



Regulatory Impact Statement: Proposed Environment Protection Regulations

DELWP and EPA

August 2019

Contents

Contents	ii
Glossary	iii
Foreword	6
Executive Summary	7
PART 1 – INTRODUCTION AND GENERAL ANALYSIS	20
1 Introduction	21
2 Background	25
3 Nature and extent of problem	33
4 Options	44
PART 2 – ANALYSIS BY SPECIFIC PROBLEM AREA	49
5 Introduction to problem areas	50
6 Permissioning	55
7 On-site wastewater management systems (Septic tank systems)	71
8 Contaminated land	80
9 Waste	102
10 Litter	151
11 Plastic bags	157
12 Air	166
13 Water	187
14 Noise	199
15 Vehicle emissions	219
16 Cost recovery and fees analysis	226
17 Preferred options	262
PART 3 – IMPLEMENTATION AND EVALUATION	274
18 Implementation plan	275
19 Evaluation strategy	282
20 Stakeholder consultation	290
Appendix 1 – Environment Reference Standard	295
Appendix 2 – Noise pollution legislative and regulatory instruments	297
Appendix 3 – Contaminated land current legislative and regulatory framework	298
Appendix 4 – Marginal air and water emissions values	300
Appendix 5 – Cohort size for proposed permission tier	302
Appendix 6 – Process map example	304
Appendix 7 – List of fees	306
Appendix 8 – Comparison of proposed fees to current	316
Appendix 9 – Fee assumptions	327
Appendix 10 – Changes to soil management	328
Appendix 11 – Human rights certificates	329
Limitation of our work	333

Glossary

Acronym	Full name
AAQ NEPM	National Environment Protection (Ambient Air Quality) Measure
ADGC	Australian Dangerous Good Code
ADR	Australian Design Rules
AHHA	Australian Home Heater Association
AS/NZS	Australian and New Zealand Standard
AVSRs	Australian Vehicle Standards Rules
BPEM	Best Practice Environmental Management
CBA	Cost benefit analysis
CC Act	<i>Climate Change Act 2010</i>
CIT	Commercial, industrial or trade (premises)
CO	Carbon monoxide
C&D (waste)	Construction and demolition waste
C&I (waste)	Commercial and industrial waste
DELWP	Department of Environment, Land, Water, and Planning
DHHS	Department of Health and Human Services
DJPR	Department of Jobs, Precincts and Regions
DWMP	Domestic wastewater management plan
DoU	Declaration of Use
EIP	Environment Improvement Plan
EPA	Environment Protection Authority Victoria
EP Act 1970	<i>Environment Protection Act 1970</i>
EP Act 2017	<i>Environment Protection Act 2017</i>
EP Amendment Act 2018	<i>Environment Protection Amendment Act 2018</i>
EP (Fees) Regulations 2012	<i>Environment Protection (Fees) Regulations 2012</i>
EPA Inquiry	Ministerial Advisory Committee's Independent Inquiry into the EPA
ERS	Environment Reference Standard
GED	General environmental duty
HCs	Hydrocarbons
ICAC	NSW Independent Commission Against Corruption
IWMP	Industrial Waste Management Policy
MAC	Ministerial Advisory Committee
MCA	Multi criteria analysis
MSW	Municipal solid waste
NAPL	Non-aqueous phase liquid

Acronym	Full name
NCAA	National Clean Air Agreement
NCO	Notifiable chemical order
NIRV	Noise from Industry in Regional Victoria (Guidelines)
NPI	National pollutant inventory
NPI NEPM	NPI National Environment Protection Measure
new EP legislation	EP Act 2017 as amended by the EP Amendment Act 2018
NSW ICAC	NSW Independent Commission Against Corruption
NO _x	Oxides of nitrogen
ODS	Ozone-depleting substance
OL	Ozone layer
PIW	Prescribed Industrial Waste
PM	Particulate matter
PPAQCR	Port Philip Air Quality Control Region
proposed Regulations	proposed Environment Protection Regulations
RIS	Regulatory Impact Statement
SEPP	State Environment Protection Policy
SEPP AAQ	SEPP (Ambient Air Quality)
SEPP AQM	SEPP (Air Quality Management)
SEPP N-1	SEPP (Control of Noise from Industry, Commerce and Trade)
SEPP N-2	SEPP (Control of Music Noise from Public Premises)
SGG	Synthetic Greenhouse Gases
SoE 2018	State of the Environment Report 2018
SoA	Statement of Acceptance
SoC	Statement of Compliance
S ₀₂	Sulfur dioxide
VAGO	Victorian Auditor-General's Office
VOCs	Volatile organic compounds
WHO	World Health Organisation
WMP	Waste Management Policy
WMP POL	Waste Management Policy (Protection of the Ozone Layer)
WMP NPI	WMP (National Pollutant Inventory)
WRR	Waste and Resource Recovery (facility)
IWMP	Industrial Waste Management Policies
IWMP POL	IWMP (Protection of the Ozone Layer)
WMP SFH	WMP (Solid Fuel Heating)

Commercial-in-confidence

Terminology

The RIS refers to the Acts as follows:

- The *Environment Protection Act 1970* is referred to as the EP Act 1970.
- The *Environment Protection Act 2017* (as in place prior to the amendments in the *Environment Protection Amendment Act 2018* (itself referred to as the EP Amendment Act 2018) taking effect) is referred to as the EP Act 2017.
- The EP Act 2017 as amended by the EP Amendment Act 2018 is referred to as the new EP legislation.

Foreword

This Regulatory Impact Statement (RIS) has been prepared with respect to the proposed Environment Protection Regulations and the Environment Protection Transitional Regulations (proposed Regulations) - to be made under the new environment protection (EP) legislation.

The RIS should be read in conjunction with the proposed Regulations, which are provided as a separate document.

This RIS sets out the objectives of the proposed Regulations, explains their effect and assesses the nature and scope of the problem that the proposed Regulations seek to address. It also sets out the likely impacts (costs and benefits) and discusses regulatory and non-regulatory alternatives.

How to respond to the proposed regulatory package

Businesses, other interested parties and members of the public are invited to make submissions responding to the RIS or the proposed Regulations.

The closing date for submissions is 31 October 2019.

The Department of Environment, Land, Water and Planning (DELWP) and Environment Protection Authority Victoria (EPA) have prepared templates to assist members of the public to provide comment on the proposed Regulations and the RIS.

All documents, including the proposed Regulations and RIS, can be accessed via Engage Victoria's website:
www.engage.vic.gov.au

Alternatively, comments may be provided via email to the following email address: sublegreform@epa.vic.gov.au.

Hard copy submissions will also be accepted and should be addressed to:

Director, Policy and Regulation Unit
EPA Victoria
GPO Box 4395
Melbourne, VIC, 3001

For further assistance about the public comment process, or to obtain copies of the RIS and proposed Regulations, please call 1300 372 842 (1300 EPA VIC).

Executive Summary

The Victorian Government is modernising the Environment Protection Authority Victoria (EPA), including its governance, legislative and regulatory framework. The legislative reforms are being implemented through two packages:

- The *Environment Protection Act 2017* (the EP Act 2017), which modernises EPA's corporate governance, strengthens its status as an independent science-based regulator, and states that the objective of the EPA is to protect human health and the environment by reducing the harmful effects of pollution and waste.
- The *Environment Protection Amendment Act 2018* (the EP Amendment Act 2018), which will repeal the *Environment Protection Act 1970* (EP Act 1970) and amend the EP Act 2017 to establish a modern regulatory approach focusing on preventing waste and pollution impacts, rather than managing the impacts after they have occurred.

The EP Act 2017 has already been enacted, and the more significant changes contained in the EP Amendment Act 2018 are intended to take effect on 1 July 2020. The EP Act 2017, as amended by the EP Amendment Act 2018, is referred to as the "new EP legislation" throughout this document.

The next phase of the reform is to consider the nature of any new Environment Protection Regulations and the Environment Protection Transitional Regulations (proposed Regulations). Such regulations may be required to support the new EP legislation and EPA to achieve their objective of protecting human health and the environment by reducing the harmful effects of pollution and waste.

In accordance with the provisions of the *Subordinate Legislation Act 1994* (SL Act), a Regulatory Impact Statement (RIS) must be prepared for any proposed regulations (unless the criteria for an exemption is met, as prescribed in the SL Act).

This RIS has been prepared in accordance with the *Victorian Guide to Regulation*,¹ which provides a best practice approach to analysing any proposed regulatory intervention. This RIS estimates the impact of the proposed Regulations on Victorian businesses, the community and environment. Rather than considering proposed regulations in terms of incremental changes from regulations that are currently in place, their impact has been estimated relative to a counter-factual scenario where the new EP legislation applies but there are no regulations to supplement it. This counter-factual scenario assumes, however, that business practices would continue to be influenced by the existing "state of knowledge" of good environmental practice and good management of harms. This includes the understanding of, and arrangements organisations have in place to comply with, the current regulatory framework.

Findings of Independent Inquiry into Environment Protection Authority Victoria

In 2015, a Ministerial Advisory Committee (MAC) conducted an Independent Inquiry into the EPA (the EPA Inquiry).

The then Minister for Environment, Climate Change and Water asked the MAC to examine and advise on what the EPA needs to address both present and future environmental risks.²

The MAC's Final Report³ observed that the legislative framework under the EP Act 1970 was not meeting the community's expectations, particularly in light of major trends and emerging challenges such as:

- The changing economy including the transition from a manufacturing to service-based economy.
- Rapid population growth and urbanisation.

² Independent Inquiry into the Environment Protection Authority, 2016, page iv-v.

³ Independent Inquiry into the Environment Protection Authority, 2016

- The changing environment.
- Technological change.⁴

The MAC recommended an overhaul of Victoria’s environment protection legislation and the introduction of a general duty to minimise risks of harm to human health and the environment, as the cornerstone of a preventative focus for EPA (Recommendation 12.1).⁵ The MAC also made specific recommendations in relation to contaminated land and waste management that are relevant to the proposed Regulations.⁶

Legislative reform

The Government’s response to the EPA Inquiry endorsed a vision of EPA’s approach being prevention of harm, and the reforms are intended to deliver modern, fit-for-purpose legislation to support this.⁷

The new EP legislation is intended to come into operation on 1 July 2020. Until then, the EP Act 1970 and the current EP Act 2017 will apply. With the repeal of the EP Act 1970, most existing State Environment Protection Policies, Waste Management Policies and Regulations will cease to operate.⁸

The primary objective of the legislative reforms is to reduce harm, and the risk of harm, to human health and the environment from pollution and waste. Consistent with the MAC’s recommendations, a cornerstone of the new legislative framework is the establishment of a general environmental duty (GED). The GED requires business, industry and the community (anyone conducting an activity that poses risks to human health and the environment) to understand and minimise those risks. The GED provides EPA with a more effective tool to deal with poor industry practices and drive investment in preventative measures. This is a similar model of protection established in Victoria’s occupational health and safety laws. Other key features of the new legislative framework are:

- Introduction of a duty to notify EPA of pollution incidents.
- A new duty to manage contaminated sites, and, in instances of contamination that may pose a significant risk to human health or the environment, to notify EPA.
- The introduction of industrial waste duties and complementary offences, which require that businesses must demonstrate that reasonable steps were taken to ensure industrial waste is taken to a place with lawful authority. A new waste management obligation for priority wastes has also been introduced.
- A new penalty system incorporating custodial sentences in the most serious of waste offences.
- Introduction of a new tailored and proportionate framework of controls for dealing with hazardous or mismanaged wastes and wastes with materials recovery potential.
- Introduction of a three-tiered permissions framework consisting of registrations, permits and licences.
- Greater capacity for councils and police to respond to unreasonable and aggravated noise in various contexts.
- Duty to remediate harm – additional legal powers for EPA to work with site operators to plan for site closure and to require management of post-closure risks over extended periods of time.
- New volume-based litter offences with increased penalties.

The new EP legislation introduces a new legislative instrument called an Environment Reference Standard (ERS). The purpose of the ERS is to set environmental values for the community, in a clear and accessible way, to help achieve and protect the environmental outcomes sought by all Victorians. A draft ERS has been prepared, however it is not examined as part of the

⁴ Independent Inquiry into the Environment Protection Authority, 2016, page v-vi.

⁵ Independent Inquiry into the Environment Protection Authority, 2016, page xiii.

⁶ Independent Inquiry into the Environment Protection Authority, 2016, page 261, page 384.

⁷ Andrews Labor Government Response to the Independent Inquiry into the Environmental Protection Authority, 2017.

⁸ Notifiable chemical orders which currently exist will directly transition to become Orders relating to environmentally hazardous substances under part 7.2 of the EP Amendment Act 2018, unless otherwise revoked.

RIS as it is not a regulation. It is subject to its own impact assessment, reflecting the scientific origins of the standards it contains. More information about the ERS is provided in Appendix 1.

Problem being addressed in this RIS

The new EP legislation provides a broad and flexible legislative framework which aims to better manage waste and pollution risks. Establishing the GED shifts pollution and waste management in Victoria from a more 'reactive' framework to a 'preventative' framework, which will require duty holders to take all reasonable steps to minimise the risk of harm to the environment from waste generation activities and to avoid or minimise pollution so far as reasonably practicable. The risks and opportunities associated with waste management will be further managed under new industrial waste and priority waste duties. The GED and waste duties will work in conjunction with targeted permissions and contaminated land framework and supporting compliance instruments, and alongside the ERS.

The general nature of these duties means that they cover a very wide variety of circumstances and risks, whereas the proposed Regulations focus on a subset of those risks of harm.

Under the new EP legislation, there will remain a number of residual risks where additional government intervention should be considered. These residual risks, which are represented in Figure E-1, arise principally for the following reasons.

- **Necessary for legislation to function** - Some obligations under the new legislative framework cannot function or would not be enforceable without prescription under regulation.
- **Significant impacts on human health and the environment** - Some risks of harm to human health and the environment can lead to significant consequences.
- **Risk of mismanagement** - There are some areas of harm to human health and the environment where there is a known risk of mismanagement by duty holders.
- **Certainty and consistency** - Greater certainty is required by duty holders to ensure consistent compliance with the duties and obligations under the GED and other EP legislation.

The targeting of particular risks through the proposed Regulations occurs in cases where it is deemed the most effective and appropriate way to deal with the risk, having considered other possible statutory responses (such as ERSs, compliance instruments, other legislative regimes) or non-statutory responses (such as policies, guidelines, education, market responses) that are considered unlikely to adequately address the risk. As previously mentioned, most existing subordinate legislation under the EP Act 1970 will cease to operate when the new EP legislation takes effect, meaning that some of the proposed regulations will address specific risks that are currently the focus of these outgoing instruments.

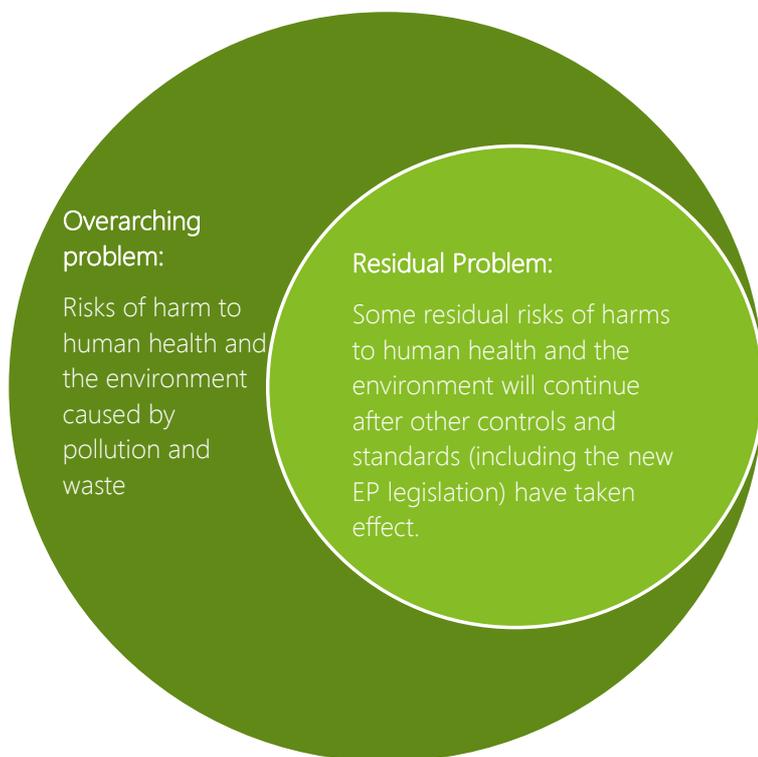


Figure E-1 The overarching and residual problems

While there are 10 specific problem areas in this RIS where regulations are being proposed, each with different drivers, harms and costs attached, some broad observations can be made at an overall level about the potential impacts of not addressing the risk of harm.

Pollution and waste in their many forms are a problem because they can:

- Damage human health, imposing financial costs on the health care system and impacting quality of life including causing disease, premature death and reduction in mental health.
- Create economic loss, including increased business costs, business closures and loss of income, as a result of land being deemed unsuitable for certain uses, damaged products, causing disruption to business activities and transport.
- Impose remediation / clean-up costs in response to legacy contamination.
- Generate incident response costs, for example emergency services and EPA and council clean-up costs.
- Impose costs on the community such as school closures and the requirement to stay indoors in the case of toxic chemical fires.
- Negatively impact amenity and recreational value, for example due to reduced enjoyment of natural environment.
- Damage animal and plant health, including causing animal and plant death.
- Reduce biodiversity, including in some cases threaten entire species.

Costs incurred as a result of waste and pollution can be significant. For example, the costs of the Hazelwood mine fire are estimated to have exceeded \$100 million.⁹ In another example, initial funding provided by the Victorian Government to

⁹ Hazelwood Mine Fire Inquiry, available at <http://report.hazelwoodinquiry.vic.gov.au/executive-summary-2/hazelwood-mine-fire.html>.

maintain and clean up the former recycling site at Lara was \$30 million.¹⁰ This RIS also estimates costs of stockpile fires, abandoned waste sites and illegal dumping alone at:

- \$105 million per year from stockpile fires.
- \$58 million per year in annual clean-up costs of abandoned waste sites in Victoria.
- \$30 million per year for Victoria on clean-up costs and lost landfills levy revenue due to illegal dumping.

Importantly, it must be noted these estimates are partial in that they include principally the financial costs of response and clean-up of these incidences. They do not capture the costs to human health or the environmental damage costs.

There are some studies which demonstrate the human health costs of certain types of pollution in Victoria. For example, the total quantified health costs from particulate matter emissions from the use of wood heaters in Victoria have been estimated at over \$8 billion over 10 years to 2028, or \$5.8 billion in present value terms (2017 dollars).¹¹

In the absence of regulations to support the new EP legislation, risks of harm that may impact the environment and human health may not be addressed. For example, key elements of the new waste framework established in the new EP legislation will not come into effect.

Other legislation and existing state of knowledge

It is important to note that in the absence of the EP Act 1970 and the new EP legislation, some environment protection would nevertheless occur as a result of other legislation, policies and program delivery in Victoria. Over 40 separate Acts cover environmental regulation in Victoria. These instruments will continue to exist once when the EPA Act 1970 ceases to operate and the new EP legislation commences (intended to commence effect on 1 July 2020).

There would also be an existing 'state of knowledge' including the understanding of, and arrangements organisations have in place to comply with, the current regulatory framework, which includes:

- the EP Act 1970
- existing Regulations under the EP Act 1970
- formal instruments such as state environment protection policies (SEPPs) and waste management policies (WMPs)
- informal instruments such as guidance documents and other educational material developed by EPA and industry over the past few decades.

This state of knowledge means that there is an understanding of what good environmental practice or good management of environmental harm and human health currently looks like. There will also be existing business practices and processes in place to meet current obligations. However, this does not mean that all duty holders would act in the same manner in response to this understanding, and new entrants to the industry may not be aware of this existing knowledge at all. Without intervention, the positive impacts of this knowledge would likely decline over time.

Objectives of government intervention

The regulatory analysis has examined the problem and options in the context of supporting the objectives of the new EP legislation, which is to protect human health and the environment by reducing the harmful effects of pollution and waste.

More specifically, the proposed Regulations will contribute to the overall objective by addressing the residual risks of harm to human health and the environment which may not be adequately addressed or controlled by the new EP legislation or where further detail is required to improve uncertainty, reduce regulatory burden or improve environmental outcomes.

Summary of problem area and preferred options

The table below describes each specific problem and the preferred options. Given the significant detail and technical complexity of many problem areas and options, only a summary of key features is provided here.

Approach

¹⁰ EPA website, available at www.epa.vic.gov.au/our-work/current-issues/broderick-road-recycling-epa-response

¹¹ Regulatory Impact Solutions, *Policy Impact assessment for the variation to the Waste Management Policy (Solid Fuel Heating)*, 2017.

Because this RIS addresses a range of problem areas, and each with different data limitations and characteristics, the approach has been to use the most rigorous tool available for each problem area estimating overall costs and benefits to the extent feasible.

Due to data limitations a fully quantified CBA was undertaken for only one problem area addressed in this RIS – permissions (licences, permits and registrations) as the data for this analysis was considered sufficiently complete and rigorous.

Where benefits and/or costs were not able to be quantified, assessment was undertaken using various types of methods which vary by problem depending on the size of the problem being addressed, the options being considered, and the extent of data that was available.

Problem area Description of Problem	Preferred option
<p>Permissions</p> <ul style="list-style-type: none"> • A number of industrial activities account for a considerable share of Victoria’s air, land and water emissions and impact on amenity. These activities pose a significant risk to human health and the environment. • In order to address these risks, the new EP legislation establishes a three-tiered permissioning framework to complement the GED. The framework allows EPA to establish greater certainty of control for activities which pose significant risks of harm to human health and the environment, and where the consequences of non-compliance are greatest. The three permission tiers established in the new EP legislation are: licences, permits and registrations. The new EP legislation also establishes the ability for EPA to require duty holders to hold a financial assurance. Financial assurance is a financial security required to be submitted for certain types of premises or activities. Financial assurance provides the Government with security to recover the costs associated with clean-up following pollution incidents or from failure to adhere to licence conditions. • The new EP legislation does not specify the activities that would require duty holders to obtain a permission, or require a financial assurance. The permissions framework under the new legislative framework therefore cannot function effectively without prescription under regulation 	<p>The preferred option is to prescribe those activities that will require some form of permission, exemption or financial assurance. This is summarised below:</p> <ul style="list-style-type: none"> • Development Licence: All activities currently requiring a works approval, plus large waste and resource recovery (WRR) facilities. • Operating Licence: All activities currently requiring a licence, plus selected WRRs. • Financial assurance: Almost all activities currently requiring a financial assurance, plus selected WRRs. • Permit: Selected activities that currently require an EPA or council permission or approval under different heads of power, along with selected WRRs, municipal landfills and selected other activities that previously did not require a permission. • Registration: Selected activities that are currently excluded from requiring a permission through a general exemption, along with dry cleaning, selected WRRs and other waste storage and processing facilities. <p>By prescribing these activities, the new permissions framework will be able to function. This will enable EPA to establish greater certainty of control for activities which pose the most significant risks of harm to human health and the environment through its permissioning framework.</p>
<p>On-site wastewater management systems (septic tank systems)</p> <ul style="list-style-type: none"> • On-site wastewater management systems (“on-site systems”) can potentially pose a significant risk to the environment, public health of communities and to local amenity. In particular, this occurs when systems (1) have deteriorated, (2) are poorly maintained, (3) are not fit for purpose, or (4) are not properly located. • Under the EP Act 1970, Victoria’s local councils are responsible for administering permits to property owners for the installation or modification of on-site systems with a flow rate less than 5,000L per day. Councils may include conditions on the permit, or refuse to issue a permit if the site is unsuitable or must 	<p>The preferred option is for councils to continue to issue permits under the new EP legislation for the construction, installation or alteration of on-site systems, but to not issue ongoing permits for their operation.</p> <p>This option would support councils’ role in managing the risks posed by on-site systems.</p>

Problem area Description of Problem	Preferred option
<p>refuse if the on-site system is not a type approved by EPA.</p> <ul style="list-style-type: none"> There are no specific requirements or duties relating to on-site systems in the new EP legislation. Under the new permissioning framework, councils can issue permits. However, councils would not be able to adequately continue their regulatory role in managing the risks posed by on-site systems and to recover their associated costs. . 	
<p>Contaminated land</p> <p>Contaminated land was identified by the EPA Inquiry as one of the critical challenges for environmental protection in Victoria.</p> <ul style="list-style-type: none"> Alongside the GED, the Victorian Government has established new duties to manage and notify of contaminated land as part of the new EP legislation to address the significant legacy problem of contaminated land. However, some risks will continue to exist after the new EP legislation has taken effect (residual risk). The new EP legislation does not include prescriptive detail, since it is not appropriate to include this detail in primary legislation. If this detail were to be included in regulations, it would provide greater consistency and certainty around the compliance standard required with respect to their contaminated land management and notification obligations, in relation to how contamination is assessed against ‘naturally occurring concentrations’.. The GED and duties to manage contamination under the new EP legislation alone may not be adequate in addressing risks of harm to human health and the environment posed by high-risk contaminants in the form of non-aqueous phase liquids (NAPL). The new EP legislation is also likely to impose a burden on businesses and individuals in the initial operation of the new EP legislation. This burden may not be commensurate to the risk posed by the contamination. In some instances, it may result in businesses and individuals undertaking actions for which the costs exceed the benefits. 	<p>The preferred options are:</p> <ul style="list-style-type: none"> Duty to manage: prescribe regulation for EPA to make determinations on background levels on a case by case basis and prescribe specific control measures for NAPL contamination. Duty to notify: prescribe in regulation an alternative risk-based definition of notifiable contamination, specific exemptions to notifiable contamination and the requirement for duty holders to provide a management response with their notification to EPA. <p>Combined, these options will provide greater certainty to duty holders with respect to complying with contaminated land duties under the new EP legislation, address the risks of harm posed by high-risk contaminants, and minimise the cost burden on duty holders.</p>
<p>Waste</p> <ul style="list-style-type: none"> Poor management of waste presents potentially catastrophic risks of harm to the environment and human health. This is clearly seen in a series of waste fires and stockpiling cases, involving both legitimate and unlawful waste management, that have occurred in Victoria in recent years (e.g. Campbellfield, Coolaroo, West Footscray, Lara, and Stawell). Factors contributing to mismanagement include inadequate technical knowledge, complex regulation, costs of regulatory compliance and intentional non-compliance or illegal activity. Complex global market forces also drive some activities and incentives in the waste sector and add a layer of complexity to local environmental protection regulations. Under the new EP legislation, harm-related waste risks 	<p>The preferred option is to:</p> <ul style="list-style-type: none"> Adopt a tiered waste classification pathway with supporting guidance which guides the user through the classification process to understand their waste and identify its source, type and classification as industrial, priority, or reportable priority waste. Use the permissioning framework to establish lawful authority to accept waste, plus the introduction of one additional tool covering the legitimate use of waste. Prescribe waste types that are determined to be very-high-hazard, high-hazard and moderate hazard, and those at risk of

Problem area Description of Problem	Preferred option
<p>will be principally managed by the GED which will require industry to demonstrate how it is managing risks and minimising risks of harm from waste related activities. There are also specific waste provisions in the new EP legislation relating to industrial waste, priority waste, waste levies and landfill management.</p> <ul style="list-style-type: none"> • However, the residual risk for the waste problem is significant. <ul style="list-style-type: none"> ○ Some waste duties under the new EP legislation cannot function without prescription under regulation. These include duties relating to priority and reportable priority wastes, transaction controls (including appropriate classification and tracking of waste), transport permissions for reportable priority waste and lawful place. ○ Some types of waste presents lower levels of risk of environmental harm in smaller quantities however cumulative impacts on the environment and human health (such as through stockpiles) can be significant. Therefore these risks are more difficult to control through the GED and duties in the new EP legislation. ○ There is a known risk of mismanagement by some duty holders in the waste sector, reflected in behaviour such as illegal dumping and illegal landfilling. Regulatory controls will create consistency and certainty between operators in their response to their duties. Guidance alone is unlikely to be effective with cohorts that have consistently demonstrated poor management practices. • In the absence of regulations, a large part of the overarching risk will not be addressed and there will be significant risks of harm to human health and the environment. 	<p>mismanagement, as priority waste.</p> <ul style="list-style-type: none"> • Require transport permissions for all very high to moderate hazard waste, and transaction tracking for all very high and high hazard wastes. Transaction duties and waste tracking responsibilities can be fulfilled by waste generators themselves, or by accredited third party consigners to manage this on their behalf. • To prescribe the sensitive environmental areas that must not be impacted by a landfill, and clarify technical landfill requirements, in regulations. • To prescribe elements of the waste levy scheme in regulation that are required for its effective operation. <p>Collectively, these problems would enable the effective operation of Victoria's new waste framework established in the EP Act, and reduce the risks of harm from waste mismanagement in Victoria.</p>
<p>Litter</p> <ul style="list-style-type: none"> • Litter is a significant problem that is currently addressed through a range of provisions in the EP Act 1970. • In addition to the GED, the new EP legislation establishes litter-related offences and creates enforcement powers. These offences and enforcement powers are intended to address most of the overarching litter problem that exists in Victoria. • The GED and new EP legislation are, collectively, likely to address a significant portion of the overall problem of litter in Victoria. However, some residual risk remains in relation to the risks of harm to human health and the environment caused by litter, as the new EP legislation does not provide controls relating to: <ul style="list-style-type: none"> ○ Preventing the creation of litter, through controls on materials likely to become litter, such as unsolicited material intended for delivery to 	<p>The preferred option is to incorporate offences for depositing material that may become litter, and other litter-related offences. These offences would be enforceable by EPA and other litter enforcement authorities (including local councils, Victoria Police and Parks Victoria).</p> <p>This aims to address the harm caused by depositing material that may become litter, and by damaging litter receptacles.</p>

Problem area Description of Problem	Preferred option
<p>private premises, leaflets placed on vehicles and bill posting.</p> <ul style="list-style-type: none"> o Damage to litter receptacles. 	
<p>Plastic bags</p> <ul style="list-style-type: none"> • Lightweight plastic shopping bags can cause harm to wildlife and ecosystems, visual amenity issues and contamination of plastic shopping bags in municipally-sourced recyclables. • The plastic bag problem has already been significantly reduced in Victoria by the voluntary decisions of major retailers, and some smaller retailers, to cease offering lightweight plastic bags to customers. However, it is estimated that hundreds of millions of lightweight plastic bags are still given out by other retailers in Victoria each year. • On 27 June 2018, the Victorian Government committed to ban single use, singlet style plastic shopping bags ("lightweight plastic shopping bags"). Power to prescribe a ban is in the new EP legislation that is intended to come into effect on 1 July 2020. • The residual risk in relation to plastic bags is that the plastic ban provisions under the new EP legislation cannot function without prescription under regulation, and lightweight plastic bags will continue to cause harm to the environment as a result of becoming litter across Victoria's land and waterways. 	<p>The preferred option is to ban all lightweight plastic bags from sale or supply in Victoria. Lightweight degradable, biodegradable and compostable shopping bags made wholly or partly of plastic would also be subject to the ban. However, all other types of non-carry lightweight bags – such as barrier bags – would be excluded, as would any other type of plastic bag such as bin liners, garbage bags and reusable polypropylene (heavier-weight) bags.</p> <p>This option would enable the plastic ban provisions under the new EP legislation to function and, in doing so, help to address the harms that plastic bag pollution causes to the environment.</p>
<p>Air</p> <ul style="list-style-type: none"> • Air pollution can be potentially harmful to human health and the environment, and can have a significant impact on visual amenity. • The GED, other duties (such as the duty to report pollution incidents), and the permissioning framework are, collectively, likely to address a significant portion of the overall problem of air pollution in Victoria. However, some residual risk remains in relation to the impact to human health and the environment that could occur as a result of the use of air pollution generated by wood heaters, the emission of highly hazardous air pollutants ('Class 3 substance') and methyl bromide. These activities require further regulatory control. • Air pollution generated from wood heaters presents a residual risk, since there is no explicit obligation for suppliers or manufacturers to produce wood heaters that meet national standards in relation to efficiency and emissions levels. • Highly hazardous air pollutants (Class 3 substances) present a particularly significant risk to human health that warrant an explicit obligation to eliminate or reduce emissions of these substances. • The emission of selected chemicals is a major cause of depletion of the earth's protective ozone layer. Commonwealth legislation and regulations prescribe the range of situations where an ozone-depleting substance (ODS) is permitted to be used (or prohibited from use). In the case of methyl bromide 	<ul style="list-style-type: none"> • The preferred approach is to prescribe regulations that ensure risk control measures for emission of Class 3 substances are commensurate to their risk by specifying obligations in relation to such pollutants. • Place control measures on handlers, suppliers and purchasers of equipment with methyl bromide, and users of methyl bromide. • Requires all wood heaters sold and manufactured in Victoria to comply with Australian New Zealand standards for emissions and efficiency. • Require businesses that exceed pollution thresholds to report to the National Pollutant Inventory. <p>Collectively, these options aim to address the residual risks of harm to human health and the environment from air pollution.</p>

Problem area	Description of Problem	Preferred option
	<p>(an ODS used in quarantine and pre-shipment uses and in commercial strawberry production), Commonwealth laws do not impose additional obligations as to exactly how it should be managed when it is used.</p> <ul style="list-style-type: none"> In the absence of regulations, there will also be no requirement for businesses to report their air (and other forms of) pollution to the National Pollutant Inventory (NPI). The NPI tracks pollution across Australia, ensuring that the community has access to information about the emission and transfer of toxic substances which may affect them locally. 	
Water	<ul style="list-style-type: none"> Water resources are of major environmental, social and economic value. This value is at risk from pollution of Victoria's water resources by human activities, including large and small industries, wastewater treatment plants, urban infrastructure, agriculture, transport, and deliberate or accidental pollution incidents. When the new legislative framework takes effect in July 2020, the overarching problem of water pollution will be primarily addressed by the establishment of the new EP legislation and planned introduction of the ERS, which will incorporate some aspects of SEPP (Waters) that will no longer be in force under the new legislative framework. Some residual risks related to water pollution will be managed by the proposed permissioning, waste and contaminated land regulations. There is a residual risk remaining in relation to the risk of harm to the environment arising from the discharge of waste into water by vessel operators. Due to gaps and wide variation in the current state of knowledge across vessel operators, duty holders are likely to be uncertain and inconsistent in their approach to complying with the new legislation. 	<p>The preferred option is to prescribe regulation to ensure that waste from vessels must not be discharged into water. This option would be enacted as a regulation with an infringeable offence that articulates how waste from vessels is to be managed.</p> <p>This would reduce uncertainty for duty holders in relation to their obligations regarding the discharge of waste from vessels under the new EP legislation.</p>
Noise	<ul style="list-style-type: none"> Noise accounts for the majority of EPA publication and advice enquiries, and accounted for 18% of reports (complaints) in 2018. A 2011 WHO study of the burden of disease due to environmental noise in Europe found that there is sufficient evidence linking the population's exposure to environmental noise with adverse health effects. Noise pollution is expected to increase in future years with forecast increases in Victoria's population, higher density living and traffic. The new EP legislation establishes duties and penalties for the control and emission of unreasonable and aggravated noise. However, residual risks would still remain: <ul style="list-style-type: none"> There would be a lack of consistency and certainty with respect to how duty holders need to comply with the unreasonable and aggravated 	<p>The preferred options are:</p> <ul style="list-style-type: none"> Noise from commercial, industrial and trade (CIT) premises: prescribe in regulation a framework for establishing noise limits for CIT premises in urban and rural areas based on the existing SEPP N-1 and NIRV arrangements with a range of selected improvements and additions, and prescribe a definition of aggravated noise in regulation. Noise from entertainment venues: prescribe in regulation a framework for establishing noise limits for entertainment premises based on the existing SEPP N-2 framework with selected improvements. Noise from residential premises: prescribe in regulation a range of specific items and prohibited times for residential premises and

Problem area Description of Problem	Preferred option
<p>noise requirements in the new EP legislation.</p> <ul style="list-style-type: none"> ○ It would be difficult to enforce the civil penalty provisions under the new EP legislation without prescription under regulation. ● These risks may lead to businesses not meeting their duties under the legislation and therefore more noise pollution and risks of harm to human health. Uncertainty is also likely to lead to higher regulatory costs for businesses in determining how to comply and for EPA in administering the framework. 	<p>define aggravated noise.</p> <p>Collectively, these preferred options aim to improve consistency and certainty to duty holders and EPA in relation to the new noise framework and, in doing so, reduce instances of under-or-over-compliance with the new requirements.</p>
<p>Vehicle emissions</p> <ul style="list-style-type: none"> ● Motor vehicles, although an important part of everyday life, are a significant source of air pollution emissions (including greenhouse gases) and noise. ● The <i>Environment Protection (Vehicle Emissions) Regulations 2013</i> set various air and noise emission requirements for in-service light vehicles (under 4.5 tonnes gross vehicle mass). ● The new EP legislation makes clear the intention of the Victorian Government - to continue to regulate vehicle emissions in a similar manner, by including a provision to save the <i>Environment Protection (Vehicle Emissions) Regulations 2013</i>. This means that, in the absence of further government intervention, these regulations remain in force under the new EP legislation until they sunset in December 2023. ● However, saving the <i>Environment Protection (Vehicle Emissions) Regulations 2013</i> would compromise one of the objectives of the new legislative framework by adding complexity for duty holders and vehicle testers in identifying their obligations and relevant offences. ● There is a residual risk that reliance on the existing Vehicle Emissions Regulations under the new EP legislation may result in a complex and confusing legislative structure for duty holders and EPA officers alike, which may result in a small increase in regulatory burden for businesses and EPA. ● Translating the <i>Environment Protection (Vehicle Emissions) Regulations 2013</i> into the proposed <i>Environment Protection Regulations 2019</i> overcomes this limitation. The current reform of subordinate legislation also presents an opportunity to incorporate relatively minor changes, which were identified and proposed by EPA. This would provide certainty to duty holders, vehicle testers and EPA officers, without adding any additional burden on duty holders. 	<p>The preferred option is to translate the <i>Environment Protection (Vehicle Emissions) Regulations 2013</i> into the proposed <i>Environment Protection Regulations 2019</i>, and to incorporate minor changes for certainty and consistency.</p> <p>This will reduce complexity for duty holders and vehicle testers in identifying their obligations and relevant offences.</p>

Cost recovery and fees

The new EP legislation enables EPA to charge fees to recover the costs associated with undertaking permissions and other activities. The proposed Regulations set out the fees for these permissions and activities. To estimate the costs to be recovered, EPA has used the Fully Distributed Costs methodology outlined in the *Cost Recovery Guidelines*. This includes direct (e.g. staff costs) and indirect costs (e.g. on-costs and overheads). EPA has estimated direct costs for most fee types using a bottom up approach.

For some permissions and activities, EPA proposes a departure from full cost recovery. For some of these activities, costs are not recovered or only partially recovered, or in the instance of operating licence annual fees, over-recovered. Departure from full cost recovery is considered appropriate for these permissions or activities because, fees may act as a disincentive for some desirable behaviours or activities, because costs might be recovered from other fee types (cross-subsidised), or because costs are immaterial.

The permissions and activities for which fees are able to be prescribed under the new EP legislation vary significantly in the nature of the regulatory service being provided, the amount of revenue to be collected, and other characteristics such as variability and homogeneity of the regulatory processes and costs involved. Reflecting this, some activities and permissions have only one appropriate fee structure (such as a flat fee), while others have more than one. For those activities with more than one feasible option, the preferred fee structure has been determined using MCA by assessing options against three objectives: "Cost reflectivity", "Equity", and "Simple and easy to understand and administer".

Under the preferred option, fees for development licence applications and annual operating licence fees (representing over 80% of EPA's total fees income) would be unchanged from the current fees, while some fees would maintain the same fee design but with a revised fee level. New fees are introduced in the case of new services and permissioning activities established by the new EP legislation or where there were exceptions under the previous fees regulations which are not continued.

EPA will undertake a future review of the fees prior to sunseting of the proposed Regulations. This will allow time to develop appropriate mechanisms to assess risk from emissions and developing better economic instruments to encourage good performance.

Implementation and evaluation of proposed regulations

Implementation plan

Implementation of the new EP legislation, regulations and ERS will occur concurrently and in an integrated way where appropriate. This RIS presents a plan that identifies what tasks need to be completed for the implementation of the proposed Regulations and how each task is being addressed as part of the broader transformation project. Tasks to be undertaken include:

- Public consultation on RIS.
- Developing and deliver education and information to promote industry and public awareness.
- Provide feedback to all participating parties and public who expressed interests during RIS process.
- Coordinate implementation of new Regulations with implementation of new Environment Reference Standards.
- Develop compliance and enforcement policy for new EP legislation and proposed Regulations.
- Develop evaluation information and data strategy.
- Internal training of staff.
- Resource planning and management.
- Develop requirements, processes and procedures for new permissions framework, including:
 - Communicate with parties that will require a new permissions.
 - Determine transitional arrangements - transition provisions for lawful place will need to be determined (see further description below).
 - Build capacity of other regulators e.g. councils.
 - Permissions applications and ongoing management.
 - Develop new or update existing guidance materials to support the new Regulations.
 - Review need for updated or amended internal EPA operating procedures, methodologies, systems, processes, procedures and databases.
 - Quality Assurance and independent evaluation implementation for transition to new legislative and regulatory framework.
 - Prepare necessary instrument of delegation and authorisations of powers.

Transition measures for permission holders

Permission holders (both new and existing) will be required to transition to the new permissioning framework. To facilitate this process effectively:

- Existing licence holders will automatically be taken to hold a 'new' licence for the relevant operating licence activity and will not need to reapply. Their licences will remain perpetual to and will not become time bound licences.
- For existing businesses or duty holders conducting an activity that will newly require a permission under the proposed regulations such as transfer stations and dry cleaners), the regulations propose a 'grace period' of 3 or 6 months from the commencement of the regulations for these businesses to apply for their licence or permit or to register with EPA (as applicable). This time is being provided as a matter of fairness, to ensure these existing businesses have time to become aware of their new obligation, prepare their permission application and make any necessary adjustments to their operations to align with EPA's permission conditions. It is noted that other requirements in the proposed Regulations that are not related to the permissioning framework will not have a similar grace period.
- Where a licence or permit is newly required, the 'grace period' for the existing business will continue until EPA finalises its assessment of their application.
- Where a permissioned activity involves the receipt of industrial waste, the proposed regulations deem the site to be authorised to receive the industrial waste that they receive as part of the relevant permissioned activity (for the purposes of section 134 of the new EP legislation) for the duration of the relevant grace period.

Evaluation strategy

An evaