water and soil
Photovoltaic panels		CdTe (cadmium telluride), lead, c-si (crystalline silicon), chromium		Air, dust, water and soil

The potential impacts on the environment and human health of brominated fire retardants, mercury, lead, cadmium, nickel and beryllium are outlined in Appendix F.

4.2.3.1.1 Lead and mercury exposure risks of dismantling old monitors and televisions

Potentially hazardous materials in e-waste may become airborne during reprocessing. For example, the separation of CRT monitors' unleaded panel (screen glass) from the leaded glass funnel and neck can result in exposure to high concentrations of lead if the latter is cracked or broken during dismantling.[86]

Aside from the use of Blu Box reprocessing technology, flat panel monitors are dismantled manually. Breakage of older-style LCD monitors containing a variation of the fluorescent

[85] Grant et al p.352.

[86] Australian Bureau of Statistics, *Waste Account, Australia, Experimental Estimates – Electronic and Electrical Waste*, 2013.

tube will release small amounts of mercury vapour to the atmosphere if not handled correctly.

4.2.3.1.2 Polybrominated diphenyl ethers (PBDE) levels in soils adjacent to e-waste reprocessors in Melbourne

PBDEs have been used as flame retardants in a variety of electronic products and have been shown to accumulate in the environment and human populations while exhibiting a range of toxic effects.

Researchers at RMIT University recently analysed surface soil samples from 30 sites adjacent to manufacturing, waste disposal and non-industrial sites across greater Melbourne.[87] Two sites out of the 30 sampled, were next to e-waste reprocessing facilities and were found to contain the highest levels of PBDEs.[88] Following the phasing out of PBDEs through legislative bans and voluntary withdrawals in North America,[89] Europe,[90] and Australia[91] from the mid-2000s, manufacturers have increasingly used novel brominated flame retardants (NBFRs) as replacements.[92] The RMIT University study also tested the same soils for NBFRs as early research has shown that these retardants are released into the environment by the same means as PBDEs and share similar toxic characteristics.[93] The soil tested close to the same two e-waste reprocessing facilities was also found to contain high levels of NBFRs in comparison to other sites.[94]

4.2.3.1.3 PBDE levels in automated shredding areas

Additionally, research conducted in Sweden found that workers at a formal electronics-dismantling plant who were exposed to shredding activities had significantly higher PBDE concentrations in their blood (37 pmol/g l.w.) than office workers (7.3 pmol/g l.w.) and cleaners (5.4 pmol/g l.w.).[95] The research demonstrated that PBDEs are bioavailable and that exposure to them occurred at the e-waste reprocessing plant.[96]

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[87] T.J. McGrath, P.D. Morrison, C.J. Sandiford, A.S. Ball, B.O. Clarke, 'Widespread polybrominated diphenyl ether (PBDE) contamination of urban soils in Melbourne, Australia', *Chemosphere*, Volume 164, December 2016, s.3.1
[88] McGrath et al
[89] US EPA, *DecaBDE Phase-out Initiative, Existing Chemicals Factsheet*, USA EPA.
[90] EU, *Offical Journal of the European Union*, L 42, pp 45-46.
[91] National Industrial Chemicals Notification and Assessment Scheme (NICNAS), *Interim public health risk assessment of certain PBDE congeners contained in commercial preparations of pentabromodiphenyl ether*, National Industrial Chemicals Notification and Assessment Scheme, 2007.
[92] McGrath et al s.3.1
[93] M. Ezechias et al, *Exotoxicology and Environmental Safety 110*, 2014, p.153-167
[94] McGrath et al s.3.1
[95] A. Sjödin et al, 'Flame retardant exposure: polybrominated diphenyl ethers in blood from Swedish workers', *Environmental Health Perspectives* 107 (8), 1999, p.644.
[96] Sjödin et al 644.

4.2.3.1.4 Metal concentrations in manual dismantling and automated shredding areas

Measurements of suspended air particulates in the manual disassembly areas of large, formal e-waste facilities in Hong Kong have revealed high trace metals concentrations.[97] When compared to concentrations in control areas, lead and nickel concentrations were found in statistically significant concentrations in manual dismantling areas and copper and zinc were found in statistically significant concentrations in cable shredding areas.[98]

4.2.3.1.5 E-waste reprocessing in developing countries

Research in developing countries has found that e-waste reprocessing has caused significant human health and environmental impacts in towns where the activity occurs on a large, informal scale and usually involves combustion to extract metals.[99] For example, in Guiyu, China, concentrations of chromium, copper and zinc in $PM_{2.5}$ in the ambient air were 4 to 33 times higher than in Asian metropolitan cities such as Tokyo, Shanghai, Ho Chi Minh, Taichung and Seoul.[100]

4.2.3.2 Current controls

4.2.3.2.1 Existing EPA controls (outside these Regulations)

As with all industries, EPA can issue remedial notices under the EP Act, including PANs and clean up notices. EPA also applies a graduated series of sanctions in the event of a pollution event. These range from official warnings, to PINs for breaches of the law with relatively minor risks to the environment or human health, through to more serious sanctions such as prosecutions.

The tools outlined above can be used when any e-waste reprocessing operation causes, or is likely to cause, offsite pollution or amenity impacts – allowing EPA to take action if pollution occurs. However, remedial notices are generally reactive tools, and sanctions are by nature applied after a non-compliance incident has occurred.

4.2.3.2.2 The role of the planning system in reducing environmental risk

Under the VPPs, planning authorities (usually local governments) regulate the location and operating conditions of e-waste processors in Victoria. In doing so, the planning system seeks to avoid environmental and amenity impacts from conflicting land uses before they occur. Planning permits are required to use land for e-waste reprocessing and are generally limited to industrial zones. EPA is a determining referral authority for permit applications (listed in clause 52.10 of the VPPs).

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[97] L. Winifred et al, 'Human health risk assessment based on trace metals in suspended air particulates, surface dust, and floor dust from e-waste recycling workshops in Hong Kong, China', *Environmental Science & Pollution Research*., Vol. 21 Issue 5, March 2014, p.3817.
[98] Winifred et al p.3817.
[99] W.J Deng et al, 'Distribution of PBDEs in air particles from an electronic waste recycling site compared with Guangzhou and Hong Kong South China', *Environment International* 33, 2007, p.1063.
[100] Deng et al p.1065.

4.2.3.2.3 Occupational health and safety standards

Occupational health and safety standards prescribe maximum levels of 10mg/m^3 for inspirable dust (also called inhalable dust).[101] This is higher than the maximums of 0.33 mg/m^3 for total suspended particles and 0.06 mg/m^3 for particles as PM_{10} set by SEPP AQM.

The difference between these standards reflects the use of protective clothing by workers at reprocessing facilities to reduce risks and which is not used by people in surrounding (offsite) areas.

4.2.3.2.4 Works approvals and licences (via Scheduled Premises Regulations)

Given the hazardous nature of reprocessing some forms of e-waste and the expected increase in volumes of e-waste diverted from landfill, works approvals and licensing are justifiable for the reprocessing of some forms of e-waste. These will provide greater assurances that appropriate design and environmental management is in place to manage the environmental risks. While research evaluating the effects of e-waste reprocessing on the environments of developed countries is lacking, the recent results of soil sampling adjacent to e-waste facilities in Melbourne and testing in workplaces support this precautionary approach.[102]

The requirement for scheduling is proposed to apply to the reprocessing of more than 500 tonnes per year of specified e-waste. This application threshold is regarded as appropriate as it will cover larger-scale operations with processing activities, such as shredding, that generally involve larger volumes of fugitive air emissions. A higher application threshold of 1,000 tonnes per year was initially considered but is regarded as too high to effectively address the scale of residual risks from the industry. Conversely, a lower application threshold of 250 tonnes per year is considered too low as it could extend to smaller-scale operations, such as social enterprises that dismantle a comparatively small amount of e-waste and involve lower levels of environmental risk.

Specified e-waste is proposed to be defined as meaning rechargeable batteries, cathode ray tube monitors and televisions, flat panel monitors and televisions, information technology and telecommunications equipment, lighting and photovoltaic panels.

4.2.4 Glass reprocessing

Glass reprocessing is defined as changing the physical structure and properties of glass waste material to allow for further use. It includes sorting, crushing and grinding into glass fines or glass cullet.

Market analysis undertaken by Sustainability Victoria (SV) in 2013 indicates that the capacity to recycle glass is highly dependent on the level of contamination (impurities) in the feedstock. The recovered glass market operates on two grades of product:

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[101] WorkSafe Australia, *Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment*, NOHSC:3008, 3rd Edition, 1995, s 14.28.
[102] The precautionary principle states that 'if there are threats of serious or irreversible damage, lack of full scientific certainty should not be used a reason for postponing measures to prevent environmental degradation' (EP Act) s 1C).

- glass fines (crushed glass that is sand like but too contaminated for direct recycling)
- glass cullet (glass ready to be reused in the manufacturing process).[103]

In 2013, glass cullet was worth $100 to $150 per tonne and glass fines $0 to $50. It is estimated that over 300,000 tonnes of glass fines are stockpiled in Victoria as the use is limited and the price is quite volatile.

Reprocessing of glass generally refers to the crushing or grinding of waste glass from bottles, windows and other sources. An additional step known as 'beneficiation' can be inserted in the reprocessing to further separate the waste glass by colour to increase the end-use options.

4.2.4.1 Environmental risks

Crushed glass has long been considered a potential health risk. The main issues with particles of glass and sand relate to the percentage of crystalline silica and the aerodynamic size of the particle.

Crystalline silica is a known carcinogen: previous measurements suggest that crystalline silica makes up 1 per cent or less of glass fines.[104] The crystalline structure of glass is changed as it is molten during manufacture. This in turn changes the structure to an amorphous silica form, which is not considered to be toxic.[105] As such, the risks relating to fugitive emissions relate to the reprocessing of glass and management of glass fines.

Crushed glass fines are normally considered a nuisance dust. If the aerodynamic size of the dust is less than 2.5 µm it can, as with any particle this size, penetrate the lungs and have negative health impacts. Standards also exist for particles less than 10 µm because of their potential long-term health impacts.[106] Testing done during a trial of glass fines used for pipe bedding found that some metals were present but ammonia, biological oxygen demand (BOD) and chemical oxygen demand (COD) and C15 - C28 hydrocarbons were of more immediate concern.[107] Impacts to surface water can also be of concern if larger amounts are released into waterways.

Glass reprocessing has the potential to generate offsite impacts from fugitive emissions with the potential to harm human health and the environment. Glass fines are considered a respiratory irritant; they are regarded as unlikely to contain enough crystalline silica to be carcinogenic.

4.2.4.1.1 Existing EPA controls (outside these Regulations)

As with all industries, EPA has the ability to issue a range of remedial notices and sanctions under the EP Act for general pollution offences, including PANs, clean up notices and PINs.

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[103] Sustainability Victoria, *Market summary – recycled glass*, 2013, p.1.
[104] Department of Environment and Climate Change, *Trial of Recycled Glass as Pipe embedment material,* 2007, Department of Environment and Climate Change, NSW, p.8.
[105] C. Winder, *Occupational Health, Safety and Environment (OHSE) Risk Assessment: Use of Recovered Crushed Glass in Civil Construction Applications* prepared for Packaging Stewardship Forum of the Australian Food and Grocery Council, 2011, pp.11-12.
[106] Commonwealth Department of the Environment and Energy, *Particles - Air quality fact sheet*, 2005, https://www.environment.gov.au/resource/particles.
[107] Department of Environment and Climate Change, *Trial of Recycled Glass as Pipe embedment material,* 2007, Department of Environment and Climate Change, NSW, p. 4.

EPA also applies a graduated series of sanctions in the event of a pollution or risk event. These range from official warnings, to PINs for breaches of the law with relatively minor risks to the environment or human health, through to more serious sanctions such as prosecutions.

The tools outlined above can be used when any glass reprocessing operation causes, or is likely to cause, offsite pollution or amenity impacts – allowing EPA to take action if pollution occurs. However, remedial notices are generally reactive tools, and sanctions are by nature applied after a non-compliance incident has occurred.

Case study – fugitive emissions from glass reprocessing

A glass reprocessing company manufactured glass beads for use in reflective roadway markings. It accepted used and recycled glass, which was crushed, sieved and dried before being fed into furnaces.

In 2010, EPA received community reports about dust emissions from the premises. EPA inspected the premises and observed dust generated from large quantities of uncontrolled and windblown glass cullet. As a result, EPA issued a pollution abatement notice (PAN), requiring the company to provide an 'action report' on how it would ensure dust generated at the premises was not visible and would not impact beyond the boundary of the premises.

The company's action report was submitted to EPA and contained a range of 'action tasks'. EPA amended the PAN to require the company to implement these tasks. The tasks included mitigation measures and improvements to the site and processes, as well as monitoring and assessment of airborne particulates.

Over an 18-month period – from when the PAN was issued to when it was revoked – there was regular communication between EPA and the company, as well as several site visits and periods of data collection and analysis.

Results from the monitoring demonstrated that, despite initial mitigation measures being implemented, levels of PM_{10} and $PM_{2.5}$ exceeded the intervention levels in Schedule B of SEPP AQM on several occasions. It took several attempts over 18 months before the premises had appropriate dust mitigation measures and management practices in place that demonstrated compliance with air quality standards.

The example highlights the reactive nature of a PAN. While EPA actively advised and worked with the company, it still took a significant amount of time for the impacts to be remedied. The impacts could have been avoided or significantly mitigated by a critical assessment of the facility's proposed design (through a works approval process) and appropriate environmental management requirements (operating licence conditions).

4.2.4.1.2 The role of the planning system in reducing environmental risk

Under the VPPs, planning authorities (usually local governments) regulate the location and operating conditions of glass processors in Victoria. In doing so, the planning system seeks to avoid environmental and amenity impacts from conflicting land uses before they occur. Planning permits are required to use land for glass reprocessing and are generally limited to the industrial zones. EPA is a determining referral authority for permit applications (listed in clause 52.10 of the VPPs).

4.2.4.1.3 Occupational health and safety standards

As with e-waste reprocessing, occupational health and safety requirements for inspirable dust are less stringent than SEPP AQM requirements.

4.2.4.1.4 Works approvals and licences (via Scheduled Premises Regulations)

Given the nature of the potential residual environmental harms, works approvals and licensing would be effective mechanisms for providing assurance that appropriate design and environmental management is in place for glass reprocessors.

It is proposed that glass reprocessing of more than 10,000 tonnes per year of glass waste require an EPA works approval and licence. EPA understands there are no significant glass reprocessing facilities under the proposed application threshold. The ability to process larger volumes increases the potential for fugitive emissions and the ability to accumulate large amounts of glass fines that may require special management requirements.

4.2.5 Conclusion and proposed approach

To improve clarity, it is proposed to remove the words ‘or other treatment of waste’ from the description of A02. The two types of activities identified as warranting application of the Scheduled Premises Regulations tools as ‘other treatment’ of waste are:

- e-waste reprocessing
- glass reprocessing.

It is proposed to include e-waste reprocessing of more than 500 tonnes per year of specified e-waste within scheduled category A02 of the Regulations.

Recent analysis by Randell Environmental Consulting for SV suggests that nine existing e-waste reprocessing premises are likely to currently exceed or be close to exceeding the proposed application threshold of 500 tonnes per year. Three of these premises are already scheduled A01 (PIW management) because of their diversified feedstock. The number of e-waste reprocessing facilities that will become subject to works approval and licensing requirements is expected to increase following the implementation of a Victorian Government ban on e-waste to landfill. The extent of this increase will depend on how the ban is defined and timed – for example, if it is introduced in several stages and across different types of e-waste.

The Scheduled Premises Regulations already include a scheduled category for glass works (H05), which currently applies to manufacturing glass by melting raw materials. It is proposed to expand this category to include glass reprocessing of more than 10,000 tonnes per year of glass waste.

Analysis of sites in the Statewide Waste and Resource Recovery Infrastructure Plan (2015) indicates that five existing glass reprocessing facilities will become subject to EPA licensing and works approval requirements at the proposed threshold of 10,000 tonnes of glass per year.

4.3 Sewage treatment (A03)

4.3.1 Industry description

Sewage treatment is the process of removing contaminants from wastewater, primarily from household sewage. It includes physical, chemical, and biological processes to remove these contaminants and produce treated wastewater (or treated effluent) that is safe for discharge to the environment. A by-product of sewage treatment is semi-solid waste or slurry, called sewage sludge, which requires further treatment before being suitable for disposal or land application.

Sewage treatment systems can be onsite systems (for example, an aerated wastewater treatment system that treats sewage from a house, caravan park, school, etc that is not connected to a sewerage system, with the treated effluent then dispersed onsite) or centralised treatment plants (receiving sewage from a network of pipes, trunk sewers and pumping stations).

There are approximately 250,000 domestic onsite wastewater systems installed in Victoria[108], servicing around 13 per cent of Victorians.[109] Onsite domestic wastewater treatment systems are generally designed to operate for 25 years or more; however, this is highly dependent on regular maintenance work being done.

In relation to Metropolitan Melbourne's sewerage system, City West Water, South East Water and Yarra Valley Water manage the smaller pipes, as well as trade waste agreements addressing sewage from commercial and industrial sources. Trunk sewers and pumping stations are managed by Melbourne Water. Greater Melbourne is serviced by two large sewage treatment plants – the Western Treatment Plant in Werribee and the Eastern Treatment Plant in Bangholme, both of which are also operated by Melbourne Water.[110]

In regional Victorian cities and towns, sewage treatment plants are operated by regional water corporations. For example, Gippsland Water operates 14 plants.[111]

Sewage treatment at a centralised plant commonly involves:

- the removal and disposal of grit and screenings at inlet structures
- biological treatment
- aeration
- biological nutrient removal
- chemical treatment for phosphorus removal
- disinfection
- biosolids (sludge) management treatments to achieve Class A or B water quality
- the discharge of treated sewage to inland waters or ocean outfalls, or reuse of treated sewage for irrigation and/or a domestic third pipe system.[112]

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[108] Victorian Auditor-General's Office, *Protecting our environment and community from failing septic tanks*, 2016 p.3.
[109] The Department of Sustainability and Environment, *Draft report: Review of Victoria's Onsite Domestic Wastewater Management Framework,* July 2011 (unpublished).
[110] Melbourne Water, *Sewage treatment process,* http://www.melbournewater.com.au/whatwedo/treatsewage/wtp/Pages/Sewage-treatment-process.aspx.
[111] Gippsland Water, *Wastewater treatment,* https://www.gippswater.com.au/residential/what-we-do/wastewater-treatment.

Centralised sewage treatment plants vary in size and age. For example, Barwon Water's 11 operational plants were constructed as early as 1981 and as recently as 2013. Their nominal capacity ranges from 0.2 to 70 megalitres per day.[113] Similarly, the construction year of Yarra Valley Water's plants ranges from 1976 to 2016, with their capacity ranging from 1.5 to 180 megalitres per day.[114] The Western Treatment Plant - Victoria's oldest and largest - has been operating since 1897 and now has a discharge capacity of 700 megalitres per day.[115] Irrespective of their age and size, all centralised plants require regular maintenance and modifications to incorporate technological advances, meet increased demand and mitigate environmental impacts.[116]

4.3.2 Key environmental risks

Wastewater (sewage) requires separation from other water sources and appropriate treatment to avoid potential outbreaks of disease from water-borne pathogens.

The treatment and disposal of sewage and effluent at centralised sewage treatment plants can pose significant odour risks for surrounding communities. This includes odour associated with inlet structures, bioreactors and biosolids management.

Treated sewage is nutrient-rich. When discharged to land, the rate of application requires careful management to avoid over-irrigation and potential impacts on soil and groundwater quality.

Similarly, the discharge of treated sewage contributes to the nutrient load in surface water. This can reduce the environmental quality of inland waters or marine environments if it is not appropriately managed. For example, extra nutrients, such as nitrogen and phosphorous, can degrade waterways by causing the excessive growth of algae and other plants. This can lead to physical and chemical changes in the water, which adversely affect aquatic life such as fish, frogs and insects.

Biosolids also present a risk to human and stock health if pathogens such as helminths (for example, tapeworm), bacteria (for example, Salmonella), protozoa (for example, Giardia) and viruses (for example, hepatitis) are not eliminated or controlled (sufficiently for the intended use) during the treatment process.[117]

Sewage treatment plants receiving industrial waste discharges comprising heavy metals and other contaminants also pose risks unless appropriate controls are implemented. For example, plants receiving significant quantities of chlorinated trade waste or other potential sources of dioxins should use dioxin screens to reduce the toxicity of their treated sewage.[118]

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[112] EPA Victoria, *Works Approval Application Guideline* – EPApublication 1307.10, 2015, Appendix C-4.
[113] EPA communication with Barwon Water, via VicWater, 13 July 2016.
[114] EPA communication with Yarra Valley Water, via VicWater, 12 July 2016.
[115] Melbourne Water, *History of sewage,* http://www.melbournewater.com.au/aboutus/historyandheritage/historyofsewerage/pages/history-of-sewerage.aspx
[116] Such as the modifications made to the Western Treatment Plant since 2000 to reduce nitrogen loads to Port Phillip Bay.
[117] EPA Victoria, *Biosolids Land Application* – EPA publication 943, 2004, p.8.
[118] EPA Victoria, *Biosolids Land Application* p.15.

4.3.3 Current controls

4.3.3.1 Small onsite wastewater systems

The EP Act (sections 53J to 53O) sets out the approval process for onsite wastewater systems with flow rates of less than 5,000 litres per day. In summary, local government issues a 'permit to install/alter and use' for individual treatment systems. To do so, the council will base its decision on the proposed treatment system and the lodged land capability assessment (if applicable). The council will also consider the proposed end use for the treated effluent. The council must refuse to issue a 'permit to install/alter' if the system type is not approved by EPA.[119]

EPA's *Code of Practice Onsite Wastewater Management* (EPA publication 891.4: 2016)[120] provides standards and guidance for the management of onsite systems that treat up to 5,000 litres of wastewater per day. It supports the onsite wastewater industry, regulators and owners of premises to design, install and/or manage smaller onsite wastewater systems in accordance with the EP Act and the State environment protection policies – Waters of Victoria (SEPP WoV) and Groundwaters of Victoria (SEPP GoV).

4.3.3.2 Planning framework controls

Under the VPPs, centralised sewage treatment plants operated by utilities fall within the land use term of 'utility installation', which includes land used to collect, treat, or dispose of sewage or sullage.[121] Planning permits are required for utility installations in most planning zones, with limited exceptions (for example, in a public use zone). The planning permit requirement is important to ensure that sewage treatment plants are appropriately located to minimise odour issues for residential areas and other sensitive receptors.

When a planning permit application for a use or development of land for a sewage treatment plant requires an EPA works approval or licence, EPA is a determining referral authority under the planning framework – this means the planning authority is required to adopt the conditions that EPA nominates for the planning permit.[122]

4.3.3.3 WorkSafe requirements

In addition to occupational health and safety requirements that apply to all sites, the Eastern Treatment Plant in Bangholme is a major hazard facility because of the quantity of chemicals on this site.[123] Melbourne Water is required to demonstrate the operational safety of this plant to WorkSafe through a site-specific safety case. The purpose of the safety case is to reduce both the likelihood of a major incident at the site and to reduce the effects if one does occur.[124]

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[119] EPA Victoria, *Regulatory framework for onsite wastewater systems*, http://www.epa.vic.gov.au/your-environment/water/onsite-wastewater
[120] EPA Victoria, *Code of Practice Onsite Wastewater Management* – EPA publication 891.4, 2016.
[121] Victorian Planning Provisions, clause 74.
[122] Victorian Planning Provisions, clause 66.02; *Planning and Environment Act 1987 (Vic)* s 55.
[123] WorkSafe Victoria, *Approved Major Hazard Facilities*, http://www.worksafe.vic.gov.au/forms-and-publications/forms-and-publications/approved-major-hazard-facilities
[124] WorkSafe Victoria, *What is a safety case?* http://www.worksafe.vic.gov.au/safety-and-prevention/your-industry/major-hazard-facilities/about-the-industry/what-is-a-safety-case

4.3.3.4 Water Act 1989 *and* Water Industry Act 1994 *requirements*

Water corporations are subject to various requirements under the *Water Act 1989* and *Water Industry Act 1994*. This includes requirements set out in the Minister's Statement of Obligations, issued under the *Water Industry Act 1994*. In the Minister's Statement, the guiding principles for water corporations include minimising the impacts of their activities on the environment and managing risk to protect public safety, quality and security of supply.[125]

4.3.3.5 EPA controls (outside of Scheduled Premises Regulations)

As with all industries, EPA has the ability to issue remedial notices (PANs, clean-up notices, etc) and to apply sanctions (for example, PINs) for general pollution offences under the EP Act to operators of sewage treatment systems.[126]

In addition, agencies responsible for sewerage provision and management are subject to obligations under SEPP (WoV). These include ensuring that sewerage infrastructure has the hydraulic capacity to contain flows associated with one-in-five year rainfall event.[127]

4.3.3.6 Scheduled premises

The current Scheduled Premises Regulations (scheduled category A03) require premises on or from which sewage effluent, exceeding a design or actual flow rate of 5,000 litres per day, is treated, discharged or deposited to obtain an EPA works approval and licence.

The application threshold of 5,000 litres per day is based on an assessment that smaller sewage treatment plants are generally lower risk than larger ones. They are therefore regulated through EPA's Code of Practice (outlined in section 4.3.3.1), rather than via scheduling.

EPA's works approval requirement seeks to ensure that odour issues, potential impacts on surface water and land, and waste management issues are well considered when sewage treatment plants are initially designed or significantly modified. EPA's licensing requirement sets ongoing operational conditions, including site-specific discharge limits to reduce the impacts of treated wastewater on the environmental quality of surface waters.

Premises discharging or depositing waste solely to land at a design capacity of not more than 100,000 litres per day in accordance with specifications acceptable to the Authority [EPA] are exempt from licensing. This exemption was introduced in the 2007 Regulations in recognition that smaller wastewater treatment plants that discharge solely to land generally present lower environmental risks than larger plants or plants that discharge to water.[128]

This exemption does not apply to premises that treat industrial wastewater effluent (current scheduled category A04).

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[125] DELWP, *Water corporations statements of obligations*, http://www.depi.vic.gov.au/water/governing-water-resources/water-corporations/water-corporations-statements-of-obligations

[126] For example, in June 2016 EPA issued Gippsland Water with a PIN for depositing industrial waste (s 27A(2)(a) of the EP Act). This related to a significant spill from the Regional Outfall Sewer in Rosedale, Gippsland (an unlicensed part of the sewerage network): http://www.epa.vic.gov.au/about-us/news-centre/news-and-updates/news/2016/july/01/epa-fines-gippsland-water-for-spill

[127] SEPP WoV, clause 35.

[128] EPA Victoria, *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 – Regulatory Impact Statement* – EPA publication 1118: 2007, p.117.

Under Regulation 11(d), a works approval and licence are not required with respect to discharges or deposits to land or water from an effluent reuse scheme or activity which meets discharge, deposit and operating specifications acceptable to the Authority.

To obtain these exemptions, sewage treatment plant operators are, in summary, required to prepare an Environment Improvement Plan (EIP) in accordance with EPA's *Guidelines for Environmental Management: Use of Reclaimed Water* (EPA publication 464.2, 2003) and to obtain EPA approval of the EIP.[129]

Under Regulation 12(c), works approvals and licences are also not required with respect to a biosolids reuse scheme or activity which meets deposit and operating specifications acceptable to the Authority. In this case, duty holders are required to demonstrate compliance with EPA's *Guidelines for Environmental Management: Biosolids Land Application* (EPA publication 943, 2004).[130]

As at 30 June 2016, EPA licensed 235 sewage treatment plants. Of these, approximately 80 per cent were operated by Victorian water corporations. The remainder of licensed sewage treatment plants service a range of facilities, including Parks Victoria and local government-operated facilities, resorts, restaurants, cafes, hotels, schools, caravan parks and prisons in regional and rural Victoria.

From 2012-16, there were 31 works approvals and 30 EPA-granted works approval exemptions (based on the grounds specified in section 19A of the EP Act) relating to sewage treatment plants.

While water corporations account for approximately 80 per cent of EPA-licensed sewage treatment plants, most EPA works approvals for sewage treatment plants in the last few years have related to premises proposed or operated by other types of entities (as listed above). Of these, most have related to commencement works (rather than modification works), with the works approval process helping to ensure that potential environmental risks are addressed by the proponent before construction and operation begins.

Duty holders can also apply for an EPA-granted exemption from a works approval requirement (on grounds under the EP Act).[131] This process does involve costs for duty holders; however, it is less costly and time consuming than a full works approval assessment.

In recent years, most EPA-granted works approval exemptions relating to sewage treatment plants have concerned modifications to plants operated by water corporations. These exemptions have been granted when EPA has been satisfied that the proposed modification works will not adversely affect the quality of any segment of the environment or the interests of any person other than the applicant – for example, for proposals to increase the capacity of emergency storage lagoons, aerobic bioreactors or anaerobic digester systems, and for proposed modifications to collect biogas for power generation.

Analysis of these recent EPA-granted works approval exemptions supports the view that, in specific circumstances relating to modifications of water corporations' sewage treatment

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[129] EPA Victoria, *Works Approval Application Guideline* – EPA publication 1307.10, section 11.2.1, 2015 pp. 45-46.
[130] EPA Victoria, *Works Approval Application Guideline* p.46.
[131] EPA Victoria, *Works Approvals Exemptions*, http://www.epa.vic.gov.au/business-and-industry/guidelines/licensing-and-works-approvals/works-approval-exemptions

plants, the works approval requirement does not add material value. Instead, in these circumstances the current requirement to obtain either a works approval or an EPA-granted exemption may impose unnecessary delays and costs for works that will improve environmental outcomes – for example, certain works that will result in higher-quality treated water and/or reduced mixing zones.[132]

4.3.3.7 Interstate comparisons

Sewage treatment plants are directly regulated in all Australian jurisdictions. Across jurisdictions, the application threshold for EPA licensing is based on a plant's capacity in litres per day and/or on how many people it can service. In New South Wales, the licensing requirement covers the sewage treatment *system*, which includes not just treatment plants but also pumping stations, sewage overflow structures and the reticulation system. In Victoria, these parts of the sewerage system are subject to other forms of regulatory control, including environment protection requirements under SEPP (WoV).

4.3.4 Conclusion and proposed approach

Given the potential impacts to human health and the environment, there continues to be a strong case for EPA assessment and oversight of larger onsite and centralised sewage treatment plants through works approvals and licensing.

As noted above, it is recognised that in specific scenarios relating to modifications of sewage treatment plants by water corporations, the current works approval requirement is not providing material value.

Consistent with the staged approach to this review, it is proposed to exempt water corporations from works approval in relation to modifications in accordance with specifications acceptable to EPA.

These specifications will be defined fully in EPA guidance, through further consultation with stakeholders. The specific scenarios that are currently regarded as appropriate for this exemption are:

1. Works to provide for up to 20 per cent more capacity for an aerobic bioreactor, subject to –
    a) in the case of a sewage treatment plant that is licensed for discharges to surface water, the works will not result in existing licensed discharge limits being exceeded.
    b) in the case of a sewage treatment plant that discharges waste solely to land and is exempt from licensing, an amended reuse EIP relating to the proposed works has been approved by EPA.
2. Works to provide for up to 20 per cent more capacity for an anaerobic digester system, subject to –
    a) in the case of a sewage treatment plant that is licensed for discharges to surface water, the works will not result in existing licensed discharge limits being exceeded.

[132] A mixing zone is an area with explicitly defined boundaries where SEPP (WoV) environmental quality objectives or background levels may be exceeded, but beyond which they must be met. The designation of mixing zones is unique to wastewater discharge licences. See EPA (June 2010), *Guidance for the determination and assessment of mixing zones* (EPA publication 1344).

b) in the case of a sewage treatment plant that discharges waste solely to land and is exempt from licensing, an amended reuse EIP relating to the proposed works has been approved by EPA.

3. Works, including covering an anaerobic lagoon, for the purpose of collecting biogas for power generation (with back-up capacity for flaring) or flaring.
4. Works to provide for increased storage capacity for emergency storage lagoons for untreated sewage during wet weather events.
5. Works to install a Class A treatment plant with a micro/ultra-filtration process followed by a disinfection process to treat Class C or B effluent to Class A or fit-for-purpose quality, subject to a Health and Environment Management Plan (HEMP)/EIP for the Class A reuse scheme having been approved by EPA.
6. Works to provide for increased nutrient removal within an existing treatment system (for example, by installing baffles in lagoons, adding extra aeration for nitrification, changing aeration sequence to create aerobic and anoxic zones, chemical dosing for phosphorous removal).

It is not considered appropriate to extend the availability of these automatic exemptions from works approval requirements to other (that is, non-water corporation) operators of sewage treatment plants. Water corporations generally have a higher level of capacity to appropriately design these specific types of modifications. This is a consequence of their level of experience with designing and operating multiple sewage treatment plants as a core part of their service delivery. For other types of operators of sewage treatment plants, it is considered proportionate and appropriate to continue to require EPA assessment of any significant modification proposals (noting this may still result in an EPA-granted exemption from works approval).

4.4 Organic waste processing (A07)

4.4.1 Industry description

The Victorian Organics Resource Recovery Strategy 2015 defines organic waste as:

> any material that is derived from a natural and biodegradable substance. It can be solid material such as timber and woody garden waste, food or liquid waste such as grease trap waste or dairy effluent. It includes avoidable and unavoidable food waste from households, supermarkets, manufacturing or restaurants and encompasses agricultural waste and effluent waste. [133]

In the context of the Scheduled Premises Regulations, the processing of organic waste refers to composting and anaerobic digestion.

Composting is the microbiological transformation of organic materials under controlled aerobic conditions. There are two phases to this process including:

- pasteurisation, which generates heat within the material to significantly reduce the number of viable pathogens and plant propagules
- maturation, which sees the decline in microbial activity and an increase in biological stability of the organic material.[134]

[133] Sustainability Victoria, *Victorian Organics Resource Recovery Strategy*, 2015, p. iv.
[134] EPA Victoria, *Designing, constructing and operating composting facilities,* EPA publication 1588 2015, p.2.

Anaerobic digestion is a naturally occurring biological process that uses microorganisms to break down organic material in the absence of oxygen to produce digestate and biogas.[135]

Organic waste for reprocessing has grown significantly since the Scheduled Premises Regulations were last reviewed in 2007 - from an average of 607 kilotonnes per annum between 2004-05 and 2007-08, to an average of 879 kilotonnes between 2009-10 and 2013-14.[136]

4.4.2 Organic waste reprocessing markets

In 2013-14, the supply of organics for processing in Victoria totalled 827,000 tonnes of which 47 per cent originated from municipal sources; 50 per cent commercial and industrial (C&I); and 3 per cent construction and demolition.[137]

The Australian Standard AS: 4454, 'Compost, soil conditioners and mulch', classifies products by maturity (the extent to which they have decomposed) from raw mulch to pasteurised product, through to compost and mature compost. It also defines products by particle size – from soil conditioner to fine mulch through to course mulch.[138]

Reprocessed organics products are principally sold through urban amenity markets (73 per cent of share by volume) for residential and commercial landscaping, infrastructure projects, sports turf management and retail sale through nurseries. Other key markets include intensive agriculture (9 per cent) – for use in viticulture and the production of fruit and vegetables; rehabilitation (6 per cent) – for rehabilitating and covering landfills, restoring damaged land and preventing erosion; and enviro-remediation (4 per cent) – for contaminated site remediation.[139]

Raw mulch products (44 per cent of share by volume)[140] include mulch that has not been pasteurised or composted and is mostly high-value output created from timber sources and is typically sold through urban amenity markets.

Pasteurised mulches and soil conditioners (6 per cent share) and composted mulches and soil conditioners (25 per cent market share) are used for urban amenity purposes, intensive agriculture and environmental rehabilitation.[141]

4.4.2.1 Garden organics

Garden organics – which comprises almost the entire municipal organic waste stream – is typically composted to produce mulches and soil conditioners for the urban amenity market and to a small extent, agriculture and environmental rehabilitation.[142] Its supply has grown significantly since the current Regulations were implemented in 2007 through the introduction and growth of kerbside garden waste collection and processing and generally involves the awarding of long-term contracts for collection and processing. While these arrangements fulfil the environmental objective of diverting garden waste from landfill, they

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[135] Environment Canada, *Technical Document on Municipal Solid Waste Organics Processing* 2013, s.4-1.
[136] Sustainability Victoria, *Organics data and graphs in the Victorian Recycling Industry Annual Report 2013-14*, 2014.
[137] Sustainability Victoria, 2014.
[138] Standards Australia, *Composts, soil conditioners and mulches – AS: 4454-2012*, 2012, p.11.
[139] Sustainability Victoria, *Recycled Organics – Market Analysis*, September 2013, p.5.
[140] Sustainability Victoria, p.4.
[141] Sustainability Victoria, p.4.
[142] Sustainability Victoria, p.3.

create a market system in which supply is not correlated to demand for end products (processed garden organics).

In urban areas, this has created an ongoing oversupply in an industry in which stockpiling quickly leads to unintended decomposition, odour and potential leaching issues, and can encourage operators to speed up processing activities to the detriment of end-product quality and safety: for example, AS: 4454 (Composts, soil conditioners and mulches) specifies that pasteurisation requires that the whole mass is subjected to a minimum of three turns with the internal temperature reaching a minimum of 55°C for three consecutive days before each turn (nine days in total), and where garden organics are mixed with high-risk materials, such as manure, a minimum of five turns over a total of 15 days. Furthermore, under AS: 4454, the production of compost and mature compost requires further time to ensure that microbial activity has declined.[143]

New investment in processing equipment has been required to cope with increasing organic waste volumes and reduce associated risks; however, with some exceptions, low-end product prices have deterred it, and while operators have continued to profitably collect and accept garden waste through contract and gate fee revenue, some have not been able to profitably process it for sale at the market price, or even find a buyer at any price.[144] This market dysfunction largely explains why, by 2007, nine of the 13 known composting facilities, had been issued with PANs due to odour or leachate issues, and why composting was included as a scheduled activity for licensing in the 2007 Scheduled Premises Regulations.[145]

4.4.2.2 Forestry residuals and timber

Organic waste sourced from C&I sources includes forestry residuals, timber and liquid organic waste. In comparison to garden organics, the markets for forestry residuals and their end products function well, principally because processors pay a price for inputs (including barks and timber residuals) based on market demand for the high value, non-composted garden mulches they produce. The market for reprocessed timber also functions successfully as its inputs, typically pallets, can be stockpiled until demand for end products increase, without causing odour or leaching.[146] For these reasons, the processing of forestry residuals and timber to produce non-composted products are not scheduled under A07.

4.4.2.3 Liquid organic waste

Increasing landfill levies have allowed composters to profitably offer a cheap alternative liquid organic waste disposal option (subject to A01 licensing requirements) in recent years. This revenue opportunity, rather than the demand for composted end products, determines the supply of liquid organic waste for processing and can result in comparable distortions found in the garden organics market.

While some forms of liquid organic waste may enhance the composting process, others include contaminants requiring special attention to avoid environmental impacts. For example, AS: 4454 stipulates that feedstock containing grease trap waste should be maintained at a temperature of 55°C or higher for 15 days or longer (instead of nine days)

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[143] Standards Australia p.11.
[144] Sustainability Victoria, p.13.
[145] EPA, *Regulatory Impact Statement for the Environment Protection (Scheduled Premises and Exemptions) Regulations 2007*, p.28.
[146] Sustainability Victoria, *Recycled Organics – Market Analysis*, September 2013, p.8.

and turned five times to counter re-infection by the outside of the pile.[147] If composters comply with these standards by lengthening batch cycles, they risk increasing their stockpile levels and causing odour problems. Alternatively, if they reduce the time allowed for pasteurisation to limit odour problems, product quality and safety may be compromised.

As AS: 4454 does not hold any statutory weight, in a few instances operators have removed feedstock prior to it becoming compost, or even pasteurised and sold it as sub-standard product. Notwithstanding the environmental risks of this practice, under the current Scheduled Premises Regulations, quantities of feedstock removed prior to composting are not included in the current threshold for requiring a works approval and licensing. Therefore, this review has given consideration to including an output threshold and definition to ensure that all organic waste processing activities that may cause environmental harm are included in the new Regulations (see conclusion and proposed approach, section 4.4.5).

4.4.3 Key environmental risks

Factors affecting the environmental, human health and amenity risks of organic waste processing include the volume and composition of feedstock; the proximity of the site to residents; onsite weather conditions; and processing infrastructure and techniques. For instance, composting food waste in open windrows poses a much higher risk of negative environmental impacts, such as odour generation or attraction of vermin, than a closed anaerobic digester accepting the same waste.

Reception of organics, specifically kerbside collection and the processing and sorting of these waste streams is often done in the open atmosphere resulting in substantial offsite odours, as the material can sometimes be two to three weeks old and has had some anaerobic decomposition in that time.

Several compost fires have occurred in recent years with smoke and ash impacting on nearby residents. These can occur when compost is removed at the pasteurised stage (when temperatures are above 55°C).

Removing materials prior to pasteurisation or at particular time-temperature ranges can result in pathogens such as Salmonella surviving.[148] Conversely, covering piles with finished compost can aid in the reduction of pathogens during the pasteurisation and maturation process.[149]

Leachate at organic waste processing facilities is usually caused by the poor management of incoming feedstock. It generally comprises pathogens and high levels of BOD and total suspended solids (TSS) and may contaminate groundwater if premises' design is poor and the soil porous.

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[147] Standards Australia, p.11.

[148] M.L. Droffner and WF Brinton, 'Survival of E. coli and Salmonella populations in aerobic thermophillic composts as measured with DNA gene probes', *International Journal of Hygiene and Medicine*, 197(5) 1995 p. 387.

[149] J.R. Patel et al, 'Physical covering for control of Escherichia coli O17:H7 and Salmonella spp. in static and window composting processes' *Applied and Environmental Microbiology*, March 2015, 81(6), p.2063.

4.4.4 Current controls

4.4.4.1 Existing EPA controls (outside these Regulations)

As with other industries, EPA has the ability to issue a range of remedial notices and sanctions under the EP Act for general pollution offences, including PANs, clean up notices and PINs.

4.4.4.2 The planning system

Under the VPPs, the use of land for materials recycling requires a planning permit. Materials recycling is land used to collect, dismantle, treat, process, store, recycle or sell used or surplus materials. This includes premises that process organic waste. The VPPs list composting and other organic materials recycling as a use with adverse amenity potential (clause 52.10) and require planning authorities to refer planning permit applications to EPA as the determining referral authority (clauses 66.02-7). The VPPs also list EPA as a determining referral authority for planning permit applications for uses or developments that require an EPA works approval or licence (clauses 66.02-1).

In this role, EPA has regard to its guideline, *Designing, constructing and operating composting facilities,*[150] which includes recommended separation distances from sensitive land uses for different types of operations. Composting facilities are generally located in farming and industry zones, as other zones usually adjoin zones which permit sensitive uses and therefore sufficient buffers cannot be provided.

In 2010, the VPPs definition of 'transfer station' was amended (through the VC69 amendment) to ensure that transfer stations storing organic waste and causing odour problems through intentional and unintentional composting were redefined as recycling centres, and therefore would require a planning permit to operate. Consequently, the definition of a transfer station changed to**: '**Land used to collect, consolidate, temporarily store, sort or recover, refuse or used material before transfer for disposal or use elsewhere.' The amendment removed 'process' from the definition to make it explicit that transfer stations could not engage in composting or any other organic waste processing.

The VPPs (clause 52.45-3) require the decision maker to consider Sustainability Victoria's *Guide to Best Practice for Organics Recovery*.

4.4.4.3 Council contracts

Following the series of odour complaints received by EPA and councils prior to the introduction of licensing in 2007, environmental standards improved partly due to councils' more demanding approaches to procurement. In recent years, councils – through waste resource recovery groups (or their predecessors) – have awarded long-term contracts based on organic waste processors' commitment to investing in new technology; location of sites to avoid odour impacts; and compliance with Australian standards. For example, in 2013, the then Municipal Waste Management Group – on behalf of 15 councils in the North and West of Melbourne – appointed Veolia Environmental Services for 15 years to process around 85,000 tonnes of green waste per year, on the basis that it had invested in state-of the-art, in-vessel processing equipment and a new, appropriately located site to limit odour and produce high-quality compost products.[151]

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[150] EPA Victoria, *Designing, constructing and operating composting facilities* – EPA publication 1588 *(*, 2015 p.6.

[151] Metropolitan Waste and Resource Recovery Group, *Organics processing procurement*, 2016, https://www.mwrrg.vic.gov.au/procurement/organics-processing-procurement/

4.4.4.4 Victorian Government grants

The uptake of anaerobic digestion to convert municipal organic waste into biogas has been relatively slow in Australia compared to parts of Europe and the United States; however, recent Victorian Government subsidised initiatives may support ongoing growth. Yarra Valley Water's Wollert anaerobic digestion facility, which will begin operating in 2017, will power a one-megawatt generator through the conversion of 100 tonnes of organic waste per day.[152] In addition to supporting the construction of the Wollert facility, the Victorian Government announced grants of $300,000 available for investment in small-scale anaerobic digestion technology in February 2016.[153]

Further investment in high technology composting and anaerobic digestion equipment will be required to not only convert the increasing supply of existing organic waste into viable end products, but also to process new streams. For example, the growth of kerbside food waste services provided by local government is estimated to grow to 125,000 tonnes by 2025, or around 14 per cent of current total organic waste volumes.[154]

4.4.4.5 Works approvals and licences

As at 30 June 2016, EPA licensed 10 premises with composting (A07) as the predominant scheduled activity. A number of other premises are scheduled for the purposes of composting but composting is not their predominant activity.

Prior to the 2007 review, the scheduled premises regulations required that composters obtain a works approval to establish a new facility or upgrade infrastructure, but exempted them from licensing. As the compost industry grew in response to the increase in green waste diverted from landfill from 1998, so too did the number of complaints about odour from composting sites. In response, the 2007 RIS concluded that composting facilities had a high likelihood of causing impacts to communities and therefore should require a licence to operate and be defined as:

> Premises with aerobic or anaerobic composting which is designed to or has a capacity to process more than 100 tonnes of waste per month.

Through licensing, EPA has had the ability to include operating conditions in licences for composters that otherwise assume the status of non-mandatory guidelines. This has allowed for direction and oversight of:

- the location and distance of premises from residential areas according to technology used
- stockpile management and processing technique by feedstock type
- pasteurisation and maturation operating procedures
- treatment of emissions before they are released
- monitoring processes, including regular onsite testing of carbon: nitrogen ratios, temperature and oxygen levels
- end-product standards.

Consequently, EPA has issued PANs and changed the licence conditions of problematic sites; for example, EPA altered one premises' conditions to mandate the use of in-vessel

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[152] Yarra Valley Water, *Turning your waste into energy*, http://www.yvw.com.au/Home/Aboutus/Ourprojects/Currentprojects/WastetoEnergyfacility/index.htm

[153] Sustainability Victoria, *Advanced Organic Processing Technology Grants*, 2016 http://www.sustainability.vic.gov.au/adorganicsgrants

[154] Sustainability Victoria, *Recycled Organics,* p.14.

equipment to address ongoing odour issues. EPA has also strengthened its approach to issuing works approvals; for example, it rejected an application for a works approval in 2010 on the basis that the applicant had not committed to investing in best practice technology (in-vessel processing) on a site that required it, due to its topography, weather patterns and proximity to residents.[155]

Despite the stronger regulatory framework (provided by licensing and a more stringent works approval process) since 2007, EPA has continued to be required to issue a number of notices to composters due to a combination of two factors:

- first, organic processing activity has increased significantly in line with the growth in the collection of garden organics in the last ten years - from an average of 607 kilotonnes per annum between 2004-05 and 2007-08, to an average of 879 kilotonees between 2009-10 and 2013-14[156]
- second, the disconnection between the supply of organic waste and demand for end products has yet to be resolved.

Case study: An example of issues with composting facilities
An open windrow composting facility had been operating since 1998. In 2007, composting facilities became subject to EPA licensing requirements. The facility's licence included the condition that:

'Odours offensive to the senses of human beings must not be discharged beyond the boundaries of the premises'.

The facility continually failed to meet this licence requirement. In January 2010 the operator pleaded guilty to contravening a licence condition.

The operator stopped receiving some odorous waste and changed their processing methods. However, there continued to be offsite odour issues, with EPA receiving approximately 20 odour reports per month attributed to the facility

It was clear the only way the facility could become compliant with its licensed operating conditions would be would be to conduct all composting in an enclosed facility, with appropriate odour control equipment. EPA subsequently issued an amended licence, stipulating these requirements and requiring compliance with the amended licence conditions by September 2010.

In June 2010, the operator informed EPA that under the current conditions it would not be financially feasible to upgrade its facilities and therefore it would not meet the new licence condition requiring all composting be carried out in an enclosed building. Instead, the operator sought a licence amendment to allow the facility to operate as a transfer station, receive and shred green waste, and remove all compost from the site. EPA approved the licence amendment sought by the operator.

In this case, an operating licence strengthened EPA's compliance response and capacity to require operational changes, by directing under licence the upgrade of the facility to address offsite odour impacts.

[155] EPA Victoria News Centre, *EPA Victoria rejects composting proposal,* 25 May 2010, http://www.epa.vic.gov.au/about-us/news-centre/media-releases/media/2010/may/25/epa-victoria-rejects-composting-proposal
[156] Sustainability Victoria, *Organics data and graphs in the Victorian Recycling Industry Annual Report 2013-14*, 2014.

4.4.4.5.1 Definition ambiguity

Since 2007, key stakeholders including industry, councils, other government agencies and EPA, have been uncertain if the current definition of composting extends to pasteurising, vermiculture, fertiliser production (static piles or pellets), aerobic and anaerobic digestion and dehydrating.

Even though composting facilities comprise the majority of organic waste processors, the expected emergence of premises using anaerobic digestion, dehydration and other forms of aerobic and anaerobic biological processing, may require that the current definition is broadened to include all organic waste processors to remove ambiguity. Alternatively, the definition could remain the same, given that in practice, forms of organic processing other than composting are already scheduled.

4.4.4.5.2 Input threshold

The current threshold is based on the *capacity* of premises to accept 100 tonnes of organic waste per month, with no reference to the amount produced at the site. As most composting facilities are located in large land allotments, many have the potential to compost much more than they may actually be composting, albeit in a less controlled manner. This makes it difficult to apply the current threshold given that it is based on design capacity. One solution would be to modify A07's threshold to *actual* tonnes or volume of organic waste accepted by processors.

4.4.4.5.3 Processing and retaining organic waste produced onsite

The intent of the 2007 Scheduled Premises Regulations was to allow farms to compost their own waste onsite for use on the site without needing a licence.[157] However, this intent was not specifically stated in the 2007 Regulation through an exemption with the effect that farms processing over 100 tonnes of waste onsite, for use on the site, may perceive they require a works approval and licence.

Given that composting on farms can create the same odour issues as on other premises, one approach would be to require farms to be licensed for composting. Conversely, as these premises process waste onsite for their own use, supply and demand are closely linked and therefore oversupplies of feedstock (that often result in odour issues) are less likely to occur. Additionally, given that farms are likely to be situated further away from residential zones than other composters' facilities, odour is less likely to be a problem.

4.4.4.6 Interstate comparisons

All Australian jurisdictions (except the Northern Territory) require a licence for composting activities. The thresholds for licensing vary from 100 tonnes of product volume per year (or equivalent) up to 1,000 tonnes of product volume per year in Western Australia. The current Victorian threshold is equivalent to approximately 600 tonnes of product volume per year (assuming a 2:1 input: output ratio), although this will be less if premises produce raw mulch products.

Tasmania, Queensland and New South Wales exempt composting of material generated onsite.

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[157] EPA Victoria, *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 – Regulatory Impact Statement- EPA publication 1118,* 2007, p.118.

4.4.5 Conclusion and proposed approach

Large-scale organic waste processing can cause significant dust and odour emissions and result in the discharge of contaminated leachate to stormwater or groundwater. The risks of environmental incidents occurring remain high relative to other industries, principally due to the disconnection between supply of feedstock and demand for end product. Given the potential hazards, the complexity of the industry and limited incentives for adopting good practice, there continues to be a case for scheduling composters.

Consistent with the staged approach to this review, the proposed amendments include the following:

1. Changing the name of the category to 'organic waste processing' and the description to clarify that it covers aerobic and anaerobic biodegradation to include techniques such as:
    a. vermiculture
    b. static windrows
    c. turned windrows
    d. in-vessel composting and digestion.
2. Replacing the design capacity threshold of 100 tonnes per month with an acceptance threshold of the same amount and an additional production threshold of 50 tonnes per month of soil conditioner, compost or digestate.
3. Explicitly exempting the processing of organic waste generated at the premises and retained on the premises from works approvals and licensing.

This approach is not intended to increase the coverage of the scheduled category. It is instead intended to provide greater clarity for industry and EPA assessors. Based on a 2:1 weight ratio between waste received and product output, the addition of the output-based threshold is not expected to result in a different scale of activity becoming subject to works approval and licensing requirements.

Some premises receive 'products' rather than 'waste' for additional processing or to store. These include premises that blend soil, produce soil conditioners and fertiliser palletisers or nurseries that receive composts. These sites are not considered to be scheduled organic waste processing premises because no further degradation occurs and the risk of odour being generated is very low. Additionally, premises storing organic products onsite prior to application to land also do not require a works approval or licence.

4.5 Intensive animal industry (B01)

Intensive agriculture encompasses the farming of beef or dairy cattle, pigs, sheep, goats or poultry. Intensive agricultural operations are those where animals spend all (or the majority) of their time in purpose-built structures, and where all (or the majority) of their feed is brought to them. This is distinct from extensive agricultural operations, where animals forage for food in pastures – though they may be brought into 'feedpads' on a temporary/short-term basis (for example, in drought situations).

The *National Guidelines for Beef Cattle Feedlots in Australia*, published by Meat and Livestock Australia, define a cattle feedlot as a 'confined yard area with watering and feeding facilities, where cattle are completely hand- or mechanically-fed for the purpose of beef production'.[158]

[158] Meat and Livestock Australia, *National Guidelines for Beef Cattle Feedlots in Australia*, 3rd Edition, 2012, p.1.

While the dairy sector has traditionally involved extensive pasture-based operations, intensification is resulting in 'dairy freestalls' where dairy cattle are permanently housed in a purpose-built structure for milk production. The *Guidelines for Victorian Dairy Feedpads and Freestalls*, published by the then Victorian Department of Primary Industries in 2010, defined a dairy freestall as: 'a type of permanent feedpad that also includes a bedding area for cattle to lie down. It is generally covered (roofed) and may also include a loafing area for cattle to stand, ruminate or idle'.

As omnivores, pigs require significant supplementary feeding to obtain adequate nutrition.[159] Intensive piggeries confine and concentrate the animals for this purpose and so require active management of animal waste to prevent nutrients reaching surface or groundwater. Both conventional and deep litter piggeries contain the pigs in a permanent structure, but differ in that conventional systems flush or drain effluent from the sheds, while deep litter systems rely on the litter (straw, sawdust or similar) to absorb effluent.[160]

With similar infrastructure to beef feedlots or piggeries, sheep and goats can be raised in intensive operations that confine the animals for the purpose of increasing the efficiency of watering and feeding operations. Goats may also be milked in intensive operations that resemble the practices of dairy freestalls.

Broiler farms, where chickens are grown for meat, house the birds in permanent sheds and are often highly mechanised operations.[161] With a lower risk of run-off reaching surface waters (effluent is collected in the litter applied to the shed floor and composted), the primary environmental risk from broiler farms is odour if they are not appropriately located and well managed.

While the agricultural sector in Victoria is a significant one, most businesses in the food and fibre sector are currently small and medium enterprises (SMEs). Ninety-nine per cent of Victoria's 33,000 primary producers employ less than 20 people.[162] Traditionally, farms have been family owned; however, the trend is towards larger, more intensified, commercial operations which are already delivering most of the sector's output.[163]

The food and fibre sector is one of six priority sectors identified by the Victorian Government as underpinning Victoria's future growth. Food and fibre is already a significant industry in Victoria, but further significant growth is both expected and actively supported. *Victoria's Future Industries – Food and Fibre Sector Discussion Paper*, released by the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) in July 2015, recognised that significant intensification of production systems will be required in order to deliver this growth.[164]

In addition to the growing intensification of agriculture, rural areas themselves are undergoing demographic change, with increased residential housing (and other sensitive uses) in some designated farming zones, putting pressure on agricultural operations to minimise noise and odour impacts.

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[159] Planning Panels Victoria, *Animal Industries Advisory Committee Discussion Paper*, 2015, p.6.
[160] Australian Pork Limited, *National Environmental Guidelines for Piggeries*, 2nd Edition 2010.
[161] Planning Panels Victoria p.5.
[162] The Department of Economic Development, Jobs, Transport and Resources (DEDJTR), *Food & Fibre Discussion Paper,* 2015, p.15.
[163] Productivity Commission, *Trends in Australian Agriculture, Research Paper*, 2005, pp.32–37.
[164] 'Food & Fibre Discussion Paper', as referenced in Animal Industries Advisory Committee's *Discussion Paper*, 2015 p.4.

4.5.1 Key environmental risks

The high-density confinement of animals requires active management of animal waste to ensure that excessive nutrients are not applied to land or result in run-off into nearby waterways. It can also result in odour, noise and dust issues if not managed appropriately and/or if located an insufficient distance from neighbouring residents.

Intensive operations involving beef cattle, dairy animals, sheep, goats, or pigs often utilise water to wash down the feedpads, bedding area or milking areas. The combination of water and animal effluent generated by high densities of animals can produce significant volumes of wastewater that require adequate consideration in the design and operation of waste treatment and disposal systems. Due to supplementary feed brought on to the property to feed the animals the wastewater often contains very high nutrient levels with the potential to impact on the heath of the soils or waterways if allowed to run-off. Pigs, in particular, require significant supplementary feeding to obtain adequate nutrition. While industry standards and practices are improving, the majority of remedial notices by issued by EPA over the past five years to such premises are often still the result of inadequate management or design of wastewater treatment systems.

By contrast, largely pasture-based feeding requires less nutrition to be added to the system, and the ability of pasture to absorb some effluent, combined with lower animal densities, means that animal waste is not often concentrated, reducing the risk of run-off.

Poultry (broiler) farms differ in that they collect the effluent and compost the material onsite, reducing the generation of liquid wastes (and subsequent need for wastewater treatment). However, broiler farms, if not properly located or managed, can generate odour when the bedding litter (containing manure, dust and feathers) begins to break down. These odours can reach a peak before the birds are harvested and the sheds are cleaned.[165]

The high density of animals in these operations can result in noise, odour and dust impacting on neighbouring land uses, particularly where buffers to residential premises or other sensitive uses are inadequate. These impacts may increase as sensitive land use zones (largely residential housing and tourism-based industries) are established in areas previously zoned for farming.

4.5.2 Current controls

4.5.2.1 Existing EPA controls (outside these Regulations)

EPA has the ability to issue a range of remedial notices and sanctions under the EP Act for general pollution offences (such as run-off leaving the boundary of an agricultural property), including PANs, clean up notices, and PINs.

Remedial notices require the receiver of the notice to take some form of action. PANs are used in the event or likelihood of pollution or environmental hazard and require actions by the subject of the notice to abate the pollution or hazard. Where a pollution event has occurred, PANs seek a remedy to avoid the event happening again. Clean up notices are used to require the active ‘cleaning up’ of pollution including the removal of waste to an appropriate location; undertaking clean up activities; and the ongoing management of pollution. The aim of a clean up notice is to prevent any further impacts on the environment and human health, beyond those which have already occurred.

[165] NSW Agriculture, *Odour management options for meat chicken farms*, January 2004, p.1.

In line with its Compliance and Enforcement Policy,[166] EPA also applies a graduated series of sanctions in the event of a pollution or risk event. These range from official warnings, to PINs for breaches of the law with relatively minor risks to the environment or human health, through to more serious sanctions such as prosecutions.

The tools outlined above can be used when an agricultural operation causes, or is likely to cause, offsite pollution or amenity impacts – allowing EPA to take action if pollution occurs. However, remedial notices are generally reactive tools, and sanctions are by nature applied after a non-compliance incident has occurred.

4.5.2.2 The role of the planning system in reducing environmental risk

Under the Victorian Planning System, planning authorities (usually local governments) regulate the location and operating conditions of many agricultural activities in Victoria. In doing so, the planning system seeks to avoid environmental and amenity impacts from conflicting land uses before they occur.

A planning permit is not required for extensive animal husbandry in farming (and green wedge) zones, but is required for intensive animal husbandry, broiler farms and some cattle feedlots.[167] The VPPs define intensive animal husbandry as any operation that is 'importing most food from outside the enclosures'.[168] EPA is a determining referral authority for some permit applications (listed in clause 52.10 of the VPPs) where EPA can require conditions be included in any permit granted. EPA must be given notice in relation to broiler farm planning permit applications. EPA can also be 'given notice' of other applications, but the relevant planning authority is not required to incorporate EPA's advice into the permit conditions.

Codes of practice for cattle feedlots, broiler farms and piggeries have been incorporated into Victoria's planning system to provide support for planning approvals. The codes are intended to achieve both environmentally and financially sustainable development in these industries. However, of these codes, the cattle and piggery codes have not been recently updated and do not reflect emerging farming systems or industry best practice.[169][170] Only the Victorian Code for Broiler Farms, updated in 2009 by the then Department of Primary Industries with EPA involvement, is considered current – with detailed guidance for managing potential environmental impacts at the siting, design and operational stages. There are currently no Victorian codes of practice for sheep feedlots, or for intensive dairy operations (feedlots or freestalls).

4.5.2.3 Works approvals and licences (via Scheduled Premises Regulations)

For the purposes of this RIS, the application of works approval and licensing requirements to intensive agriculture through the proposed 2017 Regulations needs to target residual risks to the environment and human health, in the context of the above controls.

The planning system influences the location and design of intensive agricultural operations to minimise the risk of environmental impacts on neighbouring properties and surface water. However, planning authorities, usually local councils, often lack the technical capacity to fully assess the likely environmental risks of larger and more complicated proposals. The requirement for a works approval to be assessed by EPA for these more

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[166] EPA Victoria, *Compliance and Enforcement Policy - EPA publication 1388.1*, 2014, p.21.
[167] Planning Panels Victoria, Figure 5.
[168] Victorian Planning Provisions, clause 74.
[169] Planning Panels Victoria, p.29.
[170] DEDJTR is currently leading a cross-government process to update these codes.

complicated proposals ensures that potential environmental risks are addressed by the proponent before construction and operation begin.

Planning permits are also unable to effectively manage potential environmental risks from ongoing discharge of wastes to surface water. EPA licences, issued when waste will be discharged to surface water, serve the purpose of holding the operator to predetermined emission limits to minimise ongoing environmental impacts. These limits would not be available using the planning system alone.

Intensive agriculture is currently scheduled (in the 2007 Regulations) as B01 intensive animal industry. However, there are no current EPA licence holders in this category and only three works approvals were issued during 2012-16. One works approval exemption (under the grounds in the EP Act rather than these Regulations) relating to modification works was granted by EPA in 2014. Premises that discharge waste solely to land (that is, no waste discharges to surface water) require a works approval but are automatically exempt from licensing.

The current Scheduled Premises Regulations define B01 intensive animal industry as: *'*…premises on which are situated piggeries or cattle feedlots and the like, where more than 5,000 animals are confined for the purposes of agricultural production.'

There is some lack of clarity around what is meant by 'and the like' in the above definition. As currently applied by EPA, 'and the like' includes sheep feedlots and other intensive operations, such as goat feedlots and dairy freestalls. These are purpose-built infrastructures where the animals spend all (or the majority) of their time under cover and where all (or the majority) of their food is brought to them. It is not intended to include extensive dairy farms or short-term intensive animal operations such as stock containment areas used in drought times, or feedpads used for supplementary feeding.[171]

Recent works approvals for B01 intensive animal industry have sought to minimise the risk of impacts to the environment and human health by ensuring that liquid and other wastes are appropriately managed. Conditions in these works approvals have included specifications relating to the location and design of waste storage areas and the appropriate use of bunding to reduce the risk of run-off leaving the site. [172] Other works approval conditions have required that no polluted stormwater or unacceptable noise leave the boundary of the property during construction. A recent works approval relating to an intensive goat farm also required the company to provide an extensive risk management plan to reduce the chances of Q fever infection within the goat herd and to develop protocols to minimise the chances of infection from dust particles, wastewater or contact with animals.[173]

4.5.2.4 Interstate comparisons

Intensive agriculture in some circumstances is subject to EPA licensing and works approval requirements in New South Wales, Queensland, Western Australia and South Australia. While total animal numbers are a common threshold, most other jurisdictions differentiate between different types of animals (specifying numbers for individual animal

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[171] EPA Victoria, *Response to Comments - Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 Regulatory Impact Statement* - EPA publication 1143, 2007, p.5.
[172] In line with EPA Victoria's *Bunding Guidelines - EPA publication 347*, 1992.
[173] EPA Victoria News Centre, *EPA grants works approval for Moorabool goat farm*, 30 May 2016, http://www.epa.vic.gov.au/about-us/news-centre/news-and-updates/news/2016/may/30/epa-grants-works-approval-application-for-moorabool-goat-farm - these conditions were developed in consultation with DHHS and DEDJTR.

types, or animal units). Several jurisdictions incorporate location-based thresholds for intensive agriculture: in South Australia a lower (animal number) threshold is applied where cattle feedlots are situated in a water protection area. While definitions and application threshold levels vary across states, common to all jurisdictions is the intent for the environmental regulator to directly regulate only the more intensive agricultural operations.

The relatively high Victorian threshold of 5,000 animals is a reflection of a different view in Victoria of the role and application of an EPA licence. In Victoria, works approval and licensing requirements are intended only where they are an effective tool for higher-risk activities, as risks from smaller and less intensive operations can often be effectively addressed by other tools. Alternatives include partnering with other government agencies and regulators, and using existing powers and support through the planning system, food safety standard regulators, industry codes of practice, and remedial notices.

4.5.3 Conclusion and proposed approach

The present definition and threshold for industry category B01 intensive animal industry is intended to cover large, intensive agricultural operations that present a higher potential risk to the environment or human health. Smaller operations are better regulated by other means, such as under the planning system. The requirement for a works approval ensures that these larger operations are designed appropriately, particularly in terms of effluent and wastewater management. The design requirements will vary according to the type and location of the operation, including its proximity to surface water and the characteristics of the receiving environment. Licences are only required for these same larger operations where there will be some ongoing discharge to surface water This is consistent with the current use and application of works approvals and licences as described in section 2 of this RIS.

EPA and other regulators (such as planning authorities) have additional tools to address environmental risks from agricultural operations (both intensive and extensive) that do not trigger works approval or licence requirements under the Scheduled Premises Regulations. For EPA these include PANs and sanctions, as well as targeted programs to work with the industry to improve environmental outcomes.

Local governments, as the relevant planning authority, can impose conditions in planning permits (sometimes via referral processes with EPA) to minimise the risk of environmental issues. The application of the (updated) Broiler Code provides local governments with assistance in managing the potential for offsite odour impacts. Therefore, the proposed 2017 Regulations limit changes to the definition of B01 intensive animal industry to improve clarity for industry and EPA while not expanding the nature or type of industries subject to works approvals or licences. This limited amendment is consistent with the staged reform approach to the review of these regulations (see section 1). As described above, the proposed 2017 Regulations would only apply to intensive beef, dairy cattle, sheep, pig and goat operations over a certain size, as these are seen to involve a significant risk of pollution through inadequate management of effluent and other liquid wastes. The proposed regulations do not apply to chicken broiler farms as the application of the Broiler Code through the planning system is currently regarded as sufficient to manage potential odour issues and as these operations do not require licensing to manage offsite discharges to surface water.

The draft Regulations propose replacing the words 'and the like' with specific references to the types of intensive agriculture intended to be covered by the definition. The proposed new definition for B01 intensive animal industry is as follows:

'Premises on which are situated piggeries, cattle feedlots, sheep feedlots, goat feedlots, goat dairies or dairy free stalls, where more than 5,000 animals are confined for the purposes of agricultural production.'

Sheep feedlots were explicitly referred to in the Response to Comments on the 2007 RIS as included under the definition of 'and the like'.[174] Goat dairies, goat feedlots (for meat production) and dairy freestalls (where dairy cows are confined for the purposes of dairy production) are within the scope of the intended application of the current Regulations. The intention of specifically including these activities in the definition of B01 in the proposed 2017 Regulations is to improve clarity for the industry and EPA assessors and to retain EPA's regulatory controls, through works approvals and/or licences, of intensive agricultural operations with higher risks to the environment and human health.

The retention of the works approval threshold at 5,000 animals from the 2007 (and earlier, 1996) Regulations reflects the continued purpose of works approvals as managing the highest-order risks from pollution and waste. Less significant risks from smaller agricultural operations can be managed through the land use planning system, and where necessary, through EPA's reactive instruments (for example, PANs) in the event an environmental risk or incident occurs.[175]

The proposed change in the definition for the 2017 Regulations is not expected to have a material impact on the number of affected parties, as it seeks to clarify, rather than change, how the definition is currently applied by EPA.

Stage 2 of the review of the Scheduled Premises Regulations will examine the appropriate use of works approvals and licences to reduce environmental risks from intensive agriculture in more detail. This is likely to include further analysis of the optimal threshold to trigger works approval and/or licensing requirements to best align these tools with other controls available to Government.

[174] EPA Victoria, *Response to Comments – Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 and Regulatory Impact Statement* - EPA publication 1143*,* June 2007, p.5.

[175] In the 1984 regulations, works approvals and licences were required for all dairy or beef cattle feedlots (that is, no application thresholds were defined). However, an exemption from licensing was provided (as it is in the current regulations) for any of these operations which did not discharge to (surface) water.

4.6 Beverage manufacturing (D09)

4.6.1 Category description

The broad range of non-alcoholic and alcoholic drink manufacturers covered by the current Scheduled Premises Regulations category D09 use a variety of raw materials, production methods and waste management processes in producing their beverages.

For the purposes of the Regulation, non-alcoholic beverage sub-categories include aerated or carbonated soft drinks, purified waters, fruit drinks, fruit juices, energy drinks, concentrated cordials and syrups or non-alcoholic brewed beer or cider.

Alcoholic drink production sub-categories include beer and malt, wine, cider and spirits.

Dairy-based beverages are covered by scheduled category D07 – milk processing.

4.6.2 Key environmental risks

The beverage manufacturing industry's discharge of effluent is the most likely activity to cause environmental harm. Risk profiles within the industry vary most according to whether the effluent is released to the sewer, land or water with discharges to surface water presenting the highest risk. Most beverage manufacturing plants – other than wineries, cider works and some micro-breweries – are established in urban or regional areas where reticulated sewerage systems are available. As these premises' wastewater is generally discharged into sewerage networks in accordance with trade waste agreements, it is deemed low risk and therefore these manufacturers are eligible for a general exemption from works approvals and licensing requirements under Regulation 11(a) of the current Regulations.

By comparison, the higher risk of beverage manufacturing premises emitting effluent to land is recognised through the requirement in the current Regulation to obtain a works approval (excluding wineries crushing less than 300 tonnes), and the highest risks from discharging effluent to surface water triggering both works approval and licensing requirements.

Aside from whether manufacturers discharge effluent to the sewer, land or water, the environmental risk profiles of beverage manufacturers are dependent on effluent volume, composition and treatment method.

4.6.2.1 Effluent volumes

While the volume of effluent produced is linked closely to manufacturers' scale across all beverage categories, water used per unit of production is also indicative and varies across categories. For example, the ratio of water used to finished wine product averages around 5.5 litres:1 litre,[176] cider 4 litres:1 litre[177] and fruit juice made from concentrate, 5 litres:1 litre.[178] At the lower end, beer averages 2.5:1[179] and soft drink (excluding fruit juice) 2:1.[180]

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[176] Brito et al, 'Brewery and winery wastewater treatment; some focal points of design and operation' in, V Oreopoulou and R Winfried (eds), *Utilization of By- Products and Treatment of Waste in the Food Industry,* Springer US, 2007 p.114.
[177] WRAP Consulting, *UK Drinks Sector - Resource Efficiency in the UK Cider Sector,* p.9.
[178] WRAP Consulting, *UK Drinks Sector - Resource Efficiency in the UK Soft Drink Industry*, p.6.
[179] Brito et al p.114.
[180] WRAP Consulting, *UK Drinks Sector - Resource Efficiency in the UK Soft Drink Industry*, p.6.

Another factor affecting the volume of effluent generated is the amount of water used in cleaning processes. Equipment used to produce beverages with a high organic content requires water-intensive cleaning methods. For example, fruit juice requires approximately 1.5 litres of water for cleaning per litre of production.[181]

4.6.2.2 Effluent composition

The extent to which manufacturers' wastewater depletes oxygen in water and soil – or its biological oxygen demand (BOD) – is also dependent on the organic content of beverages and its related wastewater. The simple dissolved compounds produced through fermentation in the manufacturing of alcoholic drinks - such as organic acids, sugars and alcohols – and their separation through filtration, result in wastewaters with a high BOD.[182] The processing of fruit in the production of cider and fruit juice also results in high BOD in untreated wastewater through its high content of sugars and starches.

In addition to using more water in their cleaning operations, manufacturers of beverages with a high organic content are more likely to use higher volumes of cleaning agents with the effect that their wastewater pH is prone to greater variations. For example, a brewery's effluent pH averages around 7; however, during cleaning phases it can fluctuate from 4.5 to 12 depending on the balance of acidity and alkalinity in the agents used.[183] The ongoing discharge of high volumes of acidic wastewater to land is likely to reduce soil's pH to the extent that if it falls below 4.5, elements that are beneficial to plant growth such as molybdenum, phosphorous, magnesium and calcium will become less available.[184]

At the other end of the pH spectrum, soil will become deficient in nutrients such as zinc, copper, boron and manganese if pH exceeds 7.5 and high levels of sodium have the potential to stunt plant growth at levels above 9.[185]Discharges to surface water of acidic and alkaline wastewater are also problematic given that the recommended pH range for most fish is between 6.0 and 9.0 and short-term fluctuations of pH by greater than 1.4 (up or down) compromise their survival.[186] Acidification of streams and lakes is likely to reduce the diversity and abundance of aquatic species and is linked to fish mercury contamination and the eutrophication of estuaries. At the other end of the scale, water environments with a pH above 9 may damage the gills and skin of fish and lead to death if ammonia is present.[187]

Alcoholic beverage and fruit juice wastewaters also comprise heavier concentrations of total suspended solids (TSS) than other categories – that is, solids in water that can be trapped by a filter. The TSS of wine ranges between 200-650 mg/L,[188] beer 200–1,000mg/L[189] and juice 100-2,000 mg/L).[190] The consequences of discharging untreated effluent with high concentrations of TSS include:

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[181] WRAP Consulting, *UK Drinks Sector - Resource Efficiency in the UK Soft Drink Industry*, p.7.
[182] Brito et al p.114.
[183] Brito et al p.115.
[184] NSW Department of Agriculture, *Acid Soil Action – Understanding Soil pH*, 2000, p.3.
[185] QLD Government, *Soil pH*, 2013, https://www.qld.gov.au/environment/land/soil/soil-properties/ph-levels/
[186] Fondriest Environmental, *pH of Water,* 2013, http://www.fondriest.com/environmental-measurements/parameters/water-quality/ph/
[187] Fondriest Environmental.
[188] G. Hanran-Smith and M. Gibberd, *Improved industry capacity for wastewater management by small wineries in the Margaret River wine region*, prepared for Winewatch, Appendix 1 and Brito et al 2007, p.115.
[189] W. Dreissen and T. Vereijken, 'Recent developments in biological treatment of brewery effluent', *The Institute and Guild of Brewing Convention,* Livingstone, Zambia, March 2-7, 2003 p.2 and Brito et al p.115.

- reductions in soil porosity leading to poorer oxygen uptake
- increases in water opacity leading to decreased light transmission
- increases in odour generated from anaerobic decomposition.

Although wastewater generated by soft drink production (excluding juices), is likely to have a lower BOD than that related to the production of alcoholic drinks, the inclusion of sugars, artificial sweeteners, fruit juice concentrates, flavouring agents, carbon dioxide, bicarbonates, colouring agents, preservatives and mineral salts have the potential to generate high chemical oxygen demand (COD) levels. Nonetheless, as the great majority of soft drink manufacturers are connected to the sewer in Victoria, the impacts of their effluent are limited.

4.6.2.3 Wastewater management and solid waste disposal

The filtration and wastewater separation processes of beverage manufacturers play an important role in managing wastewater composition. Victorian water corporations' trade waste agreement fee structures, such as the Yarra Valley Water's set out below provide an incentive for producers to reduce the volume, BOD and TSS of wastewater emitted to the sewer.[191] Wine, beer, cider and juice manufacturers often separate their high BOD discharge and send it offsite for anaerobic digestion to avoid sending high BOD effluent to the sewer.[192]

Table 6: Yarra Valley Trade Waste Discharge Fees - 2015/16

Trade waste discharge fees	Charge($)
Volume ($/kilolitre)	1.0699
Biochemical oxygen demand (BOD) ($/kg)	0.8359
Suspended solids (SS) ($/kg)	0.4865
Total Kjeldahl nitrogen (TKN) ($/kg)	2.2596
Inorganic total dissolved solids (ITDS) ($/kg)	0.0348

Source: Yarra Valley Water (2016), *Trade Waste Fees and Charges* available at http://www.yvw.com.au/Home/Inyourbusiness/Tradewaste/charges/overview/index.htm

Alternatively, manufacturers not connected to the sewer - such as cider processing works, juice manufacturers and wineries in non-urban areas - typically discharge their effluent to wetlands, wastewater lagoons and irrigation sites. If these facilities are appropriately designed and BOD, TSS and pH levels competently monitored and managed, these approaches may successfully avoid harming the immediate and broader environment; nonetheless, the risk of an adverse impact is inherently higher than for premises connected to the sewer. This risk is reflected in the 2007 Scheduled Premises Regulations' condition that all beverage manufacturers discharging to surface water require a works approval and licence.

Solid wastes – such as wineries' filtration clays, breweries' spent yeast and the sludge produced through the separation and aeration of high BOD discharge – either require disposal to landfill as a PIW or may sometimes be used as animal feed (for example in the

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[190] H.J. Yu, H. Li, 'An Instance about Juice Wastewater Treatment with UASB and Bio-Contact Oxidation and Coagulation and Floatation Process', *Advanced Materials Research*, Vols. 550-553, 2012, p. 2108, and S Judd, *Membrane bioreactors for industrial wastewater treatment*, Judd and Judd Ltd, 2014 p.38.

[191] Yarra Valley Water, *Trade Waste Charges*, 2016, http://www.yvw.com.au/Home/Inyourbusiness/Tradewaste/charges/overview/index.htm

[192] WRAP Consulting, *UK Drinks Sector - Effluent segregation* p.5.

instance of cider works' pomace) and as feedstock for anaerobic digestion.[193] The activity of managing this onsite solid waste is not scheduled under D09. This is because the volume of solid waste is significantly lower than effluent: for example, a winery crushing 250 tonnes of grapes in the Margaret River extracts the solid waste from its 5,000 litre tank once every two years while releasing approximately 1,600 kilolitres of effluent over the same timeframe.[194] Additionally, solid waste's relatively inert nature (compared to liquid waste) makes it far less likely to permeate the broader environment.

4.6.3 Victorian market overview

Approximately 747 wineries are in operation in Victoria. Of these, around 106 crush more than 300 tonnes of grapes per year and would therefore require a works approval if they were to make any significant infrastructure changes.[195] Given the significant number of wineries crushing less than 300 tonnes, one option considered as part of this review was to remove the threshold exemption for wineries emitting to land, however, analysis of EPA data revealed that requiring a works approval for this sub-sector would not be proportionate to the risk presented.

Around 91 beer manufacturers brew in Victoria and of those, approximately 27 produce more than 300 kilolitres of beer per annum;[196] however, as all of these breweries are likely to be connected to the sewer, they would not require a works approval if they upgraded their infrastructure. If the demand for craft beer continues to grow, some small, regional Victorian brewers currently not connected to the sewer may upgrade their infrastructure to produce more than 300 kilolitres in coming years: in these instances works approvals will be required.

Approximately 36 cider producers[197] operate in Victoria and of those, an estimated four produce more than 300 kilolitres of cider per annum[198] and therefore would be required to obtain a works approval if they were to make any significant infrastructure changes.

Approximately 15 soft drink manufacturers currently operate in Victoria of which most are estimated to produce over 300 kilolitres per year and discharge effluent to the sewer.[199] Of these, 10 produce fruit juice, including one that is located on an orchard and recently required a works approval to discharge wastewater to its property.

4.6.4 Current controls

4.6.4.1 Existing EPA controls (outside these Regulations)

As with all industries, EPA has the ability to issue a range of remedial notices and sanctions under the EP Act for general pollution offences, including PANs, clean up notices and PINs. EPA also applies a graduated series of sanctions in the event of a pollution or risk event. These range from official warnings, to PINs for breaches of the law with relatively minor risks to the environment or human health, through to more serious sanctions such as prosecutions.

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[193] WRAP Consulting p.5.
[194] G. Hanran-Smith and M. Gibberd p.11.
[195] The Australian and New Zealand Wine Industry Directory, *Number of wine producers by tonnes crushed, by state*, 2016, http://winetitles.com.au/statistics/wineriestable23.asp
[196] IBISWorld, *Beer Manufacturing in Australia IBISWorld Industry Report C1212*, 2016 and estimates provided by the Craft Beer Industry Association (email 27/05/2016).
[197] IBISWorld, *Cider Production in Australia, IBISWorld Industry Report OD4021*, 2016.
[198] Figure based on Cider Australia's estimate conveyed in phone call on 27 May 2016.
[199] Based on estimates provided by the Australian Beverages Council conveyed in phone call on 9 June 2016.

The tools outlined above can be used when any beverage manufacturing operation causes, or is likely to cause, offsite pollution or amenity impacts – allowing EPA to take action if pollution occurs. However, remedial notices are generally reactive tools and sanctions are by nature applied after a non-compliance incident has occurred.

4.6.4.2 The role of the planning system in reducing environmental risk

Under the Victorian Planning System, planning authorities (usually local governments) regulate the location and operating conditions of beverage manufacturing plants in Victoria. In doing so, the planning system seeks to avoid environmental and amenity impacts from conflicting land uses before they occur.

Planning permits are required for all beverage manufacturers and are limited to township, industrial and farming zones. EPA is a determining referral authority for permit applications (listed in clause 52.10 of the VPPs).

4.6.4.3 Works approvals and licences (via Scheduled Premises Regulations)

Under the current Scheduled Premises Regulations, beverage manufacturers exempted from works approvals and licensing include:

- those discharging wastewater to the sewer (through their eligibility for a general exemption under Regulation 11(a))
- wineries processing less than 300 tonnes of grapes per year and retaining all waste onsite.

The following beverage manufacturers are exempt from licensing but not from works approvals:

- wineries processing more than 300 tonnes of grapes per year and discharging waste solely to land
- any non-wineries discharging waste solely to land.

Beverage manufacturers discharging waste to surface water are subject to licensing and works approvals.

As at mid-2016, no beverage manufacturers were licensed by EPA. Two works approvals were issued from 2012 to 2016.

4.6.4.4 Interstate comparisons

Australian jurisdictions' approaches to scheduling beverage manufacturers vary according to:

- classification level – for example, South Australia applies different criteria to wineries and distilleries than it does to breweries and wineries based in different areas, whereas Western Australia makes distinctions at the broad, non-alcoholic and alcoholic category level
- threshold definition – for example, South Australia schedules breweries based on their daily production capacities (5kL/day) whereas NSW schedules according to intended daily (30 tonnes) or annual (10,000 tonnes) production capacities
- where effluent is discharged – for example, in Western Australia, non-alcoholic beverage manufacturers discharging effluent to land or waters (but not to the sewer) and producing over 350kL/year are scheduled while in Victoria, wineries crushing less than 300 tonnes that discharge to land are excluded
- threshold quantities.

4.6.5 Conclusion and proposed approach

Generally, the current Scheduled Premises Regulations (D09) appropriately reflect the varying environmental risks presented by different beverage manufacturing activities through:

- the exemption of producers from works approvals and licensing that discharge effluent directly to the sewer, on the basis that effects can be tightly controlled by water corporations
- the inclusion of all producers for works approvals and licensing that discharge effluent to water due to the high risk of endangering aquatic systems at any volume (through the altering of BOD, TSS and pH)
- the inclusion of wineries crushing more than 300 tonnes of grape and discharging effluent to land for works approvals, on the grounds that large volumes may harm the health of soils (through the altering of BOD, TSS and pH).

However, the absence of a threshold for non-winery beverage manufacturers in the current Regulations does not reflect the lower environmental risk presented by smaller producers emitting solely to land. It is therefore proposed that non-winery beverage manufacturers producing less than 300 kilolitres per year and emitting solely to land be exempt from licensing and works approvals (in a comparable way to wineries' current threshold-based exemption).

4.7 Potable water treatment (K03)

Potable water treatment refers to a range of processes which are used to turn water from natural catchments and dams into high-quality drinking water. The amount and type of treatment required will vary according to the original quality of the water. Melbourne Water, for example, say that most of the drinking water they supply needs relatively little treatment, due to it being sourced from protected catchments. The remainder however, needs to be fully treated.[200]

Full treatment of potable water requires a number of steps involving both physical processes (clarification and filtration) and the use of chemicals. All water, even from high-quality sources, needs to be disinfected (to kill any pathogens that may be present) before it can be released as drinking water. The two most common methods used to disinfect the water are oxidation using chemicals such as chlorine or ozone, or irradiation using ultra-violet (UV) radiation.[201]

The above means that potable water treatment facilities are required to store a number of chemicals onsite. The types of chemicals required vary according to the amount of treatment required, but are likely to include chlorine (for disinfection), fluoride (required by law to be added to drinking water),[202] as well as chemicals such as lime, which can be required to stabilise the pH of the water.

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[200] Melbourne Water, *Water treatment*, http://www.melbournewater.com.au/whatwedo/supply-water/Pages/Water-treatment.aspx
[201] Cooperative Research Centre for Water Quality and Treatment, *Factsheet: Drinking Water Treatment*, 2008, p.3.
[202] Department of Health and Human Services, *Water fluoridation*, https://www2.health.vic.gov.au/public-health/water/water-fluoridation

There are around 100-120 potable water treatment plants in Victoria, which service metropolitan Melbourne and regional cities and towns.

4.7.1 Key environmental risks

The potential environmental risks from potable water treatment plants relate to the storage of the chemicals used in the treatment process, and the disposal of the sludge or waste product that is created as a result.

4.7.1.1 Storage of chemicals onsite

As outlined above, potable water treatment plants require the use of a range of chemicals for various stages in the treatment process. These chemicals can include: aluminium sulphate, chlorine, fluoride (in the form of sodium silicofluoride, sodium fluoride or hydrofluosilicic acid), lime, caustic soda or similar chemicals.[203]

The storage of these chemicals onsite at potable water treatment plants represents a potential risk to the environment due to the location of the plants near surface water. A spill or leak of these chemicals from the plant can lead to a significant environmental impact on the local waterway.

In 2006, fluoride from the Cardinia Water Treatment Plant leaked into the nearby Cardinia Creek leading to a prosecution for water pollution under the EP Act. While the cause of the spill was a leaking pipe,[204] ineffective bunding resulted in the chemical reaching the creek. However, this is considered to have been an isolated incident and the bunding issue has since been resolved.

4.7.1.2 Management of waste material (sludge)

Potable water treatment to extract suspended solids and other impurities results in the generation of sludge, a waste product which can contain aluminium, copper, lead, zinc, and arsenic.[205] Inappropriate management of this sludge (such as discharge to surface waters) can have an adverse impact on the environment, or local amenity impacts such as odour.

In Victoria, sludge produced from potable water treatment plants is either discharged into the sewer system (where it is subsequently treated as a liquid waste) or dried in drying beds and disposed of either to landfill or directly applied to land as an inert waste.

4.7.2 Current controls

4.7.2.1 Scheduled Premises Regulations

Potable water treatment plants are currently scheduled under category K03 in the 2007 Scheduled Premises Regulations. K03 Potable water treatment plants are defined as:

> Potable water treatment plants which are designed to have a throughput of more than 1 megalitre per day.

All potable water treatment plants in this category are exempt from EPA's licensing requirements, but an EPA works approval is required for new plants or significant alternations or extensions to existing plants. This has remained unchanged since the

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[203] Melbourne Water, *Water treatment,* http://www.melbournewater.com.au/whatwedo/supply-water/Pages/Water-treatment.aspx
[204] Melbourne Water, *Sustainability Report 2005/06*, p.19.
[205] EPA Victoria, *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007 – Regulatory Impact Statement* – EPA publication 1118, 2007, p.106.

1996 Scheduled Premises Regulations; the 2007 Regulations did not make any changes to K03.

The 2007 Regulations added a related category, K04 water desalination plants, on the basis that they use large amounts of energy and produce a concentrated brine solution that can be difficult to dispose of without adverse environmental impacts.[206] The waste brine solution, which is usually discharged to water, makes the potential environmental impact from these facilities distinct from potable water treatment plants.

Regulation 11(a) of the current Scheduled Premises Regulations provides general exemptions (from works approvals) for potable water treatment plants which only discharge waste to the sewer system.

There have not been any recent (2012-16) works approvals relating to new potable water treatment plants or upgrades to existing plants. Over the same time period, one exemption from the works approval requirement was granted by EPA (based on the grounds provided in the EP Act). This exemption was granted in 2014 for works to upgrade a potable water treatment facility to improve the way the sludge by-product was handled. This low number of works approvals reflects the fact that many potable water treatment plants dispose of their wastes to sewer, triggering an exemption under Regulation 11(a).

EPA also regulates potable water treatment plants using other, more reactive, tools. These include the use of PANs if an activity is causing pollution, or is likely to cause pollution, such as the pollution of surface waters through chemical spills or leaks, or in response to the improper management of wastes.

In their submission to the *Scheduled Premises Regulations Review Discussion Paper*, the Victorian Water Industry Association Inc. (VicWater) noted that potable water treatment plants were included as scheduled premises due to the risk that chemicals used for water treatment may spill to the environment. However, VicWater noted that management controls for these chemicals are well established under water corporations' design processes which are underpinned by a variety of guidelines as well as legislative and regulatory requirements (see below). VicWater asserted that 'the contribution story', which describes how regulatory interventions are associated with outcomes, from including potable water treatments plants as a scheduled activity is 'effectively nil'.

4.7.2.2 Planning framework requirements

Under the VPPs, potable water treatment plants fall within the land use term of 'utility installation', which includes land used to collect, treat, transmit, store or distribute water.[207] Planning permits are required for utility installations in most planning zones, with limited exceptions (for example, in a public use zone).

4.7.2.3 Major hazard facilities requirements

Melbourne Water's potable water treatment plants at Christmas Hills and Silvan are major hazard facilities (MHFs),[208] as a result of the quantity of chemicals that are stored at these

[206] EPA Victoria p.106.
[207] Victorian Planning Provisions, clause 74.
[208] Worksafe, *Approved Major Hazard Facilities*, 2 August 2016, http://www.worksafe.vic.gov.au/forms-and-publications/forms-and-publications/approved-major-hazard-facilities

plants. MHFs have to demonstrate their operational safety to WorkSafe, through a Safety Case developed specifically for their unique operations and situation.[209]

4.7.2.4 Department of Health and Human Services, WorkSafe and other requirements

DHHS administers the *Health (Fluoridation) Act 1973*, which regulates the addition of fluoride into drinking water supplies in Victoria. To comply with this Act, water supply authorities are required to include the Code of practice for fluoridation of drinking water supplies in their quality management systems. The Code specifies the requirements for the safe design and effective operation of a fluoridation plant. This includes a risk assessment covering all safety and environmental risks from the design and operation of the fluoridation plant.

While the Code of practice for fluoridation of drinking water supplies details design and management requirements for safety and the handling and storage of dangerous goods, the *Occupational Health and Safety Act 2004*, the *Dangerous Goods Act 1995* and associated Regulations (such as the Dangerous Goods (Storage and Handling) Regulations 2012) administered by WorkSafe take precedence, and apply to all aspects of potable water treatment plants. These Regulations specify requirements for the design of new plants as well as how they are operated on an ongoing basis. These requirements include the need for spill containment (for example, bunding) for hazardous liquids and other chemicals.

Potable water treatment plants must also comply with EPA's bunding guidelines[210] and relevant SEPPs. SEPP Waters of Victoria, in particular, identifies measures to minimise the leakage of chemicals into water environments, which include appropriate storage and contingency plans in the event of spills, leakages or breakdowns.[211]

4.7.2.5 Interstate comparisons

Potable water treatment plants are not consistently regulated for environment protection purposes across Australian jurisdictions. In Queensland a licence is required for plants treating 10 megalitres per day of raw water, or advanced treatment of 5 megalitres or more of water per day. By comparison, Western Australia only requires registration for potable water treatment plants treating more than 1 megalitre per day.

[209] Department of Health and Human Services, *Water fluoridation*, https://www2.health.vic.gov.au/public-health/water/water-fluoridation
[210] EPA Victoria, *Bunding guidelines* – EPA publication 347, 1992.
[211] Clauses 37 and 38 of State Environment Protection Policy (Waters of Victoria).

4.7.3 Conclusion and proposed approach

Potable water treatment plants do pose some environmental risks through the storage of potentially harmful chemicals near surface waters, and through the need to manage and appropriately dispose of the sludge produced as a result of the water treatment process.

The management of chemicals, which are potentially hazardous to the environment and human health and are stored near surface waters such as creeks and rivers, creates a potential risk, which is managed through a variety of regulatory controls and guidance documents.

WorkSafe in particular (and also DHHS in relation to fluoridation) requires the safe storage and use of hazardous and dangerous chemicals to avoid spills and leaks, which pose both risks to both human health and the environment. These requirements cover the design of facilities as well as the way they are operated and maintained. As they cover the design of a facility, including controls in the event of a leak or a spill, they serve a similar purpose to that of EPA's works approvals which require best practice in the design of an operation to alleviate the risk of offsite impacts.

The sludge by-product of the water treatment process (which can contain aluminium, copper, lead, zinc, and arsenic) is usually managed via disposal to the sewer network (where it is subsequently treated) or through a drying process after which it is disposed of as an inert waste to landfill or applied to land.

The current requirement for works approvals for potable water treatment plants is not regarded as materially reducing the environmental risks associated with the premises, given the other controls that are in place. It is accordingly proposed to remove K03 potable water treatment plants from the Scheduled Premises Regulations.

EPA will retain the ability to issue remedial notices and impose sanctions for any general pollution offences under the EP Act.

A consequence of removing potable water treatment plants from the Scheduled Premises Regulations is that EPA will no longer be a determining referral authority under the VPPs in relation to planning permits relating to them. However, it is expected that planning authorities will continue to refer planning permits relating to potable water treatment plants to EPA for advice.

The separate category for water desalination plants (K04) will remain unchanged in the proposed 2017 Regulations.

4.8 Regulation 10 (general exemption relating to air emissions)

4.8.1 Description

Regulation 10 in the 2007 Scheduled Premises Regulations outlines the general exemptions which apply to emissions to air. Activities which would otherwise require a works approval or licence on the basis of air emissions, may be eligible for a general exemption under this Regulation.

Several issues have arisen in relation to general exemptions for air emissions since the current Regulations were made in 2007.

4.8.1.1 Particulate exemptions

On 4 February 2016, the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM) was amended in relation to $PM_{2.5}$ to:[212]

- adopt standards for annual average and 24-hour $PM_{2.5}$ concentrations of 8 µg/m3 and 25 µg/m3, respectively
- include long-term (10 year) targets for annual average and 24-hour $PM_{2.5}$ concentrations of 7 $\mu g/m^3$ and 20 $\mu g/m^3$, respectively
- include a nationally consistent approach to reporting population exposure to $PM_{2.5}$.

The Victorian Government amended the State Environment Protection Policy (Ambient Air Quality) (SEPP AAQ) on 28 July 2016 to align it with - and give effect to - the amended AAQ NEPM.

The introduction of these new standards is the result of a growing body of research showing that $PM_{2.5}$ is the most significant type of particle pollution in relation to health effects. Sources of $PM_{2.5}$ include combustion activities (motor vehicles, power plants, wood burning, etc.) and certain other industrial processes.[213] Aside from well-documented effects on respiratory and cardiovascular health[214], an increasing number of studies now link long-term exposure to $PM_{2.5}$ with adverse birth outcomes, and emerging evidence suggests possible effects of long-term $PM_{2.5}$ exposure on diabetes, neurodevelopment and cognitive function.[215]

The current exemption in Regulation 10 of the 2007 Scheduled Premises Regulations – "10kg per day particles (except asbestos and heavy metals)" - does not differentiate $PM_{2.5}$ from any other size of particulate and therefore does not specifically support the broad objective of reducing $PM_{2.5}$ under AAQ NEPM (and SEPP AAQ).

4.8.1.2 Class 2 indicators

SEPP AQM defines a Class 2 indicator as 'a waste which is a hazardous substance that may threaten the beneficial uses of the air environment by virtue of its toxicity, bio-accumulation or odorous characteristics', and a Class 3 indicator as 'a waste which is an

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[212] Other amendments were also made to AAQ NEPM including the addition of a PM_{10} annual standard. Details can be found at http://www.nepc.gov.au/resource/variation-ambient-air-quality-nepm-%E2%80%93-particles-standards

[213] US EPA, *Fine Particle ($PM_{2.5}$) designations*, https://www3.epa.gov/pmdesignations/faq.htm#0

[214] F.J. Kelly and J.C. Fussell, 'Air pollution and public health: emerging hazards and improved understanding of risk', *Environmental Geochemistry and Health*, 2015;37(4) p.631.

[215] Kelly and Fussell p.631.

extremely hazardous substance that may threaten the beneficial uses of the air environment due to its carcinogenic, mutagenic, teratogenic, highly toxic or highly persistent characteristics.'[216] Despite the differences in the classes' environmental risks, the current Scheduled Premises Regulations' general exemptions for air provide an exemption for Class 3 indicators, but not for the less hazardous Class 2 indicators. Additionally, they do not define either class.

4.8.1.3 Source of emissions

In general, the Scheduled Premises Regulations' thresholds for works approvals and licensing requirements are applied on a *per premises* basis; however, under Regulation 10(1)(a), emission levels are applied on a *per source* basis. This has caused confusion among some stakeholders and requires clarification that 'source' is the point from which waste is emitted to the air environment and is not the aggregate of a premises' total emissions.

4.8.1.4 Odorous compounds

'Odorous compounds' are not defined in either the current Regulations, the EP Act or SEPP AQM and therefore the meaning and intent of how the phrase is used in the 2007 Regulations is unclear.

4.8.2 Proposed approach

Proposed changes relating to Regulation 10(1)(a) based on the issues highlighted above include:

- Tightening the exemptions available to premises emitting particulate matter (PM) by restricting $PM_{2.5}$ emissions to no more than 4 kilograms per day[217] for sources that did not discharge or emit at any time during the 12 months before the introduction of the proposed 2017 Regulations (25 June 2017). This change would not require immediate upgrades of infrastructure; however, it would encourage future investment in equipment designed to reduce $PM_{2.5}$ emissions for new emission sources.
- Extending the current exemption for Class 3 indicators to include Class 2 indicators, at the same rate of emission.
- Defining Class 2 and Class 3 indicators as those listed in the SEPP AQM and including the terms in section 5 (Definitions).
- Defining 'source' of emission as the point from which wastes are emitted to the air environment and including the term in section 5 (Definitions).
- Defining 'odorous compounds' as any chemical compound, including a volatile organic compound, that is offensive to the senses of human beings when dispersed in the air and including the term in section 5 (Definitions).

[216] SEPP (AQM), s.10 (i) (b) and (c).
[217] 4 kilograms per day is based on Victoria's average $PM_{2.5}$:PM_{10} ratio of 4:6 in NEPC, *Impact statement on the draft variation to the AAQ NEPM*, 2014, Figure E.5.

5 Objectives

The Scheduled Premises Regulations are a key component of the environment protection framework in Victoria. The Regulations give effect to the works approval, licensing and financial assurance systems established under the EP Act by prescribing the classes of premises that are subject to these requirements.

Taking into account the nature and extent of the problem as described in section 3, and the existing environmental controls outlined in section 2, the objective of the Scheduled Premises Regulations is ***to minimise risks to the environment and human health by targeting the residual risk from those industrial activities which pose a significant risk***.

While all premises are subject to the provisions and the requirements of the EP Act, SEPPs and WMPs, the Scheduled Premises Regulations enable EPA's fullest form of regulatory oversight.

These Regulations seek to minimise risks to the environment and human health by applying works approval, licensing and financial assurance requirements to manage the highest-order risks from pollution and waste. These highest-order risks are identified with reference to the environmental standards and beneficial uses prescribed by statutory policy and other government policy settings.

In doing so, the effectiveness and efficiency of the scheduled premises tools to address these risks must be compared to alternative tools and approaches available to EPA and other regulators.

The objective is bounded by the staged approach that DELWP and EPA have adopted to reforming the Scheduled Premises Regulations (see section 1.4). Therefore, this RIS identifies where ***the Scheduled Premises Regulations tools are an effective mechanism for the appropriate environmental management of premises with the potential for significant environmental harms.***

6 Options

6.1 Overview

The Subordinate Legislation Act 1994 requires that the impacts of multiple means of achieving the Government's objectives are considered. The *Victorian Guide to Regulation* requires that, when remaking sunsetting regulations, one or more options are presented in the RIS that reduce the regulatory burden compared to the current regulations.[218] Two options have been identified for consideration to meet the objectives of this RIS. The second option includes seven components or sub-options, four of which identify targeted burden reductions for industry.

The options were developed, in the context of the staged reform process that is being pursued (as outlined in section 1.4). DELWP and EPA have undertaken consultation with industry stakeholders and considered approaches taken in other jurisdictions to inform the options and sub-options.

6.1.1 The base case

For this RIS, the base case is the situation where the Scheduled Premises Regulations are not in place; however, the *Environment Protection Act 1970* (EP Act) and other forms of subordinate legislation are still in place. The options considered build upon this base case, so that impacts that may arise can be identified.

The EP Act is guided by the principle of preventing pollution and environmental damage by setting environmental quality objectives and establishing programs to meet them. It establishes works approvals, licences and financial assurances as regulatory tools, while the Scheduled Premises Regulations define the population of premises that are subject to one or more of those tools.

As outlined in sections 2.1 and 2.3, the EP Act establishes the powers, duties and functions of EPA. These include the administration of the EP Act and any regulations and orders made pursuant to it, recommending State environment protection policies (SEPPs) and waste management policies (WMPs) to the Governor in Council, implementing National Environment Protection Measures (NEPMs), issuing works approvals, licences and permits and compliance and enforcement activities.

In the absence of the Regulations, the EP Act would still provide for the works approval, licensing and financial assurance tools, but they would not be applicable to any premises, as these are defined in the Regulations.

6.2 Description of the options considered

6.2.1 Option 1: Remake current Regulations

This option involves remaking the existing Scheduled Premises Regulations without any changes. The Regulations would apply requirements to a range of industrial and commercial activities that were assessed as having the potential to cause significant environmental impacts when the existing Regulations were developed in 2007.

Section 2.2 further outlines the regulatory tools provided by current Regulations.

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[218] Department of Treasury and Finance, *Victorian Guide to Regulation*, 2014, Attachment 3.

6.2.2 Option 2

Option 2 comprises seven mutually exclusive components or sub-options that can be adopted in addition to remaking the existing Regulations (Option 1), as follows:

- Option 2A: Introducing application thresholds to allow for the temporary storage of asbestos at a transfer station or public utility depot in specific circumstances (as discussed in section 4.1.4).

- Option 2B: Introducing application thresholds to allow for the temporary storage of lower-hazard, liquid prescribed industrial waste at an unlicensed premises in specific circumstances (as discussed in section 4.1.5).

- Option 2C: Exempting some sewage treatment plants from works approval requirements in specific circumstances (as discussed in section 4.3).

- Option 2D: Exempting potable treatment plants from works approval requirements (as discussed in section 4.7).

- Option 2E: Limiting the availability of exemptions for premises that emit $PM_{2.5}$ (as discussed in section 4.8).

- Option 2F: Categorising e-waste reprocessors under A02 (Other waste treatment) (as discussed in section 4.2.3).

- Option 2G: Categorising glass reprocessors under H05 (‘Glass works’) (as discussed in section 4.2.4).

Of these, options 2A to 2D involve burden reductions to ensure the Regulations are proportionate and appropriately targeted in their application to premises.

Options 2E to 2G are intended to ensure the Regulations are aligned with policy developments and recent research on the environmental and health impacts of certain emissions.

7 Analysis

7.1 Introduction

To identify a preferred option, the costs and benefits of Option 1 and of Options 2A to 2 E have been separately assessed.

This approach enables standalone components of Option 2 to be assessed individually.

7.2 Summary of results

The analysis shows that remaking the current Regulations (Option 1) would result in net benefits of $2.11 billion (net present value (NPV) over 10 years), compared to the base case of no regulations. This comprises:

- $2.48 billion of benefits (present value (PV) over 10 years)
  - 72 per cent from the benefits of reduced air emissions
  - 28 per cent from the benefits of reduced water emissions
  - 1 per cent from benefits of reduced cost of incidents for businesses
- $0.37 billion of costs (PV over 10 years)
  - 41 per cent comprising industry compliance requirements
  - 13 per cent comprising industry works approval requirements
  - 31 per cent comprising industry reporting requirements
  - 14 per cent comprising government costs.

Option 2 is made up of seven mutually exclusive components that could all be adopted in addition to remaking the existing Regulations (Option 1) if they provide net benefits.

The first four components (Option 2A to 2D) are burden reduction measures that provide the following net benefits in the form of cost savings:

- Option 2A: $0.16 million (NPV over 10 years) due to reducing the number of specific classifications required relating to temporary asbestos storage.
- Option 2B: $0.04 million (NPV over 10 years) due to reducing the number of specific classifications required relating to the temporary storage of lower-hazard, liquid PIW.
- Option 2C: $0.71 million (NPV over 10 years) due to reducing the number of works approval exemptions by exempting sewage treatment plants in specific circumstances.
- Option 2D: $0.02 million (NPV over 10 years) due to reducing the number of works approval exemptions by exempting potable treatment plants.

The expected benefits for Options 2E to 2G were not able to be quantified, and therefore break-even analysis was undertaken. This approach determines what level of emissions reductions would be required for an option to create benefits that exactly offset or equal the costs of that option. A judgement can then be made as to how achievable this level of emissions reduction is in practice.

This analysis found the following:

- Option 2E: a 16.48 per cent reduction (or an average of 2.31 tonnes per annum per premises) in total emissions from limiting exemptions for emitting $PM_{2.5}$ would be required to offset costs of around $8.4 million (NPV over 10 years). Based on EPA's analysis of the effectiveness of operational controls at relevant premises, this level of reduction in emissions is regarded as likely.
- Option 2F: a 17.59 per cent reduction (or an average of 1.81 tonnes per annum per premises) in total emissions from e-waste reprocessors would be required to offset costs of around $8.5 million (NPV over 10 years). Based on EPA's analysis of the opportunities to reduce fugitive emissions at e-waste reprocessing facilities, this level of reduction in fugitive emissions is regarded as reasonable. This assessment is regarded as conservative, as it does not account for the benefits that works approvals and licences are expected to provide in relation to emissions of brominated flame retardants. In combination, it is likely that Option 2F will provide a net benefit.
- Option 2G: a 0.64 per cent reduction (or an average of 4.11 tonnes per annum per premises) in total emissions from glass reprocessors would be required to offset costs of around $2.8 million (NPV over 10 years). Based on EPA's analysis of the opportunities to reduce fugitive emissions at glass reprocessing facilities, this level of reduction in fugitive emissions is regarded as likely.[219]

7.3 Analysis methodology

The economic impact of the option components has been assessed primarily using a cost-benefit analysis, compared to a no-regulation base case (that is, comparing all options to a case where no regulations exist).

The costs and benefits of the options have been estimated over the 10 year life of the Regulations, and using a discount rate of 4 per cent, as specified in the Victorian Guide to Regulation[220] for Category 1 proposals,[221] they have been discounted back to an NPV estimate.

Figure 6 shows the components of the cost-benefit analysis.

[219] This analysis also noted a level of uncertainty regarding industry delay and compliance costs. Accordingly, sensitivity testing has been undertaken on the breakeven points for options 2E, 2F and 2G. The results of this sensitivity analysis are discussed in sections 7.5.5 – 7.5.7.
[220] Department of Treasury and Finance, *Victorian Guide to Regulation Toolkit – Cost benefit analysis*, 2014.
[221] Department of Treasury and Finance, *Economic Evaluation Technical Guide*, 2013.

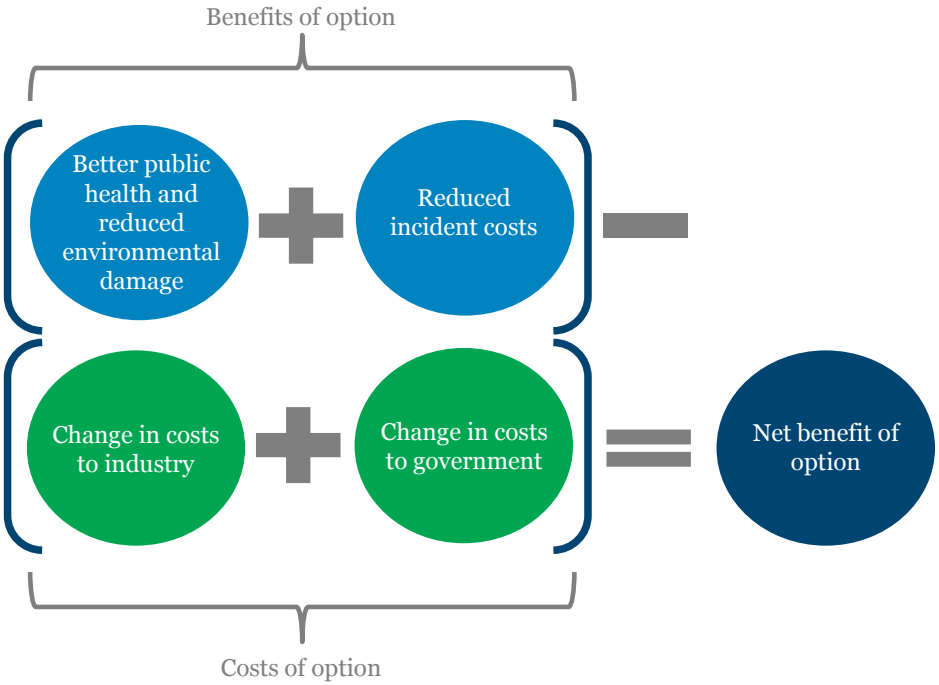

Figure 6: Cost-benefit analysis approach

The analysis in this section relies on information contained in the EPA's Scheduled Premises Regulations Economic Model (SPREM), which in turn draws on EPA internal data and publicly available information.

Where possible, significant data sources have been set out in Appendix I.

7.4 Option 1: Remake the current Regulations

Option 1 (current Regulations) seeks to reduce the environmental harms caused directly by air, water and other emissions from industry activities, and indirectly caused by incidents.

It addresses these risks by 'scheduling' businesses whose operations pose certain risks to the environment. Businesses that are scheduled may be:

- subject to the conditions of works approvals, or required to apply for works approval exemptions or (in relation to PIW management) specific classifications.
- licensed, requiring annual reporting and compliance with licence conditions, which may include being required to provide a financial assurance.

Option 1 requires EPA to administer the works approval and licensing processes. EPA also responds to incidents and, where required, oversees incident remediation.

The breakdown of benefit and cost categories for this option are illustrated below. This shows that the majority of the benefits come from the reduction in air emissions, while the majority of the costs result from industry costs to undertake reporting and to comply with licence obligations.

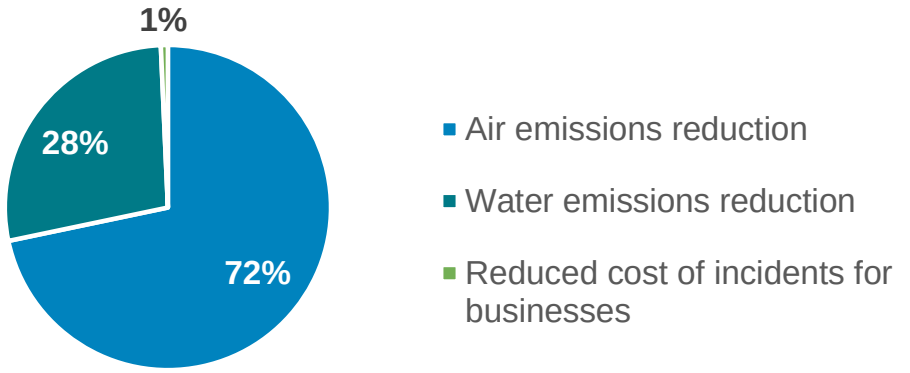

Figure 7: Option 1 benefits

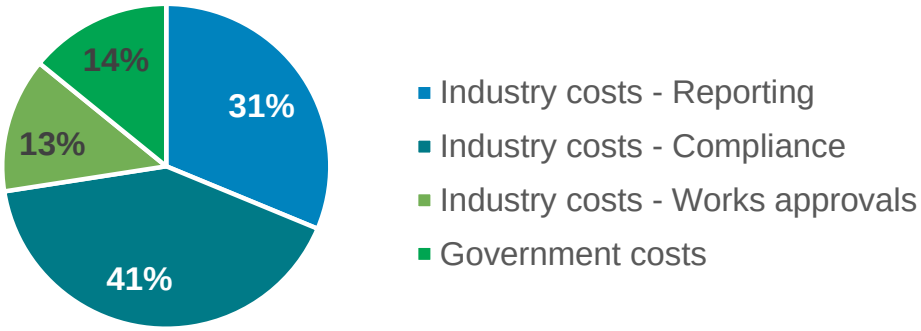

Figure 8: Option 1 costs

A detailed breakdown of the costs and benefits is shown in Table 7 below.

Table 7: Option 1 total costs and benefits ($million net present value over 10 years)

Benefits	
Air emissions reduction	1,776.08
Water emissions reduction	683.69
Reduced cost of incidents for businesses	17.22
Reduced government incident response, site inspection and assessment costs	0.15
Reduced government incident remediation costs	0.19
Total benefits	2,477.33
Costs	
Industry costs	316.14
Annual reporting	115.08
Compliance	151.72
Works approvals	49.34
Admin: Works approval application	9.76
Admin: Works approval exemption application	0.88
Admin: Works approval delay cost	30.07
Compliance cost per premises	8.66
Avoided costs of accredited licensees: avoided works approval costs	0.00
Government costs#	51.74
Licensing – administration of system	21.03
Licensing - routine compliance investigation	6.17
Financial assurances - administration	1.57
Works approval - application admin	22.64
Works approval - exemption applications admin	0.32
Total costs	367.89
Net economic benefit ($)	**2,109.43**

Source: EPA SPREM
Note that while these costs are attributed to the Government as they initially incur the costs, the majority are recovered from industry via fees (see section 7.5.9).

The sections below provide detailed analysis of each benefit and cost category.

7.4.1 Benefits from a reduction in harmful air emissions

There are 172 scheduled premises classified as emitters of potentially harmful air emissions.[222] The requirement for scheduled premises to obtain works approvals and licences is designed to reduce air emissions. It does this through better ensuring appropriate design of relevant operations (through works approvals) as well as compliance with maximum emission requirements (through licences).

This in turn reduces quantifiable harms to people and the environment. As noted in section 3.1.1, there is a large body of literature about the harms of various compounds emitted into the air, largely by industrial and motor vehicle sources.

The benefits of reductions in air emissions are estimated by taking the marginal air emission values (detailed in Appendix I), and multiplying them by the estimated change in emissions for each scheduled premises. Air emission values are based on estimated health impacts of selected pollutants discharged. The change for each premises is estimated by looking at the licensed load limits by scheduled category and emission type,

[222] EPA Victoria, *Scheduled premises' air emissions profile – internal data*, 2016.

and the estimated compliance against these load limits under the option, and then comparing this estimate to the estimate under the base case.

Table 8 shows the estimates of the benefits of air emission reductions over the 10-year evaluation period.

Table 8: Benefits of reduced air emissions ($million in real terms)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
56.74	113.48	170.22	226.96	283.70	283.70	283.70	283.70	283.70	283.70	1,776.08

Source: EPA SPREM

Further information on the calculation approach can be found in Appendix I.

The increase in benefits over time is due to the estimated deterioration of the base case over the 10-year appraisal period, referred to as 'compliance decays'.

Compliance decays

If these Regulations were not remade (as under the base case scenario), it is not assumed that compliance with existing works approval and licence conditions would fall to zero. Instead, the risk of environmental harm from businesses' activity could reasonably be expected to slowly rise over time as compliance with environmentally-beneficial processes and equipment used to control emissions (for example, particulate filters) deteriorates.

Under the base case, it is expected that the cost of emissions would slowly rise as businesses progressively allow harmful air emissions to rise. In contrast, under the regulatory requirements of Option 1, air emissions are assumed to remain at current levels over the 10-year appraisal period. Thus, the benefits relating to controlling air emissions under the Regulations increase from year one to five and stabilise thereafter (in comparison to the base case, where emissions increase over time).

7.4.2 Benefits from a reduction in harmful water emissions

Currently there are 170 scheduled premises with potentially harmful emissions to water.

Discharges from these premises can introduce contaminants into waterways and disturb natural waterflows, the effects of which are noted in section 3.1.2.

Option 1 (the current Regulations) reduces emissions (relative to the no-regulation base case) by scheduling those operations that may produce potentially harmful water emissions; for example, through licensed emission limits.

The benefits of reductions in water emissions are estimated by taking the marginal water emission values (detailed in Appendix I), and multiplying them by the estimated change in emissions for each scheduled premises. The change for each premises is estimated by looking at the licensed load limits by scheduled category and emission type, and the estimated compliance against these load limits under the option, and then comparing this estimate to the estimate under the base case.

As with air emissions, the benefits of reduced water emissions, as shown in Table 9, rise over time to mirror rising harms predicted in the no-regulations case.

Table 9: Benefits of reduction in water emissions ($million in real terms)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
21.84	43.68	65.53	87.37	109.21	109.21	109.21	109.21	109.21	109.21	683.69

Source: EPA SPREM.

Further information on the calculation approach can be found in Appendix I.

7.4.3 Reduced costs of incidents for business

Option 1 (remaking the current Regulations) is anticipated to lead to a reduction in a number of costs relating to incident management and cleanup that may be incurred by both the occupier and EPA (compared to the no-regulation base case).

For industry, these include cost savings related to:

- 'make-good' costs such as personnel, equipment and compensation
  - for example, if an incident occurs where oil used in industrial processes leaks into surrounding waterways, the business, in coordination with EPA, may need to mobilise personnel to limit the spread of the oil and clean up the waterway
- administrative costs in dealing with EPA
  - for instance, if a premises in suburban Melbourne is producing large amounts of dust and odour, it may be required to respond to EPA inspections, remedial notices and sanctions and liaise with EPA to ensure that nearby residents are not significantly affected.

The Regulations address the risk of incidents by imposing licensing and works approval requirements on those premises where the risk of an incident is high. For example, a cement manufacturer planning an expansion of its facilities may be required to implement measures to control the spread of dust to surrounding localities.

Appendix I contains detailed tables of the increased risk of incidents occurring with unlicensed premises (that is, all premises under the base case), compared to licensed premises.

The rise in the benefits of a reduction in incidents over time reflects the predicted rising risks of an incident over time under the counterfactual no-regulation scenario (see compliance decays discussion above).

The net benefits of this option are shown in Table 10. These estimates are calculated using historical averages for 'make-good' costs, and a fixed cost of $27,000 per incident in administrative costs for business.

Table 10: Benefits of reduction in incidents ($million in real terms)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
0.55	1.10	1.65	2.20	2.75	2.75	2.75	2.75	2.75	2.75	17.22

Source: EPA SPREM.

Further information on the calculation approach can be found in Appendix I.

7.4.4 Reduced government incident response, site inspection and assessment costs

Following an environmental incident[223], EPA staff are coordinated to manage the response, and inspect and assess the site. Option 1 is predicted to reduce the number and severity of incidents over time, leading to fewer costs to Government. For each incident, it is estimated to cost $1,270 on average to manage and coordinate the short-term response.

[223] For the purpose of this analysis, an environmental incident is a more typical type of incident that results in EPA issuing a remedial notice.

As the number of incidents under the base case is expected to increase over a five-year period, the number of incidents avoided under Option 1 would similarly increase over time. The estimated numbers of avoided incidents per year are shown in Table 11.

Table 11: Number of avoided incidents

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
4	7	11	15	19	19	19	19	19	19

This results in the following cost reductions shown in Table 12.

Table 12: Government costs – Site inspection and assessment incident response ($million in real terms)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.14

Source: EPA SPREM.

Further information on the calculation approach can be found in Appendix I.

7.4.5 Reduced government incident remediation costs

As well as responding to an incident in the short term, EPA must work to remediate the site and clean up any external impacts such as on groundwater or through contamination of surrounding land. For each of the incidents that occur each year on average, it is estimated to cost EPA $1,650 to remediate the site and surrounds.

This results in the following cost reductions shown in Table 13.

Table 13: Government costs – Incident remediation ($million in real terms)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.19

Source: EPA SPREM.

Further information on the calculation approach can be found in Appendix I.

7.4.6 Industry costs for annual reporting

Annual reporting costs are associated with demonstrating compliance with the Regulations and licence conditions, or providing information to Government to monitor the environmental impacts of business activity. These may include administrative costs such as record-keeping and internal monitoring, calculated as $21,177[224] for each of the 670 licensees on average each year. This is based on 172 hours of internal time for businesses, and 15 hours of external time (for example, for contractors).[225]

This equates to $14.19 million per annum (in real terms) and a net present value of $115.08 million over 10 years.

Further information on the calculation approach can be found in Appendix I.

[224] The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009 (prepared for the Victorian Competition and Efficiency Commission). The figures in this report have been updated to 2015 dollars.
[225] These estimates are based on EPA Victoria's *Revised Standard Cost Model of the Environment Protection (Scheduled Premises and Exemptions) Regulations 2007*, 2008.

7.4.7 Industry costs of compliance with licensee conditions

Compliance costs are directly related to the achievement of the intended outcomes of the regulation. Industry's costs mostly relate to monitoring the environmental effects of its activities to ensure that licence conditions are not breached (in addition to those required for annual reporting).

They may also include capital costs such as upgrading equipment to conform to standards, or production costs such as providing training to employees. It is estimated that compliance with licence conditions costs $27,919 for each of the 670 licensees on average each year. This is based on a cost of $26,931 for additional monitoring, and $988 for changed production processes.[226]

This equates to $18.71 million per annum (in real terms) and a net present value of $151.72 million over 10 years.

There is some uncertainty about the expected size of these compliance costs. The 2009 report commissioned by the Victorian Competition and Efficiency Commission (VCEC) applied a 50 per cent confidence interval to its estimate.[227] This report uses the point estimate stated above, with sensitivity testing using +/- 50 per cent scenarios for Options 2E, 2F and 2G (discussed in sections 7.5.5 to 7.5.7).

Further information on the calculation approach can be found in Appendix I.

7.4.8 Industry costs of works approval applications

Works approval requirements oblige scheduled premises to address potential environmental risks before they undertake major works on their premises. Scheduled premises must first notify EPA of upcoming construction, and make an application for an approval to undertake the works. Furthermore, businesses may be required to modify planned works if the application is rejected, which may lead to further costs.

The primary cost of applying for works approvals is employing staff to coordinate applications. It is estimated that Option 1 (remaking the current Regulations) requires businesses to undertake an average of 37.8 works approvals per year[228], based on schedule-wide averages over 2010-2015. Each works approval application is estimated to impose an economic cost of $31,790.[229]

This equates to $1.20 million per annum (in real terms) and a net present value of $9.76 million over 10 years.

Further information on the calculation approach can be found in Appendix I.

7.4.9 Industry costs of works approval exemption applications

Under certain circumstances, scheduled premises may apply for a works approval exemption to avoid the burden and conditions associated with a full works approval application. There is generally a pre-existing basis for an exemption to be granted, and the process is less time-consuming and administrative. It is estimated that Option 1 would prompt 19 works approval exemption applications per year, based on schedule-wide

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[226] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009.
[227] The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009, p.18.
[228] This is based on the average number of works approvals between 2010 and 2015.
[229] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009.

averages from 2010-2015. Each exemption application is estimated to cost an average of $5,843 to the premises.[230]

This equates to $0.11 million per annum (in real terms) and a net present value of $0.88 million over 10 years.

Further information on the calculation approach can be found in Appendix I.

7.4.10 Industry costs of works approval delay costs

A significant portion of the burden of works approvals comes from the delay costs incurred by businesses during the public consultation stage, and during reviews by a number of Victorian Government bodies, if these occur. The EP Act requires that EPA makes a decision on works approval applications within four months of receiving a complete application. Delay costs include both standby and holding costs:

- Standby costs are those incurred due to delays in production while waiting for approval. For example, if machinery or staff are unable to be utilised during the delay, then this represents an opportunity cost for the business.
- Holding costs are associated with the costs of holding of property, equipment or land while a decision is awaited, for example, the cost of interest on a property loan during the delay period.

A report commissioned by VCEC in 2009 estimated that delay costs apply to 20 per cent of works approvals, and cost an average of $400,000 (in 2009 dollars).[231] In current values, this implies an average delay cost of $97,929 for each of the average 37.8 works approvals.[232]

This equates to $3.71 million per annum (in real terms) and a net present value of $30.07 million over 10 years.

There is substantial uncertainty about the size of these delay costs. The 2009 report commissioned by VCEC applied a 75 per cent confidence interval to its estimate.[233] This report uses the point estimate stated above, with sensitivity testing using +/- 75 per cent scenarios for Options 2E, 2F and 2G (discussed in sections 7.5.5 to 7.5.7).

Further information on the calculation approach can be found in Appendix I.

7.4.11 Industry works approval compliance cost per premises

Compliance costs reflect the burden of complying with the works approval conditions over and above what the original design would cost. For example, a works approval may specify that a filter be added to a new chimney stack, or that lining be installed to stop chemicals leaking into groundwater. It is estimated that on average, works approvals

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[230] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009.

[231] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*,2009.

[232] This figure is lower than the point estimate as it adjusts for the 80 per cent of works approvals where premises do not incur delay costs.

[233] The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009, p.19.

compliance adds $28,211 to each of the average 37.8 works approval applications each year.[234]

This equates to $1.07 million per annum (in real terms) and a net present value of $8.66 million over 10 years.

There is some uncertainty about the size of these compliance costs. The 2009 report commissioned by VCEC applied a 50 per cent confidence interval to its estimate.[235] This report uses the point estimate stated above, with sensitivity testing using +/- 50 per cent scenarios for Options 2E, 2F and 2G (discussed in sections 7.5.5 to 7.5.7).

Further information on the calculation approach can be found in Appendix I.

7.4.12 Government costs – administration of licensing

EPA incurs administrative costs to operate and manage the licensing regime. These include costs to employ staff in administrative and policy roles, as well as capital expenditure on equipment, office space and technology. It is estimated that administering the licensing system costs on average $3,870 per year for each of the 670 licensed premises.

This equates to $2.59 million per annum (in real terms) and a net present value of $21.03 million over 10 years.

Further information on the calculation approach can be found in Appendix I.

7.4.13 Government costs – Routine compliance investigations

EPA undertakes investigation and enforcement activity to ensure that licensees are complying with their licence conditions. This involves employing inspectors and equipping them to visit licensed premises throughout the State. On average, undertaking the estimated 670 routine compliance investigations costs $1,136 for each premises investigated per year.

This equates to $0.76 million per annum (in real terms) and a net present value of $6.17 million over 10 years.

7.4.14 Government costs – administration of financial assurances

To ensure that licensees are complying with financial assurance conditions, EPA administers a monitoring and checking system. This is estimated to cost $1,347 for each of the 144 financial assurances EPA administers on average each year.

This equates to $0.19 million per annum (in real terms) and a net present value of $1.57 million over 10 years.

Further information on the calculation approach can be found in Appendix I.

7.4.15 Government costs – works approval application administration

EPA must assess each works approval application it receives, and ensure a decision is made within four months of application. However, other government bodies may also be involved in the administration of applications if it is reviewed or contested by the applicant or other stakeholders. For each of the 37.8 works approval applications received on

[234] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015, from The Allen Consulting Group, *The cost of environmental regulation in* Victoria, 2009.
[235] The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009, p.18.

average per year, it is estimated to cost government $73,772, although this cost may vary widely between different cases.

This equates to $2.79 million per annum (in real terms) and a net present value of $22.64 million over 10 years.

Further information on the calculation approach can be found in Appendix I.

7.4.16 Government costs – works approval exemption application administration

Administrative costs to process applications for works approval exemption are less burdensome for Government than applications for works approvals themselves. It is estimated that each of the 18.5 works approvals processed on average each year, it costs the Government $2,132.

This equates to $0.04 million per annum (in real terms) and a net present value of $0.32 million over 10 years.

Further information on the calculation approach can be found in Appendix I.

7.5 Option 2: Remake the current Regulations with incremental improvements

Option 2 contains all the elements of the existing Regulations (Option 1), plus incremental changes that are designed to either decrease burden or increase net benefits to society. Each of these elements/components has been analysed separately.

The first four components of Option 2 (2A to 2D) relate to reducing burden and hence have no impact on the estimated environmental benefits compared to Option 1. All of these components lead to a reduction in industry licensing costs, and costs related to works approval exemption applications for other industry participants and Government.

The three remaining components (2E to 2G) relate to improvements that are expected to provide net benefits, despite slight increases in regulatory burden. The impacts of each are set out below and are compared to Option 1. This approach has been used as the components are all mutually exclusive – that is, all components can be either implemented or not implemented based on their individual merits, irrespective of the analysis of the other components.

A summary of the impact of the Option 2 components is provided at the end of this section.

7.5.1 Option 2A - introducing application thresholds to allow for the temporary storage of asbestos

Part 3 of the Regulations provides general exemptions from the works approval and licensing requirements.

Option 2A relates to introducing an exemption to the A01 works approval and licensing requirements to allow for temporary storage of less than 10 cubic metres of double wrapped, non-friable asbestos for a period of up to 60 days on land permitted for use as a transfer station[236] or at a public utility depot that is at least 100 metres from sensitive land uses.

Organisations eligible for this exemption would mostly include utilities businesses (in relation to water and gas pipes that contain asbestos) and telecommunications businesses handling asbestos contained in telecommunications pits.

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[236] Under a planning scheme made under the *Planning and Environment Act 1987*.

In the absence of this exemption, businesses may instead apply for a specific classification (with the same practical outcome as the automatic exemption).

It is estimated that with the exemption in place, there would be around 10 specific classifications avoided in the first year, increasing to around 15 per year in 10 years' time.

Table 14: Expected number of avoided specific classifications

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Avoided specific classifications	10	10	11	11	12	13	13	14	14	15

Source: Assumption informed by EPA experts.

Avoiding between 10 and 15 specific classifications per annum would lead to reductions in administration costs for both business and Government.

Business cost savings are estimated as $370.81 per specific classification, based on the hourly cost assumptions in Appendix I.

Government cost savings from avoided costs of assessing specific classifications are estimated as $1,249.34 per specific classification.

This option is not expected to increase risks to human health and the environment given that temporary storage of asbestos at transfer stations and public utility depots must comply with occupational health and safety requirements for managing asbestos.

The total quantifiable savings over ten years are shown in Table 15 in net present value terms over 10 years.

Table 15: Change of costs of Option 2A ($'000 in real terms)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
Industry costs											
Administration costs of specification classifications	-3.7	-3.7	-4.1	-4.1	-4.4	-4.8	-4.8	-5.2	-5.2	-5.6	-36.4
Government costs											
Administration costs of specific classifications	-12.5	-12.5	-13.7	-13.7	-15.0	-16.2	-16.2	-17.5	-17.5	-18.7	-122.8
Total costs	-16.2	-16.2	-17.8	-17.8	-19.4	-21.1	-21.1	-22.7	-22.7	-24.3	-159.2

Source: EPA SPREM.

7.5.2 Option 2B – introducing application thresholds to allow for the temporary storage of liquid prescribed industrial waste

Option 2B introduces an exemption to the A01 works approval and licensing requirements to allow for temporary storage of up to 1,000 litres of liquid prescribed industrial waste (PIW) where the substance is listed with UN number 30XY (considered to be low hazard), for a period of up to 60 days. Given the low levels of risk associated with these types and quantities of PIW, this change is not expected to result in a material increase in risk.

As set out in section 4.1.5, organisations that will benefit from this exemption are likely to include utilities and waste oil collectors with temporary collection points for small amounts of lower-hazard liquid PIW. For example, an electricity distributor temporarily storing oil from a replaced transfer at their depot.

In the absence of this exemption, these businesses commonly apply for specific classification that have the same practical outcome as an automatic exemption, but leads to administration costs for both business and Government in processing the applications.

It is estimated that with the exemption in place, there would be about two specific classifications avoided in the first year, increasing up to four per year in 10 years' time.

Table 16: Expected number of avoided specific classifications

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Avoided specific classifications	2	2	2	3	3	3	3	4	4	4

Source: Assumption informed by EPA experts.

Avoiding the need for between two and four specific classifications per annum would lead to reductions in administration costs for both business and Government.

Business cost savings are estimated as $370.81 per specific classification, based on the hourly cost assumptions in Appendix I.

Government cost savings from avoided costs of assessing specific classifications are estimated as $1,249.34 per specific classification.

The total savings over 10 years are shown in Table 17 in net present value terms over 10 years.

Table 17: Incremental change of costs of Option 2B ($'000 in real terms)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
Industry costs											
Administration costs of specification classifications	-0.7	-0.7	-0.7	-1.1	-1.1	-1.1	-1.1	-1.5	-1.5	-1.5	-8.8
Government costs											
Administration costs of specific classifications	-2.5	-2.5	-2.5	-3.7	-3.7	-3.7	-3.7	-5.0	-5.0	-5.0	-29.6
Total costs	-3.2	-3.2	-3.2	-4.9	-4.9	-4.9	-4.9	-6.5	-6.5	-6.5	-38.3

Source: EPA SPREM.

7.5.3 Option 2C - exempting sewage treatment plants from works approval requirements

Option 2C exempts water corporations from works approval requirements in relation to specific types of modifications works at sewage treatment plants (A03).

Assessment of these applications reveals that they do not substantively improve environmental outcomes, and impose substantive and 'delay' costs. The Regulations will allow EPA to specify requirements that must be met in order to be eligible for an exemption. This mechanism will be used to ensure that exemptions only apply in situations that will not result in an increased risk to human health or the environment.

It is estimated that an automatic exemption would avoid around 10 exemptions from works approval per year (four metropolitan and six regional/urban water corporations).

Reducing the number of works approval exemptions needed each year is intended to lead to reductions in administration costs for both water corporations and Government.

Sewage treatment plants cost savings are estimated as $5,843 per exemption based on EPA data.

Government cost savings from avoided costs of assessing exemption applications are estimated as $2,912.45 per exemption application, based on advice from EPA experts.

The total savings over 10 years are shown in Table 18 in net present value terms over 10 years.

Table 18: Incremental change of costs of Option 2C ($'000 in real terms)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
Industry costs											
Admin: Works approval exemption application	-58.4	-58.4	-58.4	-58.4	-58.4	-58.4	-58.4	-58.4	-58.4	-58.4	-473.9
Government costs											
Works approval - exemption applications admin	-29.1	-29.1	-29.1	-29.1	-29.1	-29.1	-29.1	-29.1	-29.1	-29.1	-236.2
Total costs	**-87.6**	**-87.6**	**-87.6**	**-87.6**	**-87.6**	**-87.6**	**-87.6**	**-87.6**	**-87.6**	**-87.6**	**-710.1**

Source: EPA SPREM.

7.5.4 Option 2D - exempting potable treatment plants from works approval requirements

Option 2D removes works approval requirements on potable water treatment plants (K03). Assessment of these applications reveals that they do not add value but impose administrative and delay costs. No material increase in risk is expected from the removal of works approval requirements given existing WorkSafe and DHHS regulatory controls.

EPA estimates that removing the works approval requirement would avoid around one works approval every three years, leading to reductions in administrative costs for water treatment plants and Government.

Water treatment plants cost savings are estimated to be $5,843 per exemption based on EPA data.

Government cost savings from avoided costs of assessing exemption applications are estimated as $2,912.45 per exemption application, based on advice from EPA experts.

The total savings over ten years are shown in Table 19 in net present value terms over 10 years.

Table 19: Incremental change of costs of Option 2D ($'000 in real terms)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
Industry costs											
Works approvals - admin: Works approval exemption application	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-14.2
Government costs											
Works approval - exemption applications admin	-1.4	-0.6	-0.6	-1.4	-0.6	-0.6	-1.4	-0.6	-0.6	-0.6	-7.2
Total	**-3.2**	**-2.4**	**-2.4**	**-3.2**	**-2.4**	**-2.4**	**-3.2**	**-2.4**	**-2.4**	**-2.4**	**-21.4**

Source: EPA SPREM.

7.5.5 Option 2E - limiting availability of exemptions for premises that emit $PM_{2.5}$

As noted in section 3.1.1, $PM_{2.5}$ emissions present significant risks to human health and the environment.

Option 2E limits the availability of exemptions for emissions of $PM_{2.5}$ to 4 kilograms per day in Regulation 10(1)(a) for sources that commence operating on or after the introduction of the proposed 2017 Regulations or have not operated in the 12 months prior to 25 June 2017.

Analysis of the air emissions inventory indicates the relevant industry activities likely to be affected by this proposed change include milk processing (D07), chemical works (G01), food processing (D06) and incineration facilities (part of A02).

EPA estimates that limiting the exemption will lead to two new premises each year that would be no longer eligible for the Regulation 10(1)(a) exemption that is currently in place. These premises would therefore require a commencement works approval and a licence, where previously they did not.

Over the 10 years:

- five of these premises (a quarter of the 20 over the 10-year period) will subsequently obtain an EPA granted works approval exemption regarding modification works
- five of these premises (a quarter of the 20 over the 10-year period) will subsequently obtain licence amendment.

The benefits of limiting current $PM_{2.5}$ exemptions are expected to reduce emissions by at least 16.5 per cent or 2.31 tonnes per premises every year (which represents the break-even point).

Due to the lower level of confidence regarding the delay and compliance costs, an upper and lower bound sensitivity analysis was undertaken, using +/-75 per cent of the delay cost estimate and +/-50 per cent of the compliance cost estimates. This resulted in required reductions in emission levels of between 10.70 and 22.25 per cent. The 'worst case' breakeven point (22.25 per cent) is regarded as achievable. This is based on EPA's analysis of the effectiveness of operational controls at relevant premises.

Case study: How a works approval assessment can reduce particles emissions

EPA received an application for a works approval to re-establish a milk processing and drying facility in regional Victoria that would produce 5,000 tonnes of dried milk product and a small amount of ultra-high temperature (UHT) milk each year (scheduled category D07).

One of the key issues identified in the works approval application was the potential impacts to air, particularly due to the potential emissions of particulates. The applicant proposed to install a milk drying system and the initial application stated that spray dryers would be passed through cyclones to remove dust. EPA advised the applicant that it did not consider this to be 'best practice'.

As a direct result of EPA's advice, the applicant amended their proposal to incorporate bag filter technology to control particle emissions from the milk dryer discharge stack. Fabric bag filters are superior to cyclones at removing particles. They can collect more than 99 per cent of particles from a source and represent best practice technology. The applicant's amended proposal, incorporating the fabric filter system, therefore met the requirements of the works approval, mitigating impacts to air and human health.

The costs and benefits in relation to these works approvals (and exemptions), licences and licence amendments have been estimated in accordance with the assumptions and estimates used in relation to Option 1 discussed above.

The costs to industry are summarised below:

- New licensees incur annual reporting costs of $21,177 per annum and compliance costs of $27,919 per annum[237]at a total of around $49,096.
- Some licensees incur a licence amendment cost of $4,029.[238]

[237] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.

- Works approval applicants incur application costs of $31,790 per application.[239]
- Works approval exemption applicants incur costs of $5,843 per application.[240]

The costs to Government include:

- $8,284 per licence assessment
- $4,850 per licence amendment assessment
- $44,740 per works approval assessment
- $2,912 per works approval exemption assessment.

The total impacts over 10 years are shown in Table 20 in net present value terms over 10 years.

[238] EPA, *Storage of waste tyres – Regulatory impact statement* – EPA publication 1576 2014, p.77, Table 28. Adjusted for inflation to 2016 dollars.
[239] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.
[240] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.

Table 20: Incremental change of costs of Option 2E ($'000 in real terms)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
Benefits											
Air emissions cost	203.5	307.2	475.0	658.9	848.5	1,038.1	1,238.5	1,472.6	1,670.3	1,812.1	**7,398.0**
Incidents	3.9	11.6	27.4	53.8	116.2	178.6	212.1	224.5	236.5	242.3	**976.7**
Total benefits	**207.4**	**318.8**	**502.4**	**712.7**	**964.7**	**1,216.8**	**1,450.6**	**1,697.1**	**1,906.8**	**2,054.4**	**8,374.6**
Costs											
Industry costs	419.1	517.3	615.5	713.7	811.9	910.0	1,008.2	1,106.4	1,204.6	1,302.8	**419.1**
Annual reporting	42.4	84.7	127.1	169.4	211.8	254.1	296.5	338.8	381.2	423.5	**42.4**
Compliance	57.9	113.7	169.5	225.4	281.2	337.0	392.9	448.7	504.6	560.4	**57.9**
Works approvals	318.9	318.9	318.9	318.9	318.9	318.9	318.9	318.9	318.9	318.9	**318.9**
Admin: Works approval application	63.6	63.6	63.6	63.6	63.6	63.6	63.6	63.6	63.6	63.6	**63.6**
Admin: Works approval exemption application	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	**2.9**
Admin: Works approval delay cost	196.0	196.0	196.0	196.0	196.0	196.0	196.0	196.0	196.0	196.0	**196.0**
Compliance cost per premises	56.4	56.4	56.4	56.4	56.4	56.4	56.4	56.4	56.4	56.4	**56.4**
Government costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Licensing – administration of system	161.4	171.4	181.5	191.5	201.5	211.5	221.5	231.5	241.5	251.5	**161.4**
Licensing - routine compliance investigation	10.2	17.9	25.6	33.4	41.1	48.9	56.6	64.3	72.1	79.8	**10.2**
Works approval - application admin	147.5	147.5	147.5	147.5	147.5	147.5	147.5	147.5	147.5	147.5	**1,196.7**
Works approval - exemption applications admin	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	**11.8**
Total costs	**580.5**	**688.7**	**796.9**	**905.1**	**1,013.3**	**1,121.5**	**1,229.7**	**1,338.0**	**1,446.2**	**1,554.4**	**8,374.7**
Annual net economic benefit ($)	**-373.1**	**-369.9**	**-294.5**	**-192.4**	**-48.6**	**95.2**	**220.9**	**359.2**	**460.7**	**500.0**	**0.0**

Source: EPA SPREM.

It is noted that the majority of the Government costs are costs recovered from industry though fees (further discussed in section 7.5.9). The additional premises scheduled under Option 2E would incur the relevant fees specified by the Environment Protection (Fees) Regulations 2012 (the Fees Regulations).

7.5.6 Option 2F - categorising e-waste re-processors under A02 (other waste treatment)

As noted in section 4.2.3, e-waste reprocessing can result in fugitive emissions, which can pose a risk to human health and the environment. This includes activities such as dismantling and shredding of printed circuit boards, fluorescent tubes, cathode ray tubes, flat panel monitors and televisions, telecommunications equipment and photovoltaic panels.

Option 2F relates to classifying electronic waste reprocessors (if more than 500 tonnes of electronic waste are reprocessed per year) under the 'other waste treatment' category (A02), to reflect the significant levels of residual risk posed by this activity.

It is expected that this requirement would result in the scheduling of nine premises in the first year, increasing to 18 by year five and then remaining constant. This expected increase is due to the general increase in the sector participants following the expected introduction of an e-waste landfill ban in Victoria. Three of the anticipated nine premises from the first year are already scheduled as A01. In this analysis, it is assumed that these

three premises will only generate 50 per cent of the benefit from reduced emissions, compared to those premises that are not currently scheduled.

As the benefits are difficult to estimate, break-even analysis has been undertaken. The benefits of categorising e-waste reprocessors under A02 are reasonably expected to reduce emissions by at least 17.6 per cent or 1.81 tonnes per premises every year. This break-even point is regarded as conservative, as it does not account for the benefits associated with reducing emissions of brominated flame retardants.

Due to the lower level of confidence regarding the delay and compliance costs, an upper and lower bound sensitivity analysis was undertaken, using +/-75 per cent of the delay cost estimate and +/-50 per cent of the compliance cost estimates. This resulted in required reductions of between 11.81and 21.57 per cent.

For the three premises that were already scheduled as A01 and that will be additionally scheduled as A02, sensitivity testing was undertaken at 25 per cent and 75 per cent of the benefits respectively. This resulted in required reductions of 18.59 and 16.69 per cent, respectively.

Under a 'worst case' scenario (applying a breakeven point that requires emission reductions of 21.57 per cent), a net benefit is still regarded as plausible. This is based on EPA's analysis of the opportunities to reduce fugitive emissions at e-waste reprocessing facilities, combined with the benefits that scheduling is expected to provide in relation to the management of emissions of brominated flame retardants.

The costs and benefits in relation to these works approvals (and exemptions), licences, licence amendments have been estimated in accordance with the assumptions and estimates used in relation to Option 1 discussed above.

The costs to industry are categorised below:

- New licensees incur annual reporting costs of $21,177 per annum and compliance costs of $27,919 per annum.[241] Therefore new licensees incur total costs of around $49,096 per annum.
- Some licensees incur a licence amendment cost of $4,029.[242]
- Works approval applicants incur application costs of $31,790 per application.[243]
- Works approval exemption applicants incur costs of $5,843 per application.[244]

The costs to Government include:

- $8,284 per assessment per licence assessment
- $4,850 per licence amendment assessment
- $44,740 per assessment per works approval assessment
- $2,912 per works approval exemption assessment.

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[241] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.
[242] EPA, *Storage of waste tyres – Regulatory impact statement* – EPA publication 1576 2014, p.77, Table 28. Adjusted for inflation to 2016 dollars.
[243] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.
[244] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.

The total impacts over 10 years are shown in Table 21 in net present value terms over 10 years.

Table 21: Incremental change of costs of Option 2F ($'000 in real terms)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
Benefits											
Air emissions cost	621.6	787.4	1,036.0	1,201.8	1,367.5	1,367.5	1,367.5	1,367.5	1,367.5	1,367.5	**9,401.7**
Total benefits	**621.6**	**787.4**	**1,036.0**	**1,201.8**	**1,367.5**	**1,367.5**	**1,367.5**	**1,367.5**	**1,367.5**	**1,367.5**	**9,401.7**
Costs											
Industry costs	680.1	766.2	913.5	1,011.6	1,109.8	1,109.8	1,109.8	1,109.8	1,109.8	1,109.8	**8,012.3**
Annual reporting	190.6	232.9	296.5	338.8	381.2	381.2	381.2	381.2	381.2	381.2	**2,659.9**
Compliance	265.4	309.1	392.9	448.7	504.6	504.6	504.6	504.6	504.6	504.6	**3,534.7**
Works approvals	224.1	224.1	224.1	224.1	224.1	224.1	224.1	224.1	224.1	224.1	**1,817.6**
Admin: Works approval application	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	**361.0**
Admin: Works approval exemption application	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	**23.7**
Admin: Works approval delay cost	137.2	137.2	137.2	137.2	137.2	137.2	137.2	137.2	137.2	137.2	**1,112.6**
Compliance cost per premises	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	**320.3**
Government costs	151.7	147.1	162.1	172.2	182.2	182.2	182.2	182.2	182.2	182.2	**1,389.5**
Licensing – administration of system	40.2	33.4	45.0	52.7	60.5	60.5	60.5	60.5	60.5	60.5	**425.6**
Licensing - routine compliance investigation	6.8	9.1	12.5	14.8	17.0	17.0	17.0	17.0	17.0	17.0	**115.0**
Works approval - application admin	103.3	103.3	103.3	103.3	103.3	103.3	103.3	103.3	103.3	103.3	**837.7**
Works approval - exemption applications admin	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	**11.2**
Total costs	**831.7**	**913.3**	**1,075.6**	**1,183.8**	**1,292.0**	**1,292.0**	**1,292.0**	**1,292.0**	**1,292.0**	**1,292.0**	**9,401.8**
Annual net economic benefit ($)	**-210.1**	**-125.9**	**-39.6**	**17.9**	**75.5**	**75.5**	**75.5**	**75.5**	**75.5**	**75.5**	**0.0**

Source: EPA SPREM.

It is noted that the majority of the Government costs are cost recovered from industry though fees (further discussed in section 7.5.9). The additional premises scheduled under Option 2F would incur the relevant fees specified by the Fees Regulations.

7.5.7 Option 2G - categorising glass re-processors under H05 ('Glass works')

Glass reprocessing (including crushing) can also result in fugitive emissions that pose risks to environmental and human health (as discussed in section 4.2.4).

Option 2G relates to classifying glass reprocessors (if more than 10,000 tonnes of glass are reprocessed per year) under glass works (H05), to reflect the significant levels of residual risk posed by this activity.

It is expected that this requirement would apply to around five additional premises in the first year, increasing to six by year 10. These premises are not scheduled under the current Regulations. It is estimated that this would also lead to one additional commencement works approval, one modification works approval, one works approval exemption (regarding modification works) and two licence amendments over the 10-year period.

As the benefits are difficult to estimate, break-even analysis has been undertaken. The benefits of categorising glass reprocessors under H05 are expected to reduce emissions by at least 0.64 per cent or 4.11 tonnes per premises every year (which represents the break-even point).

Due to the lower level of confidence regarding the delay and compliance costs, an upper and lower bound sensitivity analysis was undertaken, using +/-75 per cent of the delay cost estimate and +/-50 per cent of the compliance cost estimates. This resulted in required reductions in emissions levels of between 0.47 and 0.81 per cent. Achievement of the 'worst case' breakeven point (0.81 per cent) is still regarded as likely. This is based on EPA's analysis of the opportunities to reduce fugitive emissions at glass reprocessing facilities.

The costs and benefits in relation to these works approvals (and exemptions), licences, licence amendments have been estimated in accordance with the assumptions and estimates used in relation to Option 1 discussed above. The costs to industry are categorised below:

- New licensees incur annual reporting costs of $21,177 per annum and compliance costs of $27,919 per annum.[245] Therefore, new licensees incur total costs of around $49,096 per annum.
- Some licensees incur a licence amendment cost of $4,029.[246]
- Works approval applicants incur application costs of $31,790 per application.[247]
- Works approval exemption applicants incur costs of $5,843 per application.[248]

The costs to Government include:

- $8,284 per licence assessment
- $4,850 per licence amendment assessment
- $44,740 per works approval assessment
- $2,912 per works approval exemption assessment.

The total impacts over 10 years are shown in Table 22 in net present value terms over 10 years.

[245] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.
[246] EPA, *Storage of waste tyres – Regulatory impact statement* – EPA publication 1576, 2014, p.77, Table 28. Adjusted for inflation to 2016 dollars.
[247] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.
[248] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria,* 2009.

Table 22: Incremental change of costs of Option 2G ($'000 in real terms)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	NPV
Benefits											
Air emissions cost	315.5	315.5	315.5	315.5	315.5	378.5	378.5	378.5	378.5	378.5	**2,789.5**
Total benefits	**315.5**	**315.5**	**315.5**	**315.5**	**315.5**	**378.5**	**378.5**	**378.5**	**378.5**	**378.5**	**2,789.5**
Costs											
Industry costs	278.5	278.5	278.5	278.5	278.5	327.6	327.6	327.6	327.6	327.6	**2,438.3**
Annual reporting	105.9	105.9	105.9	105.9	105.9	127.1	127.1	127.1	127.1	127.1	**936.3**
Compliance	140.4	140.4	140.4	140.4	140.4	168.3	168.3	168.3	168.3	168.3	**1,240.9**
Works approvals	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	**261.0**
Admin: Works approval application	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	**51.6**
Admin: Works approval exemption application	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	**4.7**
Admin: Works approval delay cost	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	**158.9**
Compliance cost per premises	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	**45.8**
Government costs	41.0	41.0	41.0	41.0	41.0	46.1	46.1	46.1	46.1	46.1	**351.2**
Licensing – administration of system	20.3	20.3	20.3	20.3	20.3	24.2	24.2	24.2	24.2	24.2	**179.0**
Licensing - routine compliance investigation	5.7	5.7	5.7	5.7	5.7	6.8	6.8	6.8	6.8	6.8	**50.2**
Works approval - application admin	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	**119.7**
Works approval - exemption applications admin	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	**2.4**
Total costs	**319.5**	**319.5**	**319.5**	**319.5**	**319.5**	**373.6**	**373.6**	**373.6**	**373.6**	**373.6**	**2,789.5**
Annual net economic benefit ($)	**-4.1**	**-4.1**	**-4.1**	**-4.1**	**-4.1**	**4.9**	**4.9**	**4.9**	**4.9**	**4.9**	**0.0**

Source: EPA SPREM.

It is noted that the majority of the Government costs are cost recovered from industry though fees (further discussed in section 7.5.9). The additional premises scheduled under Option 2G would incur the relevant fees specified by the Fees Regulations.

7.5.8 Option 2 – total quantifiable impacts

The following table shows the net benefits of Option 1 compared to the no-regulation base case, as well as the quantified components of Option 2 (A to D) compared to Option 1. The sum of these therefore provides the total quantified net benefits of Option 2 (A to D) against the no-regulation base case.

Table 23: Summary analysis results for quantifiable options shown as a net present value over 10 years ($million)

	Option 1	Option 2A	Option 2B	Option 2C	Option 2D	Option 2 (A–D)#
Benefits	2,477.3	0.0	0.0	0.0	0.0	2,477.3
Costs	367.9	-0.2	-0.0	-0.7	-0.0	367.0
Net benefits	**2,109.4**	**0.2**	**0.0**	**0.7**	**0.0**	**2,110.4**

Source: EPA SPREM
#: Includes benefits and costs of Option 1 – remaking the Regulations.

This shows that all of the quantifiable burden reduction components of Option 2 (A-D) should be adopted based on the results of the analysis.

As the benefits for Option 2 components E to G are not able to be quantified, break-even analysis was undertaken with the following results.

Table 24: Summary breakeven analysis results for options 2E to 2F shown as a net present value over 10 years

	2E	2F	2G
Costs ($millions NPV over 10 years)	**8.37**	**9.40**	**2.79**
Required emission reduction to break-even (%)	**16.48%**	**17.59%**	**0.64%**
Required emission reduction to break-even (tonnes per premises p.a.)	**2.31**	**1.81**	**4.11**

Source: EPA SPREM.

Based on EPA's analysis of the effectiveness of, and opportunities for, operational controls at relevant premises, it is likely that the break-even points for options 2E and 2G will be met, and plausible that the break-even point for 2F will also be met. Therefore, all options components should be adopted.

7.5.9 Fees

Fees charged by Government for cost recovery purposes are not included in the cost-benefit analysis as they are considered an economic transfer. The cost that is included in the analysis is the cost incurred by Government to undertake the activity; including the amount of the fee in addition to this would be double counting that cost.

However, it is important to note that the majority of Government costs in this area are recovered via fees. The fees are specified in the Environment Protection (Fees) Regulations 2012; the determination of these fees is therefore not considered in this RIS.

The primary fees charged in relation to scheduled premises relate to the assessment of applications for works approvals, licences and licence amendments.

7.5.10 Non-quantified benefits

Land contamination

As noted in 3.1.3, land contamination includes the degradation of soil quality and land utility, and is largely caused by industrial activity, agricultural chemicals and disposal of waste. Human health may be impacted through primary or secondary contact with toxic or contaminated material, often as a result of managing or processing human waste. Impacts could include both minor and serious health problems, such as:

- allergic reactions and hypersensitivity
- cancer
- respiratory illness
- reproductive problems and birth defects.

Land contamination also poses serious environmental risks, such as the formation of leachate, a mix of rainwater and decomposing waste, or the generation of leachate and landfill gas.

Noise

As noted in section 3.1.4, noise is regarded by the WHO as the second-largest environmental cause of health problems after air quality. Unwanted noise can cause hearing loss, impact on sleep and raise stress levels, leading to secondary impacts such as high blood pressure. These impacts can be particularly prevalent where manufacturing and agriculture are conducted in close proximity to residential areas. Although noise is a

necessary by-product of many industrial activities, all options include measures to control levels and dispersal of noise pollution.

7.5.11 Minor changes to the Regulations

As well as the substantive changes to the Regulations as presented above, Option 2 would include a number of minor and administrative changes that are not anticipated to materially increase or decrease burden. These are summarised in Appendix H.

8 Preferred option

8.1 Determination of preferred option

The preferred option is to implement all components of Option 2 (that is 2A to 2G), in addition to remaking the existing Regulations. The Option 2 components are:

- Option 2A: Introducing application thresholds to allow for the temporary storage of asbestos at a transfer station or public utility depot in specific circumstances.
- Option 2B: Introducing application thresholds to allow for the temporary storage of lower-hazard, liquid prescribed industrial waste at an unlicensed premises in specific circumstances.
- Option 2C: Exempting some sewage treatment plants from works approval requirements in specific circumstances.
- Option 2D: Exempting potable treatment plants from works approval requirements.
- Option 2E: Limiting the availability of exemptions for premises that emit $PM_{2.5}$.
- Option 2F: Categorising e-waste reprocessors under A02 (Other waste treatment).

Option 2G: Categorising glass reprocessors under H05 (‘Glass works’).The cost-benefit analysis in section 7 shows that remaking the existing Regulations (Option 1) will result in net benefits of $2.11 billion (NPV over 10 years), compared to the no-regulations base case. It also shows that Options 2A to 2D will each provide net benefits (industry burden reductions) over and above Option 1. The break-even analysis shows that Options 2E and 2G are likely to result in net benefits. The combination of the break-even analysis and qualitative analysis shows that Option 2F is also likely to result in net benefit.

The remainder of this chapter addresses small business impacts, competition issues, implementation and enforcement, and evaluation considerations for the preferred option.

8.2 Impact on small businesses

The preferred option attempts to minimise burden on small businesses by:

- introducing exemptions for the temporary storage of asbestos (Option 2A) and specific types of lower-hazard liquid PIW (Option 2B)
- specifying application thresholds that exempt businesses with smaller reprocessing capacities from works approval and licensing requirements in relation to e-waste reprocessing (Option 2F) and glass reprocessing (Option 2G)
- introducing an application threshold that will apply to smaller, non-winery beverage manufacturers, such as cideries, breweries and distilleries
- clarifying the intent and scope of the Regulations to avoid uncertainty.

It is possible that Option 2F may affect the expansion of some existing small e-waste reprocessing businesses, which are likely to experience an increase in supply following the proposed ban on e-waste going to landfill.

8.3 Competition assessment

As recommended in the *Victorian Guide to Regulation*, identifying any restrictions to competition from the preferred option is an important step to show that any limitations resulting from the Regulations are necessary to fulfil its objectives. This includes weighing whether the benefits of the restriction outweigh the costs in each particular case. Any regulations in Victoria must not restrict competition unless it can be demonstrated that:

- the benefits of the restriction, as a whole, outweigh the costs
- the objectives of the legislation can only be achieved by restricting competition.

Regulations are considered to have an impact on competition if any of the questions in Table 25 below can be answered in the affirmative. The table shows the rationale and significance of those areas where there is an impact on competition.

Based on the assessment, the preferred option may have an impact on competition due to works approval and licensing requirements applying to some more businesses that emit $PM_{2.5}$ and to some more businesses that reprocess e-waste and glass. Established businesses that are already licensed by EPA (for example, an e-waste reprocessor with an EPA licence for PIW management) are generally more familiar with works approval and licensing processes and requirements.

These effects are regarded as necessary to achieve the objective of the proposed Regulation.

Table 25: Assessment of significance of potential competition impacts

Issue	Answer	Significance
Is the proposed measure likely to affect the market structure of the affected sector(s) – that is, will it reduce the number of participants in the market, or increase the size of incumbent firms?	Yes	While the number of participants in the related markets is not expected to decrease, the preferred option may lead to new businesses deciding not to enter certain industries, particularly in e-waste and glass reprocessing.
Would it be more difficult for new firms or individuals to enter the industry after the imposition of the proposed measure?	Yes	Although both new and existing businesses will incur costs related to works approval and licensing, new businesses must also familiarise themselves with the legislation related to scheduled premises, and build up the administrative capacity to deal with the requirements under the legislation.
Would the costs/benefits associated with the proposed measure affect some firms or individuals substantially more than others (for example, small firms, part-time participants in occupations, etc)?	Yes	Complying with the conditions of a works approval and licence under the preferred option is likely to require up-front investment in equipment and training, affecting new entrants and small firms more than established scheduled premises.
Would the proposed measure restrict the ability of businesses to choose the price, quality, range or location of their products?	Yes	Business decisions regarding the range and location of products may be affected by the conditions of works approvals and licensing requirements.

Would the proposed measure lead to higher ongoing costs for new entrants that existing firms do not have to meet?	Yes	The proposed change to Regulation 10(1)(a) will apply to sources that commence operating from 25 June 2017, and therefore some new entrants may incur higher costs than existing operations for which the existing exemption will continue to be available.
Is the ability or incentive to innovate or develop new products or services likely to be affected by the proposed measure?	No	

8.4 Implementation and enforcement

EPA will be responsible for administration of the proposed 2017 Regulations, primarily through its works approval and licensing processes[249], and via related compliance and enforcement actions.

8.4.1 EPA assessment activity

8.4.1.1 Works approvals

Works approvals are a preventative tool. Their purpose is to ensure development proposals adequately address environmental risks before works begin at scheduled premises.

EPA officers will use published guidance materials and peer reviews to inform their assessments. Works approvals will also incorporate community views through a formal consultation stage, and statutory triggers for review by the responsible planning authority, the Department of Health and Human Services, and the Minister responsible for administering the *Mineral Resources (Sustainable Development) Act 1990*. EPA will conduct desktop assessments and/or inspections to inform whether works approval conditions have been complied with.

8.4.1.2 Licensing

Licences are designed to complement works approvals by ensuring environmentally sound practices are in place. Licences will be issued once works have been satisfactorily completed.

EPA officers will use published guidance materials to inform the standard, non-standard and site-specific licence conditions.[250]The conditions vary based on the type of operation but are likely to include:

- limits on the level of emissions permitted to be emitted in a specific time period
- requirements for minimising the risk of incidents
- monitoring requirements
- reporting of incidents and monitoring data.

Section 31D of the EP Act requires licence holders to submit annual performance statements (APS) to EPA to demonstrate their environmental obligations under the Act and under the licence are being met. It requires a public declaration of the licence holder's compliance performance against each licence condition and must be signed by the most senior executive in the company.

8.4.2 EPA compliance and enforcement activity

Under the EP Act, EPA appoints authorised officers who have rights of entry to premises to ensure duty holders comply with requirements, including licence conditions.

When there is a breach of licence conditions, a range of sanctions will be applied in line with EPA's Compliance and Enforcement Policy. Measures such as warnings; oral or written directions issued by an authorised officer; statutory notices; infringement notices; prosecutions; licence suspension or revocation; injunctions; and the calling-in of financial assurances are available under the EP Act. The decision as to which enforcement measure is appropriate is a matter of judgment on a case-by-case basis, taking into account the seriousness and impact of the offence and the culpability of the offender.

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[249] Works approvals, licences and financial assurances are described in section 2.
[250] These are stipulated in EPA's *Licence Management Guidelines* - EPA publication 1322, 2016.

The most common enforcement action for a breach of licence conditions are penalty infringement notices (PINs). More serious incidents are prosecuted through the court system, particularly where serious harm or risk to the environment, human health or welfare occurs, or repeated offences have occurred.

Remedial notices (usually pollution abatement notices) are issued to stop non-compliance with the law or to prevent or limit harm being done.

EPA authorised officers will inspect each licensed site over a defined period based on the relative risk posed by the site as determined by the Licensed Operator Risk Assessment (LORA). EPA will actively enforce against sites that fail to comply with a licence condition, do not have suitable controls or have failed to remedy any outstanding compliance issues identified in their APS.

EPA is introducing a Licence Review Framework with the aim of systematically and periodically reviewing all EPA licences to address updates in site activities, statutory policies, regulations, and guidance.

Works approvals, licences and APSs are available on EPA's website.

8.4.3 Initial implementation activity

To raise awareness of the changes to the Regulations and facilitate compliance with new requirements, a number of implementation activities are planned by EPA Victoria, including:

- development of guidance material and information to assist duty holders to understand the new regulatory obligations
- engagement and communication with stakeholders including targeted emails to specific groups affected by the Regulations and, in particular, by the proposed changes to the Regulations
- engagement and communications, including meetings, with duty holders (for example, councils), industry groups and associations affected by the Regulations
- specific guidance and engagement to assist businesses that may need to apply for a works approval and/or licence for the first time (including during the proposed seven-month transition period for existing e-waste reprocessors to apply for a licence)
- rolling the new Regulations through EPA's internal systems by training EPA staff, and updating and modifying relevant documents and processes.

8.5 Evaluation strategy

Evaluation is part of EPA's life cycle approach to regulatory design. Evaluation enables EPA and stakeholders to know whether a regulation and, more particularly, the changes made to the regulation, were effective in helping to reach an objective. The primary objective of the Scheduled Premises Regulations, as outlined in section 5, is to minimise risks to the environment and human health by targeting the residual risk from those industrial activities which pose a significant risk. An evaluation strategy has been designed to measure the effectiveness of the Regulations against this primary objective. It will also measure the impacts of the Regulations on business and Government. This will be undertaken in time to inform the next review (Stage 2).

8.5.1 Minimising risks to the environment

EPA will assess whether the Regulations are achieving their objective of better protecting human health and the environment by using EPA intelligence industry profiles, EPA's Licensed Operator Risk Assessment (LORA) ratings, and IBISWorld Industry Risk data.

- EPA Intelligence Industry Profiles include:

  - the number of:
    - scheduled premises in each category
    - inspections per year
    - pollution reports by category, region and segment (noise, emergency report, waste, dust, odour, water)
  - compliance history.
- EPA's Licensed Operator Risk Assessment (LORA) ratings are an individual site rating, and are based on the assessment of:
  - the site's proximity to receptors
  - emissions and wastes
  - the site's management systems and plans
  - compliance history
  - level of community engagement.
- IBISWorld Industry Risk data evaluates the inherent risk of hundreds of Australian industries. It defines risk as 'the difficulty or otherwise of the operating environment'. Risk scores range from 1 (very low risk) to 9 (very high risk). IBISWorld uses Australian and New Zealand Standard Industrial Classification codes to categorise industries.

A mid-term evaluation of the Regulations will be publicly available as part of Stage 2 of the Scheduled Premises Regulations review, and is likely to commence following changes to the EP Act and key SEPPs.

8.5.2 Impact on business and government

EPA will assess the efficiency of the Regulations in minimising costs to business and Government. This includes consideration of:

- the number of:
  - works approvals
  - licences
  - classifications
  - exemptions
  - planning referrals
  - illegal dumping incidents
  - resource recovery operations.
- adjusted average costs of works approvals and licences
- survey of stakeholders affected by costs and benefits of the Regulations.

9 Appendices

A. Relevance of the Independent Inquiry into the EPA to the Scheduled Premises Regulations

The final report of the Independent Inquiry into EPA (the Final Report) envisages EPA taking a stronger preventative approach to protect human health and the environment by reducing the harmful effects of pollution and waste. Central to this are the recommendations to introduce a general duty to minimise risks of harm to human health and the environment and for EPA to take a greater role in strategic land use planning to prevent future health and amenity risks.

The key recommendations of the Final Report that are most relevant to the Scheduled Premises Regulations are summarised below:

- **Recommendation 5.1** – Undertake a comprehensive overhaul of the EP Act, including establishing a standalone EPA (Establishment) Act and a modernised Environment Protection Act.
- **Recommendation 10.3** – Develop strengthened land use planning mechanisms that establish and maintain buffers to separate conflicting land uses, avoid encroachment problems, help manage health, safety and amenity impacts and ensure integration with EPA regulatory requirements.
- **Recommendation 12.1** – Introduce a general duty to minimise risks of harm to human health and the environment, as the cornerstone of a preventative focus for EPA, together with a new registration scheme based on WorkSafe's dangerous goods notification.
- **Recommendation 12.2** – Expand the cohort of activities requiring a works approval or licence to include all activities with significant impacts on human health or the environment, regardless of the type of hazard posed.
- **Recommendation 12.3** – Introduce new tools, including fixed terms for new licences and a statutory mechanism for regular reviews of licences, and a new post-closure licence category (or a new form of post-closure instrument) for landfills and high-risk contaminating activities.
- **Recommendation 15.1** – Replace SEPPs and WMPs with a simplified approach to standard setting that allows for timely review and updating of standalone elements.
- **Recommendation 16.1** – Remove the current barriers to introducing a load-based licensing scheme (licence fees restricted to cost recovery and fee caps) from the EP Act and actively consider their use.

The Final Report also includes recommendations about EPA's future role in regulating mining and wind farms. The Final Report recommended that EPA take a stronger role in regulating mining as the specialist environmental regulator. To avoid duplication of approvals, it recommended formalising EPA's role through amendments to the *Mineral Resources (Sustainable Development) Act 1990* rather than changes to the Scheduled Premises Regulations. The Final Report did not support EPA licensing of wind farms. It stated that licensing should be reserved for those activities that pose a significant risk to human health or the environment and did not consider EPA licensing proportionate to the operational risks of wind farms.

B. Comparative research on interstate and overseas environmental regulators

In 2013, Minter Ellison Lawyers was engaged by EPA to undertake a comparative study of environment protection regulatory regimes, focusing on approaches to licensing, works approval and financial assurance requirements or similar controls. Five main forms of regulatory controls were identified including:

- regulator approvals
- conditions attached to regulator approvals
- financial assurance requirements
- registration of activity
- notification of activity.

The mechanisms provide varying levels of regulatory control: regulator approvals (and associated conditions and financial assurance requirements) impose the highest level of control while notifications of activity are effectively courtesy notifications to the regulator with few, if any, restrictions and obligations.

Regulator approvals

The main mechanism employed across almost all the jurisdictions examined is the use of a regulator approval document.

In Victoria, these approval documents are licences and works approvals. Across the 19 jurisdictions, regulator approval documents have been termed ‘permits', ‘licences', ‘authorisations', ‘approvals', ‘authorities', ‘attestations' and ‘certificates'.

Despite the use of different terminology, these approvals are similar in their functions. They provide:

- notice to the regulator of the proposed activity
- specifics of the proposal
- the regulator with an opportunity to reject any proposed activity that poses too great a risk to the environment.

In many circumstances, the outcome of a regulator approval application is binary: either the activity (with or without further restrictions) will be found to be acceptable and will be granted an authorisation, or the activity (even with further restriction) will be found to pose too great a risk to the environment.

In some, but not all, jurisdictions, a distinction is made between a regulator approval required to undertake a controlled activity and a regulator approval required to construct or undertake modification work on a premises in which a controlled activity operates or will operate. In Victoria, the former requires a licence and the latter requires a works approval.

Within the Australian jurisdictions, in most cases the consideration for determining both forms of approval are identical and both approval documents can impose the same conditions.

Some jurisdictions have different kinds of regulator approvals, depending on how risky the activity is or the ambient standards in the area within which the activity is proposed.

Use of conditions and restrictions attached to regulator approvals

The 19 regimes considered can impose a wide array of types of conditions and restrictions in a regulator approval document. They include:

- pollution prevention conditions, including requirements for staff training programs
- monitoring and self-reporting conditions: mandatory audit and testing obligations
- emission and discharge restrictions, including mandating emission levels equivalent to that achievable if the best available control technology is adopted
- environmental restoration and rehabilitation conditions: financial assurances type requirements and insurance requirements
- operational and production restrictions: restrictions on production capacity and requirements for work to be done in stages.

Financial assurances

Financial assurances are used as a control mechanism in all of the regimes considered in the comparative study. Within most of the Australian regimes, financial assurances are attached as a condition in approvals. However, in most of the international regimes, financial assurances are a separate restriction that can be imposed on the operator of the proposed activity or industry.

Registration of activity

Another mechanism used in England and Wales, the Canadian province of Ontario and Western Australia is registration of a proposed activity. Registration is usually only permitted where the proposed activity is small in scale and poses a low risk of harm to the environment or public health.

Operators of eligible facilities are exempt from obtaining a regulator approval, provided that the proposed activity is registered and, in some cases, complies with a standard set of conditions or a code of conduct. In Western Australia, registration can be revoked on the basis of a poor compliance record, forcing the activity to obtain a licence.

Notification of activity

A final mechanism, as used in the Canadian province of Alberta, is notification to the regulator of a proposed activity. This mechanism represents the least invasive and burdensome form of regulatory control.

The Independent Inquiry into the EPA recommended the introduction of a registration scheme. It noted that the scheme may involve a fee to cover the costs of administering the registration scheme but would not involve any additional compliance requirement and only a modest administrative burden. It was seen as a complement to the recommended introduction of a general duty to minimise risks of harm to human health and the environment. The registration scheme proposed by the Inquiry is more akin to the notification category from the Minter Ellison report rather than the registration category.

C. Criteria for risk-based industry analysis

Criterion	Score	Method
Emissions hazard *(waste, noise and/or odour is, or is likely to be, discharged, emitted or deposited to the environment)*	Air emissions score *(direct emission of industrial waste to air)*	A score of 0 to 4 was calculated for each industry from a log scale conversion of the toxicity equivalency potential[251] in the National Pollutant Inventory and verified by a panel of EPA emissions experts (including principle experts) using the IDEA Protocol[252]
	Water emissions score *(direct discharge of industrial wastes waters to surface water)*	
	Land emissions score *(direct application of industrial wastewaters to land)*	
	Noise emissions score (*relative impact of noise to the receiver*)	A score of 0 to 4 given by internal EPA staff knowledgeable in that specific industry sector and verified by a panel of EPA emissions experts (including principle experts) using the IDEA Protocol.
	Odour emissions score (*relative impact of odour to the receiver*)	
Site hazard *(Hazards that are, or are likely to be, associated with a typical site)*	Waste storage score (*toxicity and volumes of the wastes stored on a typical site*)	A score of 0 to 4 given and verified for toxicity and volume by internal EPA staff knowledgeable in that specific industry sector.
	Chemical storage score (*toxicity and volumes of chemicals stored on typical site*)	
	Potential catastrophic events score (p*otential for catastrophic impacts*)	A score of 0 to 4 given and verified by internal EPA staff knowledgeable in that specific industry sector.
	Complexity of operations score (*reflects the scale of operation, complexity, and monitoring required*)	
Potential for self-management *(The potential, or likely potential, of an industry sector to act in accordance with the EP Act in the absence regulatory oversight)*	Maturity of the sector Score *(reflects the level of Environmental management systems in use and activities of the active industry associations)*	A score of 0 to 4 given and verified by internal EPA staff knowledgeable in that specific industry sector.
	Market drivers score *(reflects the strength of market drivers toward environmental performance such as supply chain or financier requirements)*	
	Track record score *(number of pollution abatement notices in the last 10 years)*	Historical Performance (past 10 years) assessed using compliance requirements and converted into a score of 0 to 4. This was verified by internal EPA staff knowledgeable in that specific industry sector

[251] The toxicity equivalency potential is used by NPI to compare releases of different toxic chemicals into different environmental media by converting the volume of a specific substance to the equivalent volume of a reference substance and its dispersion potential in each environmental media (that is, to air or water).
[252] The IDEA protocol is used to minimise bias and group think when procuring expert judgement; M.A. Burgman, *Trusting Judgements. How to Get the Best out of Experts,* 2016.

Criterion	Score	Method
Incentives *(The level, or likely level, of regulatory oversight of the industry sector)*	EPA involvement score *(The current level of EPA involvement in the industry sector including education, working groups, scheduling, or multiple regulatory frameworks under the EP Act (e.g. waste transport, EIP approvals, etc)*	A score of 0 to 4 given and verified by internal EPA staff knowledgeable in that specific industry sector.
	Other regulatory involvement score (*The current level of involvement of other dedicated regulators that encourage or influence environmental performance)*	

D. Principal reasons for scheduling each industry category

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Prescribed industrial waste (PIW) management	A01	Storage, treatment, reprocessing, containment or disposal facilities handling any prescribed industrial waste not generated at the premises.	Specific wastes from commercial, industrial, trade activities or from laboratories with hazardous qualities that are classified as prescribed industrial waste require appropriate management to minimise impacts on local amenity, human health and well-being, receiving ecosystems and the production of food, flora and fibre. Proposed exemptions to A01 are discussed in sections 4.1.4 and 4.1.5.
Other waste treatment	A02	Premises on which waste is immobilised, thermally degraded or incinerated, or with the capacity to reprocess significant volumes of specified electronic waste	See section 4.2.
Sewage treatment	A03	Premises on or from which significant volumes of sewage (including sullage) effluent, is treated, discharged or deposited.	Wastewater must be separated from sources of water supply to avoid possible outbreaks of disease caused by water-borne pathogens and avoid possible adverse impacts on receiving ecosystems and human health and wellbeing. Inadequately treated sewage can contribute significant nutrient loads and adversely impact on receiving environments. Odours can also be significant and impact on local amenity Proposed changes relating to A03 are discussed in section 4.3.
Industrial wastewater treatment	A04	Premises on or from which significant volumes of industrial wastewater effluent not generated at the premises, is discharged or deposited.	Industrial wastewater must be separated from sources of water supply to avoid the potential to adversely impact receiving ecosystems, local amenity and human health and wellbeing. Industrial wastewaters are more likely to contain heavy metals, oils and chemicals. Odours can also be significant and impact on local amenity. (Onsite treatment of industrial wastewater is considered as part of the assessment for other categories.)
Landfills	A05	Landfills used for the discharge or deposit of solid wastes (including solid industrial wastes) onto land except premises with solely land discharges or deposits, used only for the discharge or deposit of mining wastes and in accordance with the Mineral Resources (Sustainable Development) Act 1990	Landfills accept domestic, commercial and industrial wastes that have the potential to result in site or groundwater contamination. There is significant potential for land and groundwater contamination, noise, dust, odour and litter issues. Landfills have the potential to adversely impact receiving ecosystems, local amenity and human health and wellbeing. Proposed changes to A05 are discussed in Appendix H.
Land disposal	A06	Land disposal facilities for the disposal of nightsoil, septic tank sludge, or sewage treatment plant sludge	Nightsoil and sewage sludge wastes have a very high potential to pollute surface water and adversely impact receiving ecosystems. Treatment plant sludge is rich in nutrients and BOD. Significant levels of heavy metals and organic pollutants may be present if the treatment plant receives trade wastes from industry. Offensive odours can also cause local amenity issues.
Organic waste processing	A07	Premises on which significant volumes of organic waste, compost, soil that has conditioner or digestate is processed by aerobic or anaerobic biological conversion	Without adequate management, large-scale organic waste processing can cause significant dust and odour emissions and the potential exists for nutrient-rich contaminated leachate to enter waterways or groundwater. Composting can adversely affect local amenity and receiving ecosystems. Proposed changes to A07 are discussed in Section 4.4.

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Waste to energy	A08	Premises which recover significant amounts of energy from waste	Waste to energy facilities includes a wide range of technologies for the conversion of wastes to energy. The technologies involved can be divided into two groups: those that recover energy from direct combustion of waste and those that have an intermediate processing step to convert waste into a form which is more readily combusted (e.g. digestion of waste to make gas). There is the potential for significant air emissions from combustion of waste that include (depending on technology or waste stream): - products of combustion: CO_2, SO_2, CO, NOx, etc. - smoke, particles - a wide range of compounds e. G. heavy metals and potentially organochlorine compounds. There is also the potential for land and groundwater impacts from residual wastes from the processes involved, including ash and sludge from digestion. Organic waste storage and processing may lead to offensive odours. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment and, human health and wellbeing. Proposed changes to A08 are discussed in Appendix H.
Waste Tyre Storage	A09	Premises with significant amounts of waste tyres at any time	If not properly managed, waste tyres can create significant environmental and public health risks for Victoria. Large stockpiles of tyres can create a fire hazard. Once ignited, large volumes of waste tyres are difficult to extinguish and can impose significant environmental, social and economic costs on the community, including emergency services costs, pollution of the air, soil, groundwater and surface waters, disruption to businesses and communities and health care costs. Potential exists for adverse impacts on human health, receiving ecosystems, local amenity and aesthetic enjoyment.
Intensive animal industry	B01	Premises upon which are situated piggeries, cattle feedlots, goat feedlots, goat diaries or diary freestalls, where significant amounts of animals are confined for the purposes of agricultural production	Intensive animal industries have the potential to generate nutrient-rich wastewater and adversely impact receiving ecosystems, particularly surface water. There is the potential for local amenity to be affected by the production of offensive odours and noise. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment. Proposed changes to B01 are discussed in section 4.5.

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Livestock saleyards	B02	Large livestock saleyards or holding pens	Saleyards concentrate large numbers of animals in small areas. Large quantities of animal wastes are produced. This waste must be properly controlled to prevent contamination of water and land. Offensive odours may create problems if control and management provisions are not adequate. There is the potential for local amenity to be affected by the production of offensive odours and noise. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment. Proposed changes to B02 are discussed in Appendix H.
Fish farms	B03	Land-based fish farms or other onshore facilities for the cultivation of edible aquatic organisms	Fish farm wastewaters and solid waste streams may have significant suspended solids and nutrient loadings, be low in oxygen and be polluted by excreta, medications and other fish wastes which can adversely impact on receiving ecosystems. Potential exists for adverse impacts on receiving ecosystems. Proposed changes to B03 are discussed in Appendix H.
Extractive industry and mining	C01	Quarries, mines and the like that discharge to surface water.	This industry has the potential to cause environmental damage that may take years to rectify. Surface mining removes topsoil and vegetation and disturbs large areas of land. Stormwater run-off can be contaminated with significant amounts of sediment and other material, which enters waterways, causing pollution problems for wildlife and other downstream water users. Water from gold and base metal mining operations can be contaminated with heavy metals that can impact on receiving ecosystems even in small quantities. These issues, in addition to the potential for noise and dust generation, can adversely impact local amenity. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment.
Abattoirs	D01	Abattoirs, knackeries or poultry processing works that involves the conduct of slaughtering works for commercial purposes for the production of meat or meat products for human or animal consumption.	Without adequate management, large volumes of high-strength wastewater can produce offensive odours and cause surface/groundwater contamination. Abattoirs generally operate large boilers and can contribute to NOx emissions. Significant volumes of contaminated liquid effluent high in TDS, BOD and nutrients can impact on the receiving ecosystems. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment.
Rendering	D02	Rendering works, being works for the manufacture or extraction of substances derived from animals	Without adequate management, significant volumes of contaminated liquid effluent high in TDS, BOD and nutrients can impact on the receiving ecosystems. Rendering gives rise to very offensive odours that can impact on local amenity if it is not properly operated and controlled. Local amenity can also be affected by noisy operations (hammer mills). Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment. Proposed changes to D07 are discussed in Appendix H.

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Animal skin tanning	D03	Animal skin tanning, or re-tanning works.	Tanning operations consume large quantities of fresh water. The industry can produce significant volumes of contaminated liquid effluents with extremes of pH, high organic matter, suspended particles, salt, chromium salts and sulfides. Many tanneries discharge their (pre-treated) wastewaters to sewers, with impact on the reusability of that water. Tanneries that do not have a connection to sewer discharge wastewaters to land where significant adverse impact on the receiving ecosystems can result. This industry can produce noise and offensive odours, particularly in hair removal and chrome tanning, adversely impacting on local amenity. Solid waste from this industry is classified as prescribed and has the potential to affect human health and wellbeing. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment, and human health and wellbeing.
Seafood processing	D04	Facilities for processing fish, shellfish and other aquatic organisms.	Seafood processing produces odour, wastewater and solid organic wastes. The odour emissions can be very offensive and impact on local amenity. Wastewater from the seafood processing contains significant amounts of nutrients and can adversely impact receiving ecosystems if not managed appropriately. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment.
Pet food processing	D05	Facilities for the manufacturing and processing of pet food.	Pet food manufacturing/processing facilities can give rise to offensive odours caused by the cooking process and the batching/dehydration of protein pellets and both the solid and liquid waste streams. Liquid and solid wastes need to be managed appropriately to ensure protection of receiving ecosystems. The industry can produce significant particulate and NOx emissions and have the potential to affect human health and wellbeing. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment, and human health and wellbeing.
Food processing	D06	Food processing works preserve, can, bottle, or dry food for human consumption	Food processing facilities can generate significant volumes of cooling water and liquid effluent containing high BOD and nutrients. These wastewaters can adversely impact receiving ecosystems. Some premises discharge to sewer while others discharge to land and water environments. Offensive odours can also result from cooking processes and wastewater in pre-treatment lagoons or from irrigation practices. Operations may also be very noisy. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment.
Milk processing	D07	The process of producing consumable milk products.	Milk processing can produce significant discharges of wastewater typically high in BOD, nutrients and TDS, which can adversely impact receiving ecosystems. Offensive odours can result from wastewater in storage prior to and during treatment. Milk spray dryers may emit high levels of milk particulates, which can impact on the local area. Some operations are also very noisy, impacting on local amenity. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment.

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Edible oil	D08	Seed crushing, solvent extraction or edible oil or fat deodorising takes place to produce oils and soap.	The industry can discharge significant quantities of carbon monoxide and oxides of nitrogen into the atmosphere, and produce offensive odours and particulate fallout. There may also be significant qualities of organic solid wastes and wastewaters Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment.
Beverage manufacturing	D09	This sector includes breweries, cideries, wineries, fruit juice products and soft drink manufacturing.	Beverage manufacturers may produce large volumes of high-BOD wastewater and have the potential to impact on receiving ecosystems. Solid wastes can present waste management issues. Noise from some of these premises can also affect the local amenity. Potential exists for adverse impacts on receiving ecosystems, local amenity and aesthetic enjoyment. Proposed changes to D09 are discussed in section 4.6.
Textile manufacturing	E01	Textile manufacturing and processing works including carpet manufacturing, wool scouring, textile bleaching, textile dyeing and textile finishing works.	Air emissions from textile plants, particularly where chemicals are applied and heat-treated, can give rise to offensive odours and particulate fallout if not properly operated and controlled. Wastewaters high in COD, chemicals and TDS, can adversely impact on receiving ecosystems. Operations can also be noisy, impacting local amenity. These issues can cause reduction in local amenity, affect human health and wellbeing and impact on receiving ecosystems.
Timber preservation	F01	Treatment of timber to improve longevity of products.	The timber preserving industry uses hazardous formulations such as creosote (a complex mixture of hydrocarbons with other organic compounds), oil-borne preservatives (pentachlorophenol (PCP), dieldrin and tri-n-butyltin oxide) and water-borne preservatives (copper, chrome, arsenate (CCA)). If adequate controls are not in place, there is significant potential for pollution of land, surface water and groundwater, adversely impacting receiving ecosystems.
Fibreboard, particleboard or plywood works	F02	Works in which wood, wood products or other cellulose materials are processed to form fibreboard, particleboard, or plywood.	This industry sector can produce significant particulate emissions from both point and fugitive sources. Wastewater may contain dyes, tannins and particulates, which can adversely impact receiving ecosystems. They can also generate odour and noise issues impacting on local amenity, aesthetic enjoyment and human health and wellbeing.
Paper pulp mills	F03	Paper pulp mills, being works in which wood, wood products, waste paper or other cellulose materials are processed to form pulp, paper or cardboard.	Pulp mills can be extremely odorous; products from combustion (NOx and SOx) can be very high; particulate emissions to the atmosphere may also be excessive. Discharges of wastewater containing dioxins and high in BOD can be significant and impact on receiving ecosystems. These issues can result in impacts to receiving ecosystems, local amenity and aesthetic enjoyment.

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Chemical works	G01	Chemical works where products are manufactured by any chemical process.	This sector discharges significant air emissions and has the potential to cause local amenity issues due to odour and particulate fallout. The industry can also be a source of noise issues. Many processes are carried out under high pressure, which means there is a potential for significant fugitive gas emissions. Air emission can also contribute to the production of photochemical smog and may affect human health and wellbeing. Leakage of liquids such as oils, solvents, acid, alkalis, biodiesel or other chemicals from pipes, valves, flanges, and other spillages onsite, give the potential for pollution of land, surface water and groundwater environments.
Coal processing	G02	Coal processing works, being works in which coal is converted to gaseous, liquid or solid products.	Coal processing works can produce significant discharges of emissions to the air and water environments. Air emissions range from nuisance dusts through to the release of polycyclic aromatic hydrocarbons (PAHs). The heating of coal can produce distinctive odours. Operations can also be noisy. These issues can contribute to impacts on aesthetic enjoyment, local amenity and health and wellbeing. The presence of phenols and other organic components in wastewaters discharged from these premises can adversely affect receiving ecosystems.
Oil and gas refining	G03	Oil or gas refinery works, being works in which crude oil or gas is refined or hydrocarbon fractions are produced.	Without adequate controls, oil and gas refining can have significant air emissions that contain large sources of chemicals that can cause issues to human health and wellbeing and impact on local amenity. Air emissions can contribute to the production of photochemical smog. Operating problems can result in smoking flares, noise, odours and fumes that can affect local amenity and aesthetic enjoyment. Significant volumes of wastewater containing hydrocarbons are produced with potential to adversely impact on receiving ecosystems.
Bulk storage	G04	Facilities for the large-scale storage of carbon compounds or Class 3 indicators.	Petrol and oil storage facilities can have significant emissions to the atmosphere of volatile organic compounds. These emissions contribute to the production of photochemical smog and can have local amenity and human health and wellbeing issues. Class 3 indicators are substances of concern and defined in the SEPP (AQM). Storage of Class 3 indicators must be carefully controlled to ensure emissions are minimised so that they do not impact on human health and wellbeing. Discharges to water and land, surface water and groundwater environments have the potential to cause significant impacts to receiving ecosystems and the useful life and aesthetic appearance of building, structures, property and materials. The flammable and combustible nature of most of the materials represents a significant fire risk. Irrespective of any planned discharge to the environment, storage of these products needs to be carefully managed to protect the environment.

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Bulk container washing	G05	Premises receiving, for the purpose of internal washing, bulk or intermediate transport containers which have contained either: (i) prescribed industrial waste; or (ii) dangerous goods.	These premises can handle a wide variety of materials, some of which can impact on human health and wellbeing. If not properly managed, bulk container washing can result contaminated wastewater entering surface waters, soils or groundwater, adversely affecting receiving ecosystems and impacting human health and wellbeing. There is also the potential for odorous air emissions resulting in adverse impacts on local amenity.
Cement works	H01	Cement works in which clays or limestone materials are used in either a furnace or kiln in the production of cement clinker; or cement clinker or clays or limestone or like materials are ground.	Cement works can produce large quantities of very fine dust particles, which can cause fallout problems in their local areas. They also have significant discharges of products of combustion that can contribute to the production of photochemical smog. These issues can adversely impact on local amenity and human health and wellbeing. Contaminated stormwater can adversely impact on receiving ecosystems. Some cement kilns are also being fired on supplementary fuels such as tyres, waste oils and solvent sludges. The use of these fuels needs to be carefully controlled.
Bitumen and asphalt	H02	Bitumen and asphalt batching plants.	Bitumen batching plants can produce dust and odour (hydrocarbon) emissions that result in impacts on local amenity.
Ceramic works	H03	Ceramic works, being works in which bricks, tiles, pipes, pottery goods or refractories are processed in dryers or kilns or ground.	Ceramic works can produce significant air emissions of products of combustion (POCs), particulates and fluoride emissions. The POCs can contribute to the production of photochemical smog. These issues can adversely affect local amenity and human health and wellbeing. Fluoride emissions can also have a significant impact on local vegetation and can affect the production of food, flora and fibre. Excessive fluorides in food, flora and fibre can impact on receiving ecosystems and human/animal health and wellbeing.
Mineral wool	H04	Mineral wool or ceramic fibre works.	Mineral wool and ceramic fibre works can produce significant air emissions including offensive odours, particulates (of respirable size), hydrocarbons, ammonia, phenol and formaldehyde. These emissions can adversely impact on local amenity and human health and wellbeing.
Glass Works	H05	Glass works, being works manufacturing glass by the melting of raw materials or reprocessing.	This industry can produce significant air emissions that contribute to the production of photochemical smog, particulate fallout and odour. These emissions can adversely impact on local amenity and human health and well-being. Proposed changes to H05 are discussed in section 4.2.5.
Primary metallurgical	I01	Primary metallurgical works, being works in which ores or ore concentrates are processed or smelted to produce metal.	This industry sector uses significant amounts of energy and has the potential to produce significant air emissions (acid gases and smog precursors) and solid wastes. These emissions can cause respiratory problems and damage vegetation. This industry has historically been one of the largest single sources of fluorides and one of the five largest sources of sulfur dioxide in Victoria. These issues have the potential to adversely impact on local amenity, human health and wellbeing, production of food, flora and fibre and receiving ecosystems.

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Metal melting	I02	Metal melting works being works in which any metal melting is performed in furnaces.	Metal Melting works incorporate two main types of works, metals recycling, and metal casting. Ferrous foundries can be large emitters of NOx, SOx, CO and particulates. These emissions must be controlled, primarily to prevent localised amenity issues. Non-ferrous foundries can produce dusts and fumes including lead, aluminium and cadmium. A significant percentage of these particles can be in a size range which can be breathed in and may result in adverse impacts to human health and wellbeing. Smoke and offensive odours may also be produced, impacting on local amenity. Other problems include potential for land, surface water and groundwater contamination from heavy metal leaching, adversely impacting on receiving ecosystems. Non-ferrous wastes pose greater environmental risks and therefore have a lower design threshold.
Metal galvanising works	I03	Coating of iron or steel with rust-resistant zinc using a range of processes including: galvanising, electroplating, mechanical plating, sherardising, painting with zinc-rich coatings and zinc spraying or metallising.	Large galvanising operations have the potential to generate significant odour, products of combustion and particulate emissions. The particulates are typically in the form of a visible and potentially harmful fume. These emissions can adversely impact local amenity and human health and wellbeing. Oils and other contaminants may also be volatilised if there is inadequate pre-treatment. Liquids and solids, such as acids/alkalis and zinc, may contaminate the soil and surface waters and impact receiving ecosystems.
Metal finishing works	I04	Metal finishing works, including electroplating of metal or plastic, anodising, electroforming or printed circuit board manufacturing.	Discharges from metal finishing works may include contaminated wastewater containing heavy metals, acids and alkalis. Potential exists for contamination of land, surface water and groundwater environments resulting in adverse impact on receiving ecosystems.
Can and drum coating	I05	Can and drum coating works, in which surface coating is applied to metal before or after the metal is formed into cans, closures, coils or drums.	Can and drum coating premises can be a major source of emissions of volatile organic compounds (VOCs). Air emissions can be odorous and can contribute to the production of photochemical smog. These emissions can adversely impact local amenity and human health and wellbeing. The industry also generates large quantities of waste solvents which have the potential to adversely affect receiving ecosystems without adequate controls.
Vehicle assembly	I06	Facilities that are designed to produce or assemble automobiles (including trucks).	Large vehicle assembly plants can be major sources of VOC emissions contributing odour issues and to the production of photochemical smog. These emissions can adversely impact on local amenity and human health and wellbeing. The industry also generates large quantities of waste solvents which, without adequate controls can adversely affect receiving ecosystems.
Printing	J01	Printing and coating works using a variety of printing processes on a variety of substrate (e.g.. paper, plastic and metallic films)	The printing industry can be a major source of VOC emissions that can contribute to offensive odours and the production of photochemical smog. These emissions can adversely impact on local amenity and human health and wellbeing. Important upstream environmental impacts can be associated with the production of inks and substrates.
Power stations	K01	Facilities used to general electrical power from the consumption of a fuel.	Fuel-burning power stations are likely to discharge quantities of products of combustion (POCs) and incomplete POCs, and greenhouse gas emissions (CO_2) to the atmosphere. Waste emissions can include significant volumes of solid and liquid wastes. These issues can result in adverse impacts to local amenity, human health and wellbeing and receiving ecosystems.

Scheduled category summary description	Scheduled category	Description of the sector	The rationale for regulation - the broad problem associated with the sector
Carbon geosequestration	K02	Premises which capture, separate, process or store waste carbon dioxide for the purpose of geological disposal.	These sites have the potential for significant air and noise emissions resulting in adverse impacts on local amenity, human health and wellbeing or the environment. Underground storage of carbon dioxide may impact subterranean conditions and it is important to ensure carbon dioxide is securely contained.
Water desalination plants	K04	Premises at which salt is removed from water to make the water drinkable or for other uses	Water desalination plants produce a concentrated salt sludge that has the potential to impact receiving ecosystems if it is disposed of directly to land, groundwater and/or surface waters
General emissions to air	L01	Sectors that emit or that propose to discharge or emit specific compounds into the atmosphere	This category is designed as a 'catch all' for premises which may emit pollutants that can adversely impact on human health and wellbeing. Air emissions include products of combustion, volatile organic compounds, and Class 3 indicators that can contribute to the production of photochemical smog, adversely affect local amenity, and impact on human health and wellbeing. Proposed changes to exemptions relating to air emissions are discussed in section 4.8.
Contaminated sites - onsite soil containment	L02	Facilities for the long-term retention of contaminated soil.	Contaminated soil has the potential to adversely affect land, surface water and groundwater environments with the effects varying depending on the contaminant. These issues can adversely impact on local amenity, human health and wellbeing, and receiving ecosystems. To prevent this, correct design of storage facilities is required.
Tunnel ventilation systems	L03	Systems for the forced ventilation of road tunnels.	Potential exists for air emissions and noise issues to adversely impact local amenity and human health and wellbeing if not properly managed. If problems eventuate due to poor design, appropriate environmental controls can be difficult and expensive to retrofit.
Contaminated sites – long-term management	L04	Sites where soil or groundwater may require on-going active management or monitoring.	These sites require ongoing monitoring and management to ensure that soil and/or groundwater contamination is managed appropriately. Where significant active or contingent management is required, it is important that responsible parties have the capacity for such future actions. There is the potential that these sites may be left to persons with inadequate resources, and therefore result in the State being left with a legacy issue. These sites have the potential to adversely impact local amenity, human health and wellbeing, and receiving ecosystems.

E. Level of activity relating to current scheduled premises categories

Industrial activity	Scheduled category	Description	Works approvals in last 4 years (July 2012 - June 2016)	EPA-granted exemptions from works approvals in last 4 years (July 2012 - June 2016)	Licensed premises (at 30 June 2016)	Business notifications of incident or non-compliance with licence conditions in last 5 years (2011-2016)	Alleged pollution reports to EPA in last 5 years (2011—16)	Remedial notices, official warnings and penalty infringement notices in the last 9 years (2007 - 2016)
Prescribed industrial waste (PIW) management	A01	Prescribed industrial waste management (A01 only)	7	12	64	14	54	35
Other Waste treatment	A02	Other waste treaters licensed to accept prescribed industrial waste (A02, A01)	0	0	2	0	0	5
		Other waste treatment (A02 only)	0	0	1	0	0	0
		Other waste treaters including energy recovery (A02, A08)	2	0	1	4	8	1
Sewage treatment	A03	Sewage treatment plants (A03 only)	31	30	233	214	48	41
		Sewage treatment plants accepting wastewater or PIW (A04, A03, A01)	0	0	2	0	7	0
Industrial wastewater treatment	A04	Industrial wastewater treatment (A04 only)	0	1	4	11	0	1
Landfills	A05	Landfills accepting PIW (A05, A01)	1	0	32	132	185	65

Industrial activity	Scheduled category	Description	Works approvals in last 4 years (July 2012 - June 2016)	EPA-granted exemptions from works approvals in last 4 years (July 2012 - June 2016)	Licensed premises (at 30 June 2016)	Business notifications of incident or non-compliance with licence conditions in last 5 years (2011-2016)	Alleged pollution reports to EPA in last 5 years (2011—16)	Remedial notices, official warnings and penalty infringement notices in the last 9 years (2007 - 2016)
		Landfill only (A05 only)	4	1	36	48	2972	42
		Landfills co-located with organics processing facilities (A05, A07)	0	0	7	5	13	4
Land disposal	A06	Land disposal (A06 only)	0	0	5	0	0	0
Composting	A07	Composting (A07) only	4	5	10	0	32	3
		Composters accepting PIW incl waste to energy (A07, A01, A08)	4	0	10	1	272	24
Waste to energy	A08	Waste to energy (A08 only)	2	0	10	1	0	1
Waste tyre storage	A09	Waste tyres (A09 only)	1	0	2	Category introduced in 2015	Category introduced in 2015	Category introduced in 2015
Intensive animal industry	B01	Intensive animal industry (B01 only)	3	4	0	0	0	0
Livestock saleyards	B02	Livestock saleyards (B02 only)	0	0	0	0	5	0
Fish farms	B03	Fish farms (B03 only)	1	0	21	13	1	6

Industrial activity	Scheduled category	Description	Works approvals in last 4 years (July 2012 - June 2016)	EPA-granted exemptions from works approvals in last 4 years (July 2012 - June 2016)	Licensed premises (at 30 June 2016)	Business notifications of incident or non-compliance with licence conditions in last 5 years (2011-2016)	Alleged pollution reports to EPA in last 5 years (2011—16)	Remedial notices, official warnings and penalty infringement notices in the last 9 years (2007 - 2016)
Extractive industry and mining	C01	Licensed for extractive industries (C01 only)	3	0	22	13	23	8
Abattoirs and rendering	D01 & D02	Abattoirs (D01 only)	1	2	11	0	13	14
		Abattoirs with rendering (D01, D02)	1	1	8	2	122	17
		Rendering (D02 only)	0	4	0	0	480	36
Animal skin tanning	D03	Animal skin tanning (D03 only)	0	0	1	0	0	0
Seafood processing	D04	Seafood processing (D04 only)	0	0	N/A	0	0	0
Pet food processing	D05	Pet food processing (D05 only)	0	0	1	1	4	0
		Pet food with rendering plant (D05, D01)	0	0	2	0	0	1
Food processing	D06	Food processing (D06 only)	0	0	8	47	54	10
Milk processing	D07	Milk processing (D07 only)	2	10	21	197	267	28

Industrial activity	Scheduled category	Description	Works approvals in last 4 years (July 2012 - June 2016)	EPA-granted exemptions from works approvals in last 4 years (July 2012 - June 2016)	Licensed premises (at 30 June 2016)	Business notifications of incident or non-compliance with licence conditions in last 5 years (2011-2016)	Alleged pollution reports to EPA in last 5 years (2011—16)	Remedial notices, official warnings and penalty infringement notices in the last 9 years (2007 - 2016)
Edible oil	D08	Edible oil (D08 only)	0	1	4	5	49	1
Beverage manufacturing	D09	Beverage manufacturing (D09 only)	2	0	0	0	0	0
Textile manufacturing	E01	Textile manufacturing (E01 only)	0	0	1	0	26	3
Timber preservation	F01	Timber preservation (F01 only)	3	0	N/A	0	0	0
Fibreboard, particleboard or plywood works	F02	Fibreboard, particleboard or plywood works (F02 only)	0	0	3	0	4	5
Paper pulp mills	F03	Paper mill (F03 only)	1	0	1		0	1
		Paper mill with associated landfill and waste management (F03, A01, A07)	0	1	1	157	23	3
Chemical works	G01	Chemical works (G01 only)	2	5	21	88	123	17
		Chemical works with PIW management facilities, emissions to air or extractive industries (G01, A01, L01 or C01)	0*	0	6	14	18	3
Coal processing	G02	Coal processing (G02 only)	0	1	2	6	4	0

Industrial activity	Scheduled category	Description	Works approvals in last 4 years (July 2012 - June 2016)	EPA-granted exemptions from works approvals in last 4 years (July 2012 - June 2016)	Licensed premises (at 30 June 2016)	Business notifications of incident or non-compliance with licence conditions in last 5 years (2011-2016)	Alleged pollution reports to EPA in last 5 years (2011—16)	Remedial notices, official warnings and penalty infringement notices in the last 9 years (2007 - 2016)
		Coal processing with emissions to air (G02, L01)	0	0	1	5	0	0
Oil and gas refining	G03	Oil and gas refining (G03 only)	2	5	7	507	186	2
		Oil and gas refining with wastewater management (G03, A04)	1	0	1	44	67	0
Bulk storage	G04	Bulk storage facilities only (G04)	0	2	9	7	7	3
		Bulk storage facilities including PIW management or emissions to air (G04, A01, L01)	1	0	1	7	1	2
Bulk container washing	G05	Bulk container washing (G05 only)	1	0	2	0	3	2
		Bulk container washing with PIW management (G05,A01)	0	0	2	1	0	3
Cement works	H01	Cement works (H01 only)	1	0	3	7	2	3
		Cement works with extractive industries or other waste treatment (H01, C01, A02)	1	0	1	35	0	0
		Cement works with associated landfill (H01, C01, A05)	0	0	1	5	2	0

Industrial activity	Scheduled category	Description	Works approvals in last 4 years (July 2012 - June 2016)	EPA-granted exemptions from works approvals in last 4 years (July 2012 - June 2016)	Licensed premises (at 30 June 2016)	Business notifications of incident or non-compliance with licence conditions in last 5 years (2011-2016)	Alleged pollution reports to EPA in last 5 years (2011—16)	Remedial notices, official warnings and penalty infringement notices in the last 9 years (2007 - 2016)
Bitumen and asphalt	H02	Bitumen and asphalt (H02 only)	4	3	N/A	0	4	1
Ceramic works	H03	Ceramic works (H03)	1	0	2	6	2	
		Ceramic works with extractive industries (H01, C01)	1	0	2	0	0	
		Ceramic works with extractive industries and associated landfill (H01, C01, A05)	0	0	1	0	0	7
Mineral wool	H04	Mineral wool (H04 only)	0	0	0	0	0	0
Glass works	H05	Glass works (H05 only)	0	0	3	5	0	2
Primary metallurgical and metal melting	I01, I02	Primary metallurgical (I01 only)	0	0	1	11	3	3
		Metal melting with primary metallurgical and prescribed waste management (I01, I02, A01)	0	0	1	10	4	4
		Metal melting (I02 only)	0	0	4	0	0	7

Industrial activity	Scheduled category	Description	Works approvals in last 4 years (July 2012 - June 2016)	EPA-granted exemptions from works approvals in last 4 years (July 2012 - June 2016)	Licensed premises (at 30 June 2016)	Business notifications of incident or non-compliance with licence conditions in last 5 years (2011-2016)	Alleged pollution reports to EPA in last 5 years (2011—16)	Remedial notices, official warnings and penalty infringement notices in the last 9 years (2007 - 2016)
Metal galvanising works	I03	Metal galvanising works (I03 only)	1	1	6	4	4	13
Metal finishing works	I04	Metal finishing works (I04 only)	0	0	0	0	0	0
Can and drum coating	I05	Can and drum coating (I05 only)	1	1	2	0	0	2
Vehicle assembly	I06	Vehicle assembly (I06 only)	0	0	3	0	0	0
		Vehicle assembly with metal melting (I06, I02)	0	0	1	0	0	0
Printing	J01	Printing (J01 only)	1	4	14	7	22	8
Power stations	K01	Power station including extractive industry and associated PIW landfill (K01, C01, A05, A01)	2	0	4	67	153	2
		Power station (K01 only)	3	3	11	8	3	0
		Power station including emissions to air (K01, L01)		0	1	0	0	0
Carbon geosequestration	K02	Carbon geosequestration (K02 only)	0	0	0	0	0	0

Industrial activity	Scheduled category	Description	Works approvals in last 4 years (July 2012 - June 2016)	EPA-granted exemptions from works approvals in last 4 years (July 2012 - June 2016)	Licensed premises (at 30 June 2016)	Business notifications of incident or non-compliance with licence conditions in last 5 years (2011-2016)	Alleged pollution reports to EPA in last 5 years (2011—16)	Remedial notices, official warnings and penalty infringement notices in the last 9 years (2007 - 2016)
Water desalination plants	K04	Water desalination plants (K04 only)	1	0	1	1	4	0
General emissions to air	L01	General emissions to air (L01 only)	1	1	18	11	379	6
Contaminated sites - onsite soil containment	L02	Contaminated sites - onsite soil containment (L02 only)	1	0	N/A	0	0	0
Tunnel ventilation systems	L03	Tunnel ventilation systems (L03 only)	1	0	2	3	0	0
Contaminated sites – long-term management	L04	Contaminated sites – long-term management (L04 only)	0	0	N/A	0	0	0

F. E-waste elements and persistent organic pollutants' potential effects on the environment and human health

Element/ persistent organic pollutant	Potential effects on environment and human health
Brominated flame retardants	Polybrominated diphenyl ethers (PBDEs) and polybrominated biphenyls (PBB) serve as flame retardants for electrical equipment, electronic devices, furniture, textiles and other household products. **PBDEs** • PBDEs have been banned or voluntarily withdrawn for use in manufacture in Australia[253], Europe[254] and North America[255] since the mid-2000s. • According to the US EPA, evidence of carcinogenic potential is suggested for decaBDE.[256] • Studies on mice and rats have shown that exposure to PBDEs and PBBs causes neuro-developmental toxicity, weight loss, toxicity to the kidney, thyroid and liver and dermal disorders.[257] **PBBs** • PBBs were formerly used as additive flame retardants in synthetic fibres and moulded plastics. They were banned from use in manufacturing in the United States in 1976, the EU in 2003 and China in 2007. • The US Department of Health and Human Services states that PBBs are 'reasonably anticipated to be human carcinogens based on sufficient evidence of carcinogenicity from experimental animal studies'.[258] • The International Agency for Research on Cancer classified PBBs as 'probably carcinogenic to humans'.[259] • The US EPA has not classified PBBs for carcinogenicity.[260]
Mercury	Mercury exposure can adversely affect the cellular, cardiovascular, haematological, pulmonary, renal, immunological, neurological, endocrine, reproductive, and embryonic development of humans.[261] The major route of human exposure to methylmercury (MeHg) is largely through eating contaminated fish, seafood, and wildlife which have been exposed to mercury through ingestion of contaminated lower organisms. MeHg toxicity is associated with nervous system damage in adults and impaired neurological development in infants and children.[262]

[253] NICNAS, *Interim public health risk assessment of certain PBDE congeners contained in commercial preparations of pentabromodiphenyl ether*, National Industrial Chemicals Notification and Assessment Scheme, 2007.
[254] EU, *Offical Journal of the European Union*, L 42, 2003, pp 45-46.
[255] US EPA, *DecaBDE Phase-out Initiative, Existing Chemicals Factsheet*, 2010.
[256] US EPA, *Polybrominated Diphenyl Ethers (PBDEs) Action Plan Summary*, http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/pbdes_ap_2009_1230_final.pdf, 2009.
[257] Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Polybrominated Biphenyls and Polybrominated Diphenyl Ethers*, 2004.L.S. Birnbaum and D. F. Staskal, 'Brominated Flame Retardants: Cause for Concern?' *Environmental Health Perspectives.* Volume 112(1). 2004, pp. 9-14.
[258] National Toxicology Program, *Report on Carcinogens, Thirteenth Edition.* Research Triangle Park, NC: U.S. Department of Health and Human Services, Public Health Service, 2014, substance profiles PBBs.
[259] World Health Organization. International Agency for Research on Cancer, *Agents Classified by the IARC Monographs, Volumes 1-107,* http://monographs.iarc.fr/ENG/Classification/index.php, 2013.
[260] US EPA, Technical fact sheet, *Polybrominated Diphenyl Ethers (PBDEs) and Polybrominated Biphenyls (PBBs),* 2014 p.3.
[261] K.M Rice, 'Environmental Mercury and Its Toxic Effects.' *Journal of Preventive Medicine and Public Health* 47.2, 2014, p.83.
[262] Rice et al. p.74.

Element/ persistent organic pollutant	Potential effects on environment and human health
Lead	Lead can affect almost every organ and system in the human body. Children six years old and younger are most susceptible to the effects of lead.[263] *Potential health effects of lead on children:*[264] • behaviour and learning problems • lower IQ and hyperactivity • slowed growth • hearing problems; and • anaemia. *Potential health effects of lead on pregnant women:*[265] • reduced growth of the foetus • premature birth. *General potential health effects of lead:*[266] • cardiovascular effects, increased blood pressure and incidence of hypertension • decreased kidney function • reproductive problems (in both men and women).
Cadmium	The US EPA considers cadmium to be a probable human carcinogen (cancer-causing agent) and has classified it as a Group B1 carcinogen.[267] Acute inhalation exposure to high levels of cadmium may result in effects on the lung, such as bronchial and pulmonary irritation. A single acute exposure to high levels of cadmium may result in long-lasting impairment of lung function.[268] Chronic inhalation and oral exposure of humans to cadmium results in a build-up of cadmium in the kidneys that can cause kidney disease, including proteinuria, a decrease in glomerular filtration rate, and an increased frequency of kidney stone formation.[269]
Nickel	Chronic exposure to nickel can lead to dermatitis and compromise lung function.[270] Soluble nickel compounds are more toxic to the respiratory tract than less soluble compounds.[271] Human studies have reported an increased risk of lung and nasal cancers among nickel refinery workers exposed to nickel refinery dust (noting that e-waste dismantling does not result in emissions of nickel refinery dust).[272]

[263] US EPA, *Learn about Lead*, https://www.epa.gov/lead/learn-about-lead#effects
[264] US EPA
[265] US EPA
[266] US EPA
[267] US EPA, *Cadmium Compounds*, https://www3.epa.gov/airtoxics/hlthef/cadmium.html#ref6 January 2000
[268] US EPA
[269] US EPA
[270] US EPA, *Nickel Compounds – hazard summary* https://www3.epa.gov/airtoxics/hlthef/nickel.html 2000.
[271] US EPA.
[272] US EPA

Element/ persistent organic pollutant	Potential effects on environment and human health
Beryllium	Several human epidemiological studies have investigated the relationship between beryllium exposure in workers and lung cancer deaths. Although, according to the US EPA, there are shortcomings in all the studies, the results are suggestive of a causal relationship between beryllium exposure and an increased risk of lung cancer.[273] Beryllium compounds have been shown to cause lung cancer from inhalation exposure in rats and monkeys.[274] The US EPA has classified beryllium as a Group B1, probable human carcinogen.[275]

[273] US EPA, *Beryllium Compounds – hazard summary created in 1992* https://www3.epa.gov/airtoxics/hlthef/berylliu.html, 2000.
[274] US EPA
[275] US EPA

G. Draft Human Rights Certificate

Subordinate Legislation Act 1994

DRAFT HUMAN RIGHTS CERTIFICATE

(Section 12A)

Environment Protection (Scheduled Premises) Regulations 2017

I, Lily D'Ambrosio, Minister for Energy, Environment and Climate Change, and Minister responsible for administering the **Environment Protection Act 1970** certify that, in my opinion the proposed Environment Protection (Scheduled Premises) Regulations 2017 do not limit any human right set out in the **Charter of Human Rights and Responsibilities Act 2006**.

Dated:

Hon Lily D'Ambrosio MP
Minister for Energy, Environment and Climate Change

H. Summary of proposed minor and administrative changes

Minor change	Reason for change	Reason for classifying as non-substantive
Regulation 12(a) Replace the reference to the State Disaster Plan (DISPLAN) with 'State Health and Medical Commander of the State Health Emergency Plan'	To bring the Regulation up to date with changes to Victoria the State's disaster / emergency plan policy name.	Simply an update in a reference to the State's disaster/emergency plan policy name.
A05 Limiting works approval exemptions for municipal landfills serving less than 500 people to those in use prior to June 25, 2017. [See Appendix J for case study]	To prevent the potential for environment risks presented by poorly planned landfills servicing small populations.	It is understood that there are no Councils planning new landfills serving less than 500 people. The establishment of new small landfills are inconsistent with Victorian Government policy.
A08 Clarify that the application threshold for premises which recover energy from waste to at least 3 megawatts of thermal capacity, or at least 1 megawatt of electrical power.	The current category description does not clarify if the application threshold (rated capacity of at least 1 megawatt) refers to thermal capacity or electrical power. E.g. a biomass boiler with a thermal capacity of 1 megawatt has a lower electrical power output.	Clarifying the application threshold will increase clarity and align regulations with current practice. This may reduce costs for industry to request interpretation.
B02 Add '…or holding pens' to the summary description in 'livestock saleyards' premises category.	Lack of clarity as description (column 2) mentions holding pens but summary description (column 1) does not	Increases consistency between different parts of the Regulation, with no change from current practice.
B03 Include reference to 'land-based' and 'on-shore' in the definition of the 'fish farms' premises category (B03), to clarify that the category excludes 'in situ' and offshore farms.	Ongoing issues have persisted regarding EPA's role in licensing 'in situ' facilities, particularly in the marine environment. These have grown in importance with the growth of the aquaculture sector (beyond traditional inland fish farming).	Increases clarity around the exclusion, which may reduce burden compared to current situation.
B03 Make consequential amendments to the Fees Regulations to clarify that fees for inland/freshwater fish farms are 70 units, i.e. 50% of the current fee.	Changes made to the 2011 Fees Regulations increased the base fee amounts to B03 category. Since then, the inland fish farm industry has provided evidence to EPA that the relative impact of its operations, compared to marine facilities is less, and subsequently their fees should be reduced. In late 2014, EPA agreed to manually adjust the base fees for inland/freshwater fish farms to 50% of the current fee (from 140 units to 70 units).	Since 2014, EPA has been manually adjusting fees to 70 units.

Minor change	Reason for change	Reason for classifying as non-substantive
D02 Amend the definition of rendering to include reference to human consumption, and introduce an application threshold of 200 tonnes per year.	Lack of clarity regarding renderers extracting substances that are for consumption but not for human consumption; and the lack of application threshold.	Clarifies existing intent, and exempts small businesses from the requirements.
D04 Adding '…under Section 20(1) of the Act' to the 'seafood processing' category (D04)	To fix minor legal drafting error	Improves clarity
J01 Adding 'No' to columns 3 and 4 of the 'printing' category (J01).	To fix minor legal drafting error	Improves clarity
L02 Amend the definition of L02 to read 'Onsite retention of contaminated soil in a facility designed for the purpose of containing, or preventing further contamination, and which can hold at least 1000m^3 of contaminated soil'.	Lack of clarity regarding the intent of category based on poor definition in regulations.	Clarifies definition to improve clarity. The change will not alter the application and enactment of the requirements beyond current scope.

I. Analysis data and assumptions

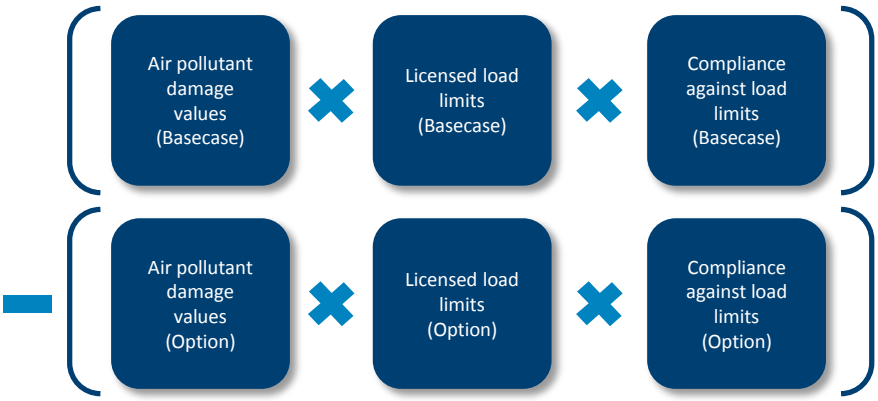
9.1 General assumptions

Assumptions	Value	Source
Discount rate	4%	Government of Victoria, 2014, *Victorian Guide to Regulation*, Department of Treasury and Finance, Melbourne.
Time period	10 years	
Average Victorian weekly earnings (based on trend average for full-time, adult, total earnings)	$1,472.30	ABS
On-costs	16.5%	Government of Victoria, 2011, *Victorian Guide to Regulation*, Department of Treasury and Finance, Melbourne.
Overheads	50%	
Weeks in a year	52	
Weeks worked in a year (52 weeks - 4wks annual leave - 2 weeks public holidays - 2 weeks other leave)	44	
Average weekly hours for full-time workers in job	41	
Average hourly earnings	$74.16	Calculation

9.2 Specific assumptions for all options

9.2.1 Benefits from a reduction in harmful air emissions

The reduction in harmful air emissions is calculated as:



9.2.1.1 Air pollutant damage values

The air pollutant damage cost values used in the modelling were determined by BDA using the following approach.

- Damage cost values for $PM_{2.5}$ for the key regions across Victoria.[276]
- Average pollutant damage cost values for the other regional air pollutants, heavy metals and organic pollutants developed by EEA (2015):
  - with the exception of SOx, which has been scaled relative to NOx using the Victorian EPA pollutant weights. This reflects that Victoria uses relatively low sulfur coal and does not face high ambient concentrations of SOx or associated acid rain problems as occurs in Europe.

[276] N. Aust, P. Watkiss, P. Boulter and K. Bawden, *Methodology for valuing the health impacts of changes in particle emissions* - PAE Holmes Report 6695, 2013. The values provided in this report are consistent with those provided in the European Environment Agency's report, *Costs of air pollution from European industrial facilities 2008–2012. An updated assessment - EEA Technical report No 20/2014*, 2014.

- Values for the other pollutants identified in the Victorian EPA pollutant weighting exercise were developed, by applying the pollutant relativity between it and another pollutant. Specifically:
  - benzo(a)pyrene was valued equal to benzene, as both are SEPP Class 3 pollutants and were given an equal pollutant weight by EPA Victoria
  - toluene and xylene were valued equal to $PM_{2.5}$, as all three are SEPP Class 2 pollutants and were given equal pollutant weights by EPA Victoria.
  - fluoride is also a SEPP Class 2 pollutant, but its relative weighting by the Victorian EPA to $PM_{2.5}$ is 50 per cent.
  - carbon monoxide is a SEPP Class 1 pollutant with a pollutant weighting of 10 per cent of VOCs, another Class 1 pollutant.
- Finally, all other pollutants listed in the Air SEPP were valued based on the pollutant class they were listed under, and using the average impact value for pollutants in that class derived by averaging the respective values for the pollutants above.

The derived pollutant impact values are shown in Table 25.

Table 25: Air pollutant marginal values ($A/tonne)

Air pollutant values ($A/tonne)	Port Phillip	Portland	Latrobe	Major urban centres	Other
Ammonia (NH3)	$37,026	$37,026	$37,026	$13,446	$5,749
Arsenic	$624,745	$624,745	$624,745	$226,881	$97,000
Benzene (toxic VOC)	$136,048	$68,024	$68,024	$49,407	$21,123
Benzo(a)pyrene	$136,048	$68,024	$136,048	$49,407	$21,123
Cadmium	$51,913	$51,913	$51,913	$18,853	$8,060
Chromium	$68,024	$68,024	$68,024	$24,703	$10,562
CO	$472	$472	$472	$171	$73
Dioxins and furans (toxic VOC)	$48,332,700,000	$48,332,700,000	$48,332,700,000	$17,552,401,579	$7,504,287,632
Fluoride	$78,911	$78,911	$789	$789	$12,252
Lead	$1,727,447	$1,727,447	$1,727,447	$627,336	$268,209
Mercury	$1,628,991	$1,628,991	$1,628,991	$591,581	$252,922
Nickel	$6,802	$6,802	$6,802	$2,470	$1,056
NOx	$14,665	$7,333	$14,665	$5,326	$2,277
PM10	$80,276	$29,153	$29,153	$29,153	$12,464
PM2.5	$190,000	$69,000	$69,000	$69,000	$29,500
PAH (polycyclic aromatic hydrocarbons)	$2,289,538	$2,289,538	$2,289,538	$831,464	$355,481
SOx	$147	$147	$14,665	$53	$23
Toluene	$157,821	$78,911	$78,911	$57,314	$24,504
VOCs (other or unspeciated)	$4,716	$4,716	$4,716	$1,713	$732
Xylene	$157,821	$78,911	$78,911	$57,314	$24,504
Other Class 1	$16,713	$16,713	$16,713	$6,069	$2,595
Other Class 2	$326,631	$326,631	$326,631	$118,618	$50,714
Other Class 3	$775,561	$775,561	$775,561	$281,651	$120,416

Source: EPA SPREM.

9.2.1.2 Modelling changes in emissions (using licensed load limits and compliance against load limits)

To identify the relationship between licensee compliance with the Regulations and their emissions performance, a number of datasets were examined, including data on:

- a premises' risk rating (LORA) and historical emissions compliance
- the average emissions of 'compliant' and 'non-compliant' premises
- emission compliance across licensed and unlicensed sectors
- premises-specific information (for example, location) and emissions compliance.

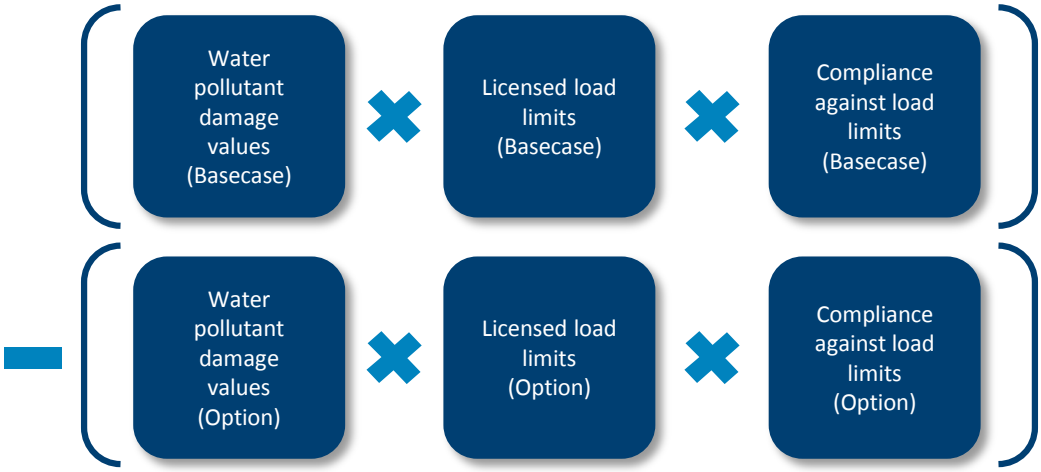
Unfortunately, these approaches did not reveal robust relationships that could provide the basis for analysis of how compliance would be influenced by regulatory policy options.

In light of the limitations in estimating robust emissions compliance relationships, an alternative approach was developed. Specifically, the current average emissions compliance at a 'whole-of-

scheduled category' level was identified, and the model constructed to identify the changes in air and water emissions that would arise from changes in average category compliance against licensed load limits.

9.2.2 Benefits from a reduction in harmful water emissions

The reduction in harmful water emissions is calculated as:



9.2.2.1 Water pollutant damage values

A relative impact weighting exercise (pollutant weightings and critical zone weights) for key water pollutants was conducted (similar to that undertaken for air pollutants).

A group of key regions were chosen as critical zones for nutrients including Port Phillip and Western Port, Gippsland Lakes catchment and the Murray Darling Basin catchment.

Damage cost values for the water pollutants were subsequently derived anchored on a value of $524,349 per tonne of total nitrogen, drawn from the Melbourne Water Stormwater Offsets Program. These are shown below in Table 26.

Table 26: Water pollutant marginal values ($A/tonne)

Water pollutant values ($A/tonne)	Port Phillip	Gippsland	Other
Aluminium	$5,243,488	$5,243,488	$5,243,488
Ammonia	$524,349	$524,349	$524,349
Benzene	$5,243,488	$5,243,488	$5,243,488
Benzene, ethylbenzene	$5,243,488	$5,243,488	$5,243,488
Benzene, toluene, ethylbenzene, xylene	$5,243,488	$5,243,488	$5,243,488
Boron	$52,435	$52,435	$52,435
Chlorine	$524,349	$524,349	$524,349
Copper	$524,349	$524,349	$524,349
Fluoride	$524,349	$524,349	$524,349
Hydrogen sulfide	$524,349	$524,349	$524,349
Iron	$52,435	$52,435	$52,435
Lead	$5,243,488	$5,243,488	$5,243,488
Manganese	$174,783	$174,783	$174,783
Mercury	$52,434,882	$52,434,882	$52,434,882
Nickel	$5,243,488	$5,243,488	$5,243,488
Nitrogen (TN)	$1,573,046	$1,048,698	$524,349
Phenol (phenolic compounds)	$524,349	$524,349	$524,349
Phosphorus (TP)	$524,349	$1,573,047	$524,349
PDFs	$524,349	$524,349	$524,349
PAHs	$524,349	$524,349	$524,349
Toluene	$5,243,488	$5,243,488	$5,243,488
Zinc	$174,783	$174,783	$174,783
Xylene	$5,243,488	$5,243,488	$5,243,488

Source: EPA SPREM.

No damage cost values have been able to be derived for a number of other pollutants likely to be discharged to water by licensed premises in Victoria.

As the quantity of these other pollutants discharged is relatively small, their omission is not considered significant. Key pollutants not included and the quantities of these discharged by industrial sources in Victoria in 2013-14 recoded by the national pollutant inventory (NPI) are shown in Table 27.

Table 27: Other pollutants

Pollutant	Emissions to water (Tonnes)
Antimony and antimony compounds (as Sb)	0.003
Arsenic	0.79
Beryllium and compounds	0.038
Cadmium	0.17
Chlorophenols (di, tri, tetra)	0.36
Chromium III	1.2
Chromium VI	0.085
Cumene (1-methylethylbenzene)	0.086
Cyclohexane	3.2
Ethanol	4.6
Ethylbenzene	1.5
Ethylene glycol (1,2-ethanediol)	26
Isohexane (n-hexane)	5.3
Methanol	30
Phosphoric acid	0.091

Source: EPA, *Economic Analysis of Environment Protection (Scheduled Premises and Exemptions) Regulations 2007*.

9.2.3 Benefits from a reduction in incidents

The benefits form a reduction in incidents is calculated by taking the number of schedules premises (by category), multiplied by the likelihood of an incident (based on historical data), multiplied by the cost of an incident (including EPA administration cost) and multiplied by the increased risk of an incident by an unlicensed premises relative to a licensed premises.

Table 28: Increased risk of incident by unlicensed premises relative to licensed premises

Scheduled category (code)	Scheduled category (name)	Number of licensed premises	Year 1	Year 2	Year 3	Year 4	Year 5 to Year 10
A01	PIW management	59	9.1%	18.1%	27.2%	36.2%	45.3%
A02	Other waste treatment	1	6.6%	13.2%	19.8%	26.4%	33.0%
A02,A01	Other waste treatment; PIW management	1	2.0%	4.0%	6.0%	8.0%	10.0%
A03	Sewage treatment	237	4.9%	9.8%	14.8%	19.7%	24.6%
A04	Industrial wastewater treatment	4	8.7%	17.5%	26.3%	35.0%	43.8%
A04,A01	Industrial wastewater treatment; PIW management	1	6.6%	13.2%	19.8%	26.4%	33.0%
A05	Landfills	38	10.0%	19.9%	29.9%	39.9%	49.9%
A05,A01	Landfills; PIW management	34	8.5%	17.0%	25.5%	34.0%	42.4%
A06	Land disposal	5	3.8%	7.7%	11.5%	15.4%	19.2%
A07	Composting	11	7.7%	15.5%	23.2%	31.0%	38.7%
A07,A01	Composting; PIW management	9	7.3%	14.7%	22.1%	29.4%	36.8%
A07,A05	Composting; Landfills	4	8.7%	17.5%	26.3%	35.0%	43.8%
A07,A05,A01	Compositing; Landfills; PIW management	3	2.0%	4.0%	6.0%	8.0%	10.0%
A08	Waste to energy	10	8.8%	17.6%	26.4%	35.2%	44.0%
A08,A02	Waste to energy; Other waste treatment	1	13.2%	26.4%	39.6%	52.8%	66.0%

Scheduled category (code)	Scheduled category (name)	Number of licensed premises	Year 1	Year 2	Year 3	Year 4	Year 5 to Year 10
B03	Fish farms	22	7.6%	15.1%	22.7%	30.3%	37.8%
C01	Extractive industry and mining	20	8.5%	17.1%	25.6%	34.2%	42.7%
D01	Abattoirs	11	8.8%	17.5%	26.3%	35.1%	43.8%
D02	Rendering	9	8.1%	16.1%	24.2%	32.3%	40.3%
D02,D01	Rendering; Abattoirs	7	10.4%	20.7%	31.1%	41.5%	51.9%
D03	Animal skin tanning	1	13.2%	26.4%	39.6%	52.8%	66.0%
D05	Pet food processing	1	13.2%	26.4%	39.6%	52.8%	66.0%
D05,D01	Pet food processing; Abattoirs	2	9.9%	19.8%	29.7%	39.6%	49.5%
D06	Food processing	8	8.3%	16.5%	24.8%	33.0%	41.3%
D07	Milk processing	22	6.8%	13.7%	20.5%	27.4%	34.2%
D08	Edible oil	4	10.4%	20.8%	31.2%	41.6%	52.0%
E01	Textiles	1	6.6%	13.2%	19.8%	26.4%	33.0%
F02	Fibreboard	3	7.3%	14.5%	21.8%	29.1%	36.3%
F03	Paper pulp mills	1	6.6%	13.2%	19.8%	26.4%	33.0%
F03,A05	Paper pulp mills; Landfills	1	6.6%	13.2%	19.8%	26.4%	33.0%
G01	Chemical works	23	10.3%	20.5%	30.8%	41.1%	51.3%
G01,A01	Chemical works; PIW management	2	9.9%	19.8%	29.7%	39.6%	49.5%
G01,A04	Chemical works; Industrial wastewater treatment	1	13.2%	26.4%	39.6%	52.8%	66.0%
G01,C01	Chemical works; Extractive industry and mining	1	6.6%	13.2%	19.8%	26.4%	33.0%
G02	Coal processing	2	13.2%	26.4%	39.6%	52.8%	66.0%
G03	Oil and gas refining	7	9.4%	18.9%	28.3%	37.7%	47.1%
G03,A04	Oil and gas refining; Bulk storage	1	13.2%	26.4%	39.6%	52.8%	66.0%
G04	Bulk storage	9	9.0%	18.0%	27.1%	36.1%	45.1%
G04,A01	Bulk storage; PIW management	1	6.6%	13.2%	19.8%	26.4%	33.0%
G05	Container washing	2	6.6%	13.2%	19.8%	26.4%	33.0%
G05,A01	Container washing; PIW management	2	9.9%	19.8%	29.7%	39.6%	49.5%
H01	Cement	2	9.9%	19.8%	29.7%	39.6%	49.5%
H01,A05	Cement; Landfills	1	13.2%	26.4%	39.6%	52.8%	66.0%
H01,C01	Cement; Extractive industry and mining	1	13.2%	26.4%	39.6%	52.8%	66.0%
H03	Ceramics	2	9.9%	19.8%	29.7%	39.6%	49.5%
H03,C01	Ceramics; Extractive industry and mining	2	6.6%	13.2%	19.8%	26.4%	33.0%
H03,C01,A05	Ceramics; Extractive industry and mining; Landfills	1	2.0%	4.0%	6.0%	8.0%	10.0%
H05	Glass works	3	8.8%	17.6%	26.4%	35.2%	44.0%
I01	Primary metallurgical	1	2.0%	4.0%	6.0%	8.0%	10.0%
I02	Metal melting	5	8.7%	17.4%	26.2%	34.9%	43.6%
I02,I01,A01	Metal melting; Primary metallurgical; PIW management	1	6.6%	13.2%	19.8%	26.4%	33.0%
I03	Metal galvanizing	7	5.6%	11.1%	16.7%	22.3%	27.9%
I05	Can and drum coating	4	3.2%	6.3%	9.5%	12.6%	15.8%
I06	Vehicle assembly	3	5.7%	11.5%	17.2%	22.9%	28.7%
I06,I02	Vehicle assembly; Metal melting	1	6.6%	13.2%	19.8%	26.4%	33.0%
J01	Printing	14	9.9%	19.8%	29.7%	39.6%	49.5%
K01	Power stations	11	9.9%	19.8%	29.7%	39.6%	49.5%
K01,C01,A05	Power stations; Extractive industry and mining; Landfills	1	2.0%	4.0%	6.0%	8.0%	10.0%
K01,C01,A05,A01	Power stations; Extractive industry and mining; Landfills; PIW Management	3	7.3%	14.5%	21.8%	29.1%	36.3%
K04	Water desalination plants	1	6.6%	13.2%	19.8%	26.4%	33.0%
L01	General emissions to air	17	8.3%	16.7%	25.0%	33.4%	41.7%

Scheduled category (code)	Scheduled category (name)	Number of licensed premises	Year 1	Year 2	Year 3	Year 4	Year 5 to Year 10
L01,G01	General emissions to air; Chemical works	1	13.2%	26.4%	39.6%	52.8%	66.0%
L01,G02	General emissions to air; Coal processing	1	6.6%	13.2%	19.8%	26.4%	33.0%
L01,K01	General emissions to air; Power stations	1	13.2%	26.4%	39.6%	52.8%	66.0%
L03	Tunnel ventilation systems	2	6.6%	13.2%	19.8%	26.4%	33.0%

Source: EPA estimates.

9.2.4 Reduced government incident response, site inspection and assessment costs

EPA estimates that it costs $1,270 on average to manage and coordinate the short-term response. The number of incidents is shown in Table 29 below.

Table 29: Number of avoided incidents

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
4	7	11	15	19	19	19	19	19	19

The number of avoided incidents is calculated using the number of licensed premises and number of unlicensed premises multiplied by their relative likelihood of an incident. This was calculated for the base case and the option, and the difference provided the likely number of avoided incidents per annum.

9.2.5 Reduced government incident remediation costs

The number of avoided incidents is calculated as per the discussion above.

9.2.6 Industry costs for annual reporting

The number of licences is shown in the table below. This is then multiplied by the annual reporting costs of $21,177 per licensee.[277]

Table 30: Number of licences by category and region (2016)

Category	Gippsland	Metro	North East	North West	Not assigned	South West	Southern Metro	#N/A	Grand Total
Total	**96**	**181**	**113**	**85**	**1**	**101**	**91**	**2**	**670**

9.2.7 Industry costs of compliance with licensee conditions

The number of licensees is shown in Table 30 in the sub-section above. The cost of compliance per licensee of $27,919 was taken from schedule-wide estimates determined in 2009 and updated to 2015 prices, from the 2009 report commissioned by VCEC.[278]

9.2.8 Industry costs of works approval applications

The average number of works approvals was calculated using works approval data from 2010 to 2015.

Table 31: Average number of works approvals (2010-2015)

Year	2010	2011	2012	2013	2014	2015	Average
Number	26	39	41	45	48	28	37.8

Source: EPA data.

[277] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009.
[278] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009..

The average cost of a works approval application per premises of $31,790 was taken from schedule-wide estimates determined in 2009 and updated to 2015 prices, from the 2009 report commissioned by VCEC.[279]

9.2.9 Industry costs of works approval exemption applications

The average number of works approval exemption applications was calculated using works approval data from 2010 to 2015.

Table 32: Average number of works approvals exemption applications (2010-2015)

Year	2010	2011	2012	2013	2014	2015	Average
Number	5	3	8	11	37	47	18.5

Source: EPA data.

The average cost of a works approval exemption application per premises of $5,843 was taken from schedule-wide estimates determined in 2009 and updated to 2015 prices, from the 2009 report commissioned by VCEC.[280]

9.2.10 Industry costs of works approval delay costs

The average number of works approvals was calculated using works approval data from 2010 to 2015.

Table 33: Average number of works approvals (2010-2015)

Year	2010	2011	2012	2013	2014	2015	Average
Number	26	39	41	45	48	28	37.8

Source: EPA data.

The average works approval delay costs per premises of $97,929 comprised $61,206 in holding costs and $36,724 in standby costs. These figures were taken from schedule-wide estimates determined in 2009 and updated to 2015 prices, from the 2009 report commissioned by VCEC.[281]

9.2.11 Industry works approval compliance cost per premises

The average number of works approvals was calculated using works approval data from 2010 to 2015 (see Table 33).

The average works approval compliance costs per premises of $28,211. These figures were taken from schedule-wide estimates determined in 2009 and updated to 2015 prices, from the 2009 report commissioned by VCEC.[282]

9.2.12 Government costs – administration of licensing

Government costs of administering licences are calculated using the 670 licences multiplied by the cost per licence of $3,870.[283]

9.2.13 Government costs – routine compliance investigations

Government costs of routine compliance investigations are calculated using the 670 licences multiplied by the cost per licence of $1,136.[284]

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[279] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009.
[280] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009.
[281] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009.
[282] These estimates are based on schedule-wide estimates determined in 2009 and updated to 2015 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009.
[283] EPA Victoria, *Licensing administration costs – internal data,* 2016.
[284] EPA Victoria, *Routine compliance investigations administration costs – internal data,* 2016.

9.2.14 Government costs – administration of financial assurances

Government costs of administering financial assurances are calculated using the 144 financial assurances multiplied by the cost per licence of $1,347.[285]

9.2.15 Government costs – works approval application administration

The average number of works approvals was calculated using works approval data from 2010 to 2015 (see Table 33).

Government costs of administering licences are calculated using the 37.8 works approvals per annum multiplied by the cost per licensee of $73,772.[286]

9.2.16 Government costs – Works approval exemption application administration

The average number of works approval exemption applications was calculated using works approval data from 2010 to 2015.

Table 34: Average number of works approvals exemption applications (2010-2015)

Year	2010	2011	2012	2013	2014	2015	Average
Number	5	3	8	11	37	47	18.5

Source: EPA data.

Government costs of administering licences are calculated using the 18.5 works approvals exemption applications per annum multiplied by the cost per licensee of $2,132.[287]

[285] EPA Victoria, *Financial assurances administration costs – internal data,* 2016.
[286] EPA Victoria, *works approval administration costs – internal data,* 2016.
[287] EPA Victoria, *works approval administration costs – internal data,* 2016.

9.3 Specific assumptions for Option 2

Specific assumptions used for a number of the Option 2 components differed from the average assumptions used in the model (which were applied to Option 1). For instance, the reduction in Government costs from the removal of a works approval requirement in specific instances may not be reflective of the average cost across all works approvals. Therefore, specific estimates have been used in a number of instances that vary from the averages applied in Option 1.

These are summarised below:

Description	Relevant Option(s)	Value
Average EPA cost of assessing a specific classification application (regarding temporary storage of asbestos / lower-hazard liquid PIW)	2A, 2B	$1,249.34
Average cost to industry of a specific classification application	2A, 2B	5 hours x average wage
Average EPA cost regarding an EPA-granted works approval exemption	2C, 2D	$2,912.45
Average EPA cost regarding a works approval	2E, 2F, 2G	$44,739.96
Average EPA cost regarding a licence	2E, 2F, 2G	$8,283.99
Average EPA cost regarding a licence amendment	2E, 2F, 2G	$4,849.78
Average cost to industry of a licence amendment	2E, 2F, 2G	$3,926.67

Source: EPA data and estimates.

J. Case study – example of issues with a smaller landfill

Port Fairy's East Beach is the site of two former landfills. The larger of the two, the "Old Town Municipal Tip" operated from the 1940s until the 1980s and is responsible for an estimated 10,000 cubic metres of waste buried in the dunes.[288] It began breaching in 2015 through erosion and has resulted in debris being scattered along the beach. In response, the Moyne Council took the short-term measure of increasing the size of its rock wall to protect the dunes from rising tides.[289] The Council estimates that the preferred option - of removing the waste entirely - is likely to cost $30 million.[290] While Port Fairy's Old Town Municipal Tip was established and operated well before Victoria's scheduled premises and works approval system was introduced in 1982, the example provides evidence of the types of long-term, large-scale environmental risks presented by poorly planned landfills – and even those servicing small populations such as in Port Fairy.[291]

[288] I. Sutherland, 'History comes back to haunt us', *The Warrnambool Standard*, 16 May 2015, http://www.standard.net.au/story/3082527/history-comes-back-to-haunt-us/
[289] E. Himmelreich, 'Eroding East beach landfill could cost $30m to fix', *The Warrnambool Standard,* 21 May 2015, available at http://www.standard.net.au/story/3093035/30m-to-clear-port-fairy-east-beach-rubbish/
[290] Himmelreich
[291] Port Fairy's population was approximately 2000 in the 1940s - Victorian Places, *Port Fairy*, http://www.victorianplaces.com.au/port-fairy .

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L. Proposed Environment Protection (Scheduled Premises) Regulations 2017

Environment Protection (Scheduled Premises) Regulations

Exposure Draft

TABLE OF PROPOSALS

Victoria

Environment Protection (Scheduled Premises) Regulations

Exposure Draft

Part 1—Preliminary

1 Objectives

The objectives of these Regulations are—

(a) to prescribe premises as scheduled premises for the purposes of the **Environment Protection Act 1970**; and

(b) to specify scheduled premises in respect of which the Authority may require a financial assurance; and

(c) to specify scheduled premises in respect of which the landfill levy is payable; and

(d) to specify scheduled premises in respect of which the environment protection levy is payable; and

(e) to provide for exemptions from provisions of the Act; and

(f) to make consequential amendments to the Environment Protection (Fees) Regulations 2012.

2 Authorising provision

These Regulations are made under section 71 of the **Environment Protection Act 1970**.

3 Commencement

These Regulations come into operation on 25 June 2017.

4 Revocations

The following Regulations are **revoked**—

(a) the Environment Protection (Scheduled Premises and Exemptions) Regulations 2007[1];

(b) the Environment Protection (Scheduled Premises and Exemptions) Amendment Regulations 2009[2];

(c) the Environment Protection (Scheduled Premises and Exemptions), (Industrial Waste Resource) and (Fees) Amendment Regulations 2015[3].

5 Definitions

In these Regulations—

ambulance service has the same meaning as in the **Ambulance Services Act 1986**;

animal unit means 1 head of cattle or 5 of any other kind of mammal;

chemical process means any process where a chemical change occurs but does not include physical processes such as mixing or blending;

Chief Health Officer has the same meaning as in the **Public Health and Wellbeing Act 2008**;

Class 2 indicator means a Class 2 indicator in the State environment protection policy (Air Quality Management);

Class 3 indicator means a Class 3 indicator in the State environment protection policy (Air Quality Management);

compost means an organic product that has undergone controlled aerobic and thermophilic biological transformation through the composting process to achieve pasteurization and reduce phytotoxic compounds, and achieved a specified level of maturity required for compost;

contaminated soil has the same meaning as it has in the Environment Protection (Industrial Waste Resource) Regulations 2009[4];

digestate means the material remaining after the anaerobic digestion of organic waste;

EPU (equivalent passenger units), in relation to a type of tyre in column 2 of the Table in Schedule 2, means the corresponding value in column 3 of that Table;

health service has the same meaning as in the **Public Health and Wellbeing Act 2008**;

information technology and telecommunications equipment means products and equipment used for the collection, storage, processing, presentation, communication, transmission or receipt of sound, images, video or other information by electronic means or telecommunications;

odorous compound means any chemical compound, including a volatile organic compound, that is offensive to the senses of human beings when dispersed in the air;

particles means any particles referred to in the State environment protection policy (Air Quality Management) including the following indicators—

(a) Particles as $PM_{2.5}$;

(b) Particles as PM_{10};

(c) total suspended particles;

(d) TSP (nuisance dust);

prescribed industrial waste has the same meaning as in the Environment Protection (Industrial Waste Resource) Regulations 2009;

reprocessing means changing the physical structure or properties of a waste material to allow for further use;

soil conditioner means any composted or other pasteurized organic product, including vermicast, manure and mushroom substrate, that is suitable for adding to soils, including products described as "soil amendment", "soil additive", "soil improver" and similar, but excluding polymers that do not biodegrade, such as plastics, rubber and coatings;

source means a point from which wastes are emitted to the air environment;

specified electronic waste means waste rechargeable batteries, cathode ray tube monitors and televisions, flat panel monitors and televisions, information technology and

telecommunications equipment, lighting and photovoltaic panels;

State environment protection policy (Air Quality Management) means the **Environment Protection Act 1970**: State environment protection policy (Air Quality Management) published in the Victoria Government Gazette S240 on 21 December 2001, as in force from time to time;

the Act means the **Environment Protection Act 1970**;

UN Number has the same meaning as in regulation 5 of the Dangerous Goods (Transport by Road or Rail) Regulations 2008[5];

volatile organic compound means any chemical compound based on carbon with a vapour pressure of at least 0·010 kPa at a temperature of 25° Celsius or having a corresponding volatility under the particular conditions of use except carbon monoxide (CO), carbon dioxide (CO_2), carbonic acid, metallic carbides or carbonate salts;

waste tyres means whole rubber tyres which are considered waste for the purposes of the Act;

water corporation has the same meaning as in the **Water Act 1989**.

Part 2—Scheduled premises

6 Scheduled premises

For the purposes of paragraph (b) of the definition of ***scheduled premises*** in section 4(1) of the Act, a premises of a class described in column 2 of the Table in Schedule 1 is prescribed as a scheduled premises.

7 How conflict to be resolved if premises falls into more than one description

If a scheduled premises falls within 2 or more of the descriptions in column 2 of the Table in Schedule 1 and the premises is exempt in relation to at least one description but is not exempt in relation to one or more of the other descriptions, that exemption does not apply to the premises.

Part 3—General exemptions

8 Application of exemption provisions

Section 19A or 20(1) of the Act do not apply in respect to the occupier of any scheduled premises to the extent set out in—

(a) regulations 9 to 12; or

(b) column 3 of the Table in Schedule 1.

Notes

1 Regulations 9 to 12 set out general exemptions.

2 Column 3 of the Table in Schedule 1 sets out category specific exemptions.

9 Noise

(1) A works approval under section 19A(1)(d) of the Act is not required with respect to emissions of noise from a source emitting less than 80dB(A) sound power level.

(2) A works approval under section 19A(1)(d) of the Act is not required with respect to emissions of noise from premises that do not otherwise require works approval in respect of the premises.

(3) Subregulation (2) does not apply with respect to emissions of noise from premises of a type numbered A08, D07, F02, F03, G03 or K01 in column 1 of the Table in Schedule 1.

10 Air

(1) A works approval under section 19A(1) or 19A(2) of the Act or a licence under section 20(1) of the Act is not required with respect to discharges or emissions to air from the following—

(a) a source, other than an incinerator or an afterburner, discharging or emitting less than—

(i) 100 kg per day Oxides of Nitrogen; and

(ii) 10 kg per day Oxides of Sulphur; and

(iii) 100 kg per day Carbon Monoxide; and

(iv) 5 kg per day volatile organic compounds of which none are odorous compounds (except those substances referred to in subparagraphs (vii) and (viii)); and

(v) in the case of—

(A) a source that discharges or emits at any time during the 12 months before 25 June 2017, 10 kg per day particles (except lead, respirable crystalline silica and asbestos); and

(B) any other source, 10 kg per day particles (except lead, respirable crystalline silica and asbestos), including no more than 4 kg per day Particles as $PM_{2·5}$; and

(vi) 0·1 gram per minute of lead; and

(vii) 0·1 gram per minute of any substance classified as a Class 2 indicator (except Particles as $PM_{2·5}$); and

(viii) 0·1 gram per minute of any substance classified as a Class 3 indicator;

(b) a standby engine;

(c) fire fighting training activities;

(d) a spray booth, extractor vent system or fume cupboard used in product development or in a laboratory;

(e) a safety relief valve or rupture disc;

(f) a vent on a wastewater treatment system except at a sewage treatment plant;

(g) a general room or building ventilation point;

(h) a food cooker or kitchen range;

(i) an acid or alkali tank;

(j) vents on fuel storage tanks which meet technology specifications acceptable to the Authority;

(k) hand-held or other portable cleaning, maintenance and construction equipment;

(l) extractive industry or mining operating in accordance with the **Mineral Resources (Sustainable Development) Act 1990**.

(2) A licence under section 20(1) of the Act is not required with respect to discharges or emissions to air from boilers fired solely by natural gas with a total rated capacity of less than 20 megawatts.

11 Land or water

A works approval under section 19A(1)(a) of the Act or a licence under section 20(1)(a) of the Act is not required with respect to discharges or deposits to land or water from the following—

(a) an enclosed drain connected to a sewer;

(b) a municipal stormwater drainage system;

(c) an emergency relief structure or other installations in the sewers of a sewerage authority;

(d) an effluent reuse scheme or activity which meets discharge, deposit and operating specifications acceptable to the Authority.

12 Wastes

A works approval under section 19A(1)(b) or 19A(1)(c) of the Act or a licence under section 20(1) of the Act is not required with respect to the following—

(a) storage of 40 cubic metres or less of any biomedical waste not generated at the premises—

(i) by a council, a health service or an ambulance service; or

(ii) for a period of no more than 60 days in the event of an emergency, by any organisation or facility approved by the Authority in consultation with the Chief Health Officer;

(b) a temporary plant for the onsite treatment of waste not generated at the premises where the activity meets technology, deposit, discharge and emission specifications acceptable to the Authority and which is limited to a maximum cumulative operating time of 12 months within any 3 year period;

(c) a biosolids reuse scheme or activity which meets deposit and operating specifications acceptable to the Authority;

(d) temporary storage of less than 10 cubic metres of double wrapped, non-friable asbestos not generated at the premises for a period of no more than 60 days on land—

(i) permitted under a planning scheme made under the **Planning and Environment Act 1987** for use as a transfer station and which is allowed to accept asbestos; or

(ii) used as a depot by, or for the purposes of, a public utility and which is 100 metres or more from sensitive land uses, including residential premises, health services, child care centres and education centres;

(e) temporary storage of 1000 litres or less of liquid prescribed industrial waste not generated at the premises where the substance is listed with UN Number 30XY, for a period of no more than 60 days.

Part 4—Financial assurances

13 Scheduled premises requiring a financial assurance

For the purposes of sections 21(1)(ba)(i) and 31A(2A)(a) of the Act, a scheduled premises is prescribed as a scheduled premises requiring a financial assurance if column 4 of the Table in Schedule 1 in respect of those premises states that a financial assurance is required.

Part 5—Environment protection levy

14 Environment protection levy

For the purposes of section 24A(1) of the Act, a scheduled premises is prescribed as a scheduled premises in respect of which the environment protection levy is required to be paid if the premises—

(a) stores, processes or uses in excess of the prescribed quantities and prescribed concentrations of notifiable chemicals; or

(b) stores, processes, treats, disposes of or otherwise handles prescribed industrial waste.

Part 6—Landfill levy

15 Scheduled premises required to pay landfill levy

For the purposes of section 50S of the Act, a scheduled premises is prescribed as a scheduled premises in respect of which the landfill levy is required to be paid—

(a) if the premises is of a type numbered A01 or A05 in column 1 of the Table in Schedule 1; and

(b) the premises is required to be licensed.

Note

Certain premises are not subject to the levy—see section 50T of the Act.

Part 7—Temporary exemption

16 Transitional provision for certain premises reprocessing electronic and glass waste

(1) Subject to subregulation (2), section 20(1) of the Act does not apply until 25 January 2018 to an occupier of premises, if that premises has the capacity to reprocess more than—

(a) 500 tonnes of specified electronic waste per year; or

(b) 10 000 tonnes of glass waste per year.

(2) If an occupier of premises who is exempted under subregulation (1) applies for a licence under section 20 of the Act before 25 January 2018, that section does not apply to the occupier until—

(a) the Authority issues a licence to the occupier; or

(b) the Authority refuses to issue a licence to the occupier.

Part 8—Environment Protection (Fees) Regulations 2012

17 Amendment of Schedule 2

In the Table in Schedule 2 to the Environment Protection (Fees) Regulations 2012[6]—

(a) for item 5 **substitute**—

"5.	A07 (Organic waste processing)	Premises on which organic waste is processed by aerobic or anaerobic biological conversion and which—	
		accept 100 to 300 tonnes or 200 to 600 cubic metres of organic waste, or produce 50 to 150 tonnes of soil conditioner, compost or digestate, per month	140 fee units
		accept 301 to 1000 tonnes or 601 to 2000 cubic metres of organic waste, or produce 151 to 500 tonnes of soil conditioner, compost or digestate, per month	297·5 fee units
		accept 1001 to 3000 tonnes or 2001 to 6000 cubic metres of organic waste, or produce 501 to 1500 tonnes of soil conditioner, compost or digestate, per month	490·25 fee units

		accept over 3000 tonnes or over 6000 cubic metres of organic waste, or produce over 1500 tonnes of soil conditioner, compost or digestate, per month	910·25 fee units";

(b) for item 9 **substitute**—

"9.	B03 (Fish farms)	Land based fish farms or other on-shore facilities for the cultivation of edible aquatic organisms with a design water flow rate of 0·2 or more megalitres per day, discharging to—	
		inland waters;	70 fee units
		marine waters	140 fee units".

Schedule 1—Scheduled premises table

Regulations 6, 7, 8(b), 9(3), 13, 15

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
A: Waste treatment, disposal and recycling			
A01 (PIW management)	Storage, treatment, reprocessing, containment or disposal facilities handling any prescribed industrial waste not generated at the premises.	No	Yes
A02 (Other waste treatment)	Premises on which waste is immobilised, thermally degraded or incinerated, or with the capacity to reprocess more than 500 tonnes of specified electronic waste per year.	No	No
A03 (Sewage treatment)	Premises on or from which sewage (including sullage) effluent, exceeding a design or actual flow rate of 5000 litres per day, is treated, discharged or deposited.	Premises occupied by a water corporation are exempt from works approval under section 19A of the Act in relation to	No

Column 1	*Column 2*	*Column 3*	*Column 4*
Type number and summary description	*Description of scheduled premises**	*Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Is a financial assurance required?*
		modification works in accordance with specifications acceptable to the Authority. Premises discharging or depositing waste solely to land at a design capacity of not more than 100 000 litres per day in accordance with specifications acceptable to the Authority are exempt from licensing under section 20(1) of the Act.	
A04 (Industrial wastewater treatment)	Premises on or from which industrial wastewater effluent not generated at the premises, exceeding a design or actual flow rate of 5000 litres per day, is discharged or deposited.	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
A05 (Landfills)	Landfills used for the discharge or deposit of solid wastes (including solid industrial wastes) onto land except premises with solely land discharges or deposits, used only for the discharge or deposit of mining or extractive industry wastes and in accordance with the **Mineral Resources (Sustainable Development) Act 1990**.	Municipal landfill facilities occupied by a municipal council, in use before 25 June 2017 and serving less than 500 people are exempt from works approval under section 19A of the Act. Municipal landfill facilities occupied by a municipal council and serving less than 5000 people are exempt from licensing under section 20(1) of the Act.	Yes
A06 (Land disposal)	Land disposal facilities for the disposal of nightsoil, septic tank sludge or sewage treatment plant sludge.	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
A07 (Organic waste processing)	Premises on which organic waste is processed by aerobic or anaerobic biological conversion and which— (a) accept more than 100 tonnes or 200 cubic metres of organic waste per month; or (b) produce more than 50 tonnes of soil conditioner, compost or digestate per month.	Premises that process organic waste generated at the premises and retain the processed organic waste on the premises are exempt from works approval under section 19A of the Act and licensing under section 20(1) of the Act.	No
A08 (Waste to energy)	Premises which recover energy from waste at a rated capacity of at least 3 megawatts of thermal capacity or at least 1 megawatt of electrical power.	No	No
A09 (Waste tyre storage)	Premises with more than 40 tonnes or 5000 EPU of waste tyres at any time.	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
B: Primary industry and allied operations			
B01 (Intensive animal industry)	Premises upon which are situated piggeries, cattle feedlots, sheep feedlots, goat feedlots, goat dairies or dairy freestalls, where more than 5000 animals are confined for the purposes of agricultural production.	Premises discharging or depositing waste solely to land are exempt from licensing under section 20(1) of the Act.	No
B02 (Livestock saleyards or holding pens)	Livestock saleyards or holding pens which are designed to have a throughput of at least 10 000 animal units per year.	Premises discharging or depositing waste solely to land are exempt from licensing under section 20(1) of the Act.	No
B03 (Fish farms)	Land based fish farms or other on-shore facilities for the cultivation of edible aquatic organisms with a design water flow rate of 0·2 or more megalitres per day.	Premises discharging or depositing waste solely to land are exempt from licensing under section 20(1) of the Act.	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
C: Mining			
C01 (Extractive industry and mining)	Extractive industry and mining but excluding eductor dredging.	Premises, with solely land discharges or deposits, used only for the discharge or deposit of mining or extractive industry wastes and that are in accordance with the **Mineral Resources (Sustainable Development) Act 1990** are exempt from works approval under section 19A of the Act and licensing under section 20(1) of the Act.	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
D: Animal derived by-products and food			
D01 (Abattoirs)	Abattoirs, knackeries or poultry processing works which are designed to have a throughput of more than 200 tonnes per year.	Premises discharging less than 100 000 litres per day of treated wastewater solely to land in accordance with specifications acceptable to the Authority are exempt from licensing under section 20(1) of the Act.	No
D02 (Rendering)	Rendering works, being works for the manufacture or extraction of substances derived from animals that are not suitable for human consumption and which are designed to have a throughput of more than 200 tonnes per year.	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
D03 (Animal skin tanning)	Animal skin tanning, or re-tanning works.	No	No
D04 (Seafood processing)	Seafood processing works with a processing capacity of more than 200 tonnes per year of seafood.	These premises are exempt from licensing under section 20(1) of the Act.	No
D05 (Pet food processing)	Pet food processing or pet food manufacturing works, which are designed to produce at least 200 tonnes per year of pet food.	No	No
D06 (Food processing)	Food processing works, being works in which food is preserved, canned, bottled, or dried by means of fuel fired plant, and which are designed to produce at least 200 tonnes per year of food.	No	No
D07 (Milk processing)	Milk processing or dairy product manufacturing works, which are designed to produce at least 200 tonnes per year of product(s).	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
D08 (Edible oil)	Edible oil or fat processing works, where seed crushing, solvent extraction or edible oil or fat deodorising takes place, which are designed to produce at least 2000 tonnes per year of product(s).	No	No
D09 (Beverage manufacturing)	Beverage manufacturing or processing works except for— (a) wineries that process less than 300 tonnes per year of grapes and discharge or deposit waste solely to land; and (b) other types of beverage manufacturing or processing works with a production capacity of less than 300 kilolitres per year and that discharge or deposit waste solely to land.	Premises discharging or depositing waste solely to land are exempt from licensing under section 20(1) of the Act.	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
E: Textiles			
E01 (Textiles)	Textile manufacturing and processing works including carpet manufacturing, wool scouring, textile bleaching, textile dyeing and textile finishing works.	Premises are exempt from licensing under section 20(1) of the Act for discharges or emissions to the atmosphere, except those premises engaging in textile finishing using chemical treatment.	No
F: Wood and wood derivatives			
F01 (Timber preservation)	Timber preserving works.	These premises are exempt from licensing under section 20(1) of the Act.	No
F02 (Fibreboard)	Fibreboard, particle board, or plywood works, being works in which wood, wood products or other cellulose materials are processed to form fibreboard, particle board or plywood.	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
F03 (Paper pulp mills)	Paper pulp mills, being works in which wood, wood products, waste paper or other cellulose materials are processed to form pulp, paper or cardboard.	Premises producing less than 30 000 tonnes per year of pulp, paper or cardboard are exempt from licensing under section 20(1) of the Act.	No
G: Chemicals including petroleum			
G01 (Chemical works)	Chemical works— (a) where products are manufactured by any chemical process, and which are designed to produce at least 2000 tonnes per year of chemical products; or (b) where acrylic compounds, herbicides, insecticides or pesticides are manufactured by any chemical process.	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
G02 (Coal processing)	Coal processing works, being works in which coal is converted to gaseous, liquid or solid products.	No	No
G03 (Oil and gas refining)	Oil or gas refinery works, being works in which crude oil or gas is refined or hydrocarbon fractions are produced.	No	No
G04 (Bulk storage)	Bulk storage facilities which have a total design capacity of more than 1 megalitre (in tanks exceeding 10 000 litres capacity) and which store compounds of carbon (including petroleum products or oil) which— (a) contain at least one carbon to carbon bond, as well as derivatives of methane; and (b) are liquid at Standard Temperature and Pressure; or (c) contain any substance classified as a Class 3 indicator.	No	Yes

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
G05 (Container washing)	Premises receiving bulk transport containers for the purpose of internal washing or cleansing where the containers have contained— (a) prescribed industrial waste; or (b) any material that is classified as dangerous goods under the **Road Transport (Dangerous Goods) Act 1995**.	No	Yes
H: Non-metallic minerals			
H01 (Cement)	Cement works in which— (a) clays or limestone materials are used in either a furnace or a kiln in the production of cement clinker; or (b) cement clinker or clays or limestone or like materials are ground.	No	No

Column 1	*Column 2*	*Column 3*	*Column 4*
Type number and summary description	*Description of scheduled premises**	*Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Is a financial assurance required?*
H02 (Bitumen (asphalt) batching)	Bitumen or asphalt batching works which are designed to have a throughput of at least 100 tonnes per week.	These premises are exempt from licensing under section 20(1) of the Act.	No
H03 (Ceramics)	Ceramic works, being works in which bricks, tiles, pipes, pottery goods or refractories are processed in dryers or kilns, which are designed to produce at least 10 000 tonnes per year of ceramic product(s).	No	No
H04 (Mineral wool)	Mineral wool or ceramic fibre works.	No	No
H05 (Glass works)	Glass works, being works manufacturing glass by the melting of raw materials or with the capacity to reprocess more than 10 000 tonnes of glass waste per year.	No	No
I: Metals and engineering			
I01 (Primary metallurgical)	Primary metallurgical works, being works in which ores or ore concentrates are processed or smelted to produce metal.	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
I02 (Metal melting)	Metal melting works, being works in which any metal melting is performed in furnaces, having a total design rate of at least 10 tonnes per hour for ferrous foundries, or 2 tonnes per hour for non-ferrous foundries.	No	No
I03 (Metal galvanising)	Metal galvanising works which are designed to have a throughput of at least 5000 tonnes per year of steel.	No	No
I04 (Metal finishing)	Metal finishing works, including electroplating of metal or plastic, anodising, electroforming or printed circuit board manufacturing.	These premises are exempt from licensing under section 20(1) of the Act for discharges or emissions to the atmosphere.	No
I05 (Can and drum coating)	Can and drum coating works, in which surface coating is applied to metal before or after the metal is formed into cans, closures, coils or drums.	Premises which discharge or emit to the atmosphere less than 100 kilograms per day of volatile organic compounds are	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
		exempt from licensing under section 20(1) of the Act.	
I06 (Vehicle assembly)	Vehicle assembly or sub-assembly works which are designed to produce at least 2000 units per year.	No	No
J: Printing			
J01 (Printing)	Printing works emitting more than 100 kilograms per day of volatile organic compounds.	No	No
K: Utilities			
K01 (Power stations)	Premises which generate electrical power from the consumption of a fuel at a rated capacity of at least 5 megawatts of electrical power.	Premises using solely natural gas turbines and which have a total rated capacity of less than 20 megawatts are exempt from licensing under section 20(1) of the Act.	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
K02 (Carbon geosequestration)	Premises which capture, separate, process or store waste carbon dioxide for the purpose of geological disposal.	Premises used only for greenhouse gas sequestration operations, as defined by the **Greenhouse Gas Geological Sequestration Act 2008**, and carried out in accordance with that Act, are exempt from works approval under section 19A of the Act and licensing under section 20(1) of the Act.	No
K04 (Water desalination plants)	Premises at which salt is removed from water for potable or other uses that have a design capacity to process more than 1 megalitre per day of feed water.	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
L: Other			
L01 (General emissions to air)	Premises which discharge or emit, or from which it is proposed to discharge or emit, to the atmosphere any of the following— (a) at least 100 kilograms per day of— (i) volatile organic compounds; or (ii) particles; or (iii) sulphur oxides; or (iv) nitrogen oxides; or (v) other acid gases (excluding carbon dioxide); or (b) at least 500 kilograms per day of carbon monoxide; or	No	No

Column 1 *Type number and summary description*	*Column 2* *Description of scheduled premises**	*Column 3* *Does a category specific exemption from works approval under section 19A or licensing under section 20(1) apply?†*	*Column 4* *Is a financial assurance required?*
	(c) any quantity from any industrial plant or fuel burning equipment of any substance classified as a Class 3 indicator.		
L02 (Contaminated sites—onsite soil containment)	On-site retention of contaminated soil in a facility designed for the purpose of containing, or preventing further, contamination and which can hold at least 1000 m³ of contaminated soil.	These premises are exempt from licensing under section 20(1) of the Act.	Yes
L03 (Tunnel ventilation systems)	Road tunnel ventilation systems.	No	No
L04 (Contaminated sites—long term management)	Premises on which there is soil or groundwater contamination in respect of which a notice has been issued under the Act requiring long term management.	These premises are exempt from works approval under section 19A of the Act and licensing under section 20(1) of the Act.	Yes

*(*Note—these premises require works approvals or licences*)

†(*Note that a general exemption may also apply under regulations 9 to 12*)

Schedule 2—EPU values table

Regulation 5

Column 1 *Item*	*Column 2* *Type of tyre*	*Column 3* *EPU value*
1.	Motorcycle	0·5
2.	Passenger car	1
3.	Light truck	2
4.	Truck	5
5.	Super single	10
6.	Solid small (diameter ≤ 0·3 m high)	3
7.	Solid medium (diameter > 0·3 m ≤ 0·45 m)	5
8.	Solid large (diameter > 0·45 m ≤ 0·6 m)	7
9.	Solid extra large (diameter > 0·6 m)	9
10.	Tractor small (diameter ≤ 1 m high)	15
11.	Tractor large (diameter > 1 m ≤ to 2 m)	25
12.	Forklift small (diameter ≤ 0·3 m high)	2
13.	Forklift medium (diameter > 0·3 m ≤ 0·45 m)	4
14.	Forklift large (diameter > 0·45 m ≤ 0·6 m)	6
15.	Grader	15
16.	Earthmover small (diameter ≤ 1 m high)	20
17.	Earthmover medium (diameter > 1 m ≤1·5 m)	50
18.	Earthmover large (diameter >1·5 m ≤ 2 m)	100
19.	Earthmover extra large (diameter > 2 m ≤ 3 m)	200
20.	Earthmover giant (diameter > 3 m ≤ 4 m)	400
21.	Bobcat	2

Endnotes

[1] Reg. 4(a): S.R. No. 77/2007 as amended by S.R. Nos 152/2009 and 25/2015.

[2] Reg. 4(b): S.R. No. 152/2009.

[3] Reg. 4(c): S.R. No. 25/2015.

[4] Reg. 5 def. of ***contaminated soil***: S.R. No. 21/2008 as amended by S.R. No. 25/2015.

[5] Reg. 5 def. of ***UN Number***: S.R. No. 77/2007 as amended by S.R. Nos 37/2011, 125/2013, 91/2015 and 156/2015.

[6] Reg. 17: S.R. No. 115/2012 as amended by S.R. No. 25/2015.

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Fee Units

These Regulations provide for fees by reference to fee units within the meaning of the **Monetary Units Act 2004**.

The amount of the fee is to be calculated, in accordance with section 7 of that Act, by multiplying the number of fee units applicable by the value of a fee unit.

The value of a fee unit for the financial year commencing 1 July 2016 is $13.94. The amount of the calculated fee may be rounded to the nearest 10 cents.

The value of a fee unit for future financial years is to be fixed by the Treasurer under section 5 of the **Monetary Units Act 2004**. The value of a fee unit for a financial year must be published in the Government Gazette and a Victorian newspaper before 1 June in the preceding financial year.

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Table of Applied, Adopted or Incorporated Matter

The following table of applied, adopted or incorporated matter is included in accordance with the requirements of regulation 5 of the Subordinate Legislation Regulations 2014.

Statutory rule provision	**Title of applied, adopted or incorporated document**	**Matter in applied, adopted or incorporated document**
Regulation 5, definition of ***Class 2 indicator***	State environment protection policy (Air Quality Management) published in the Victoria Government Gazette S 240 on 21 December 2001 and as in force from time to time	Part IV
Regulation 5, definition of ***Class 3 indicator***	State environment protection policy (Air Quality Management) published in the Victoria Government Gazette S 240 on 21 December 2001 and as in force from time to time	Part IV
Regulation 5, definition of ***particles***	State environment protection policy (Air Quality Management) published in the Victoria Government Gazette S 240 on 21 December 2001 and as in force from time to time	The whole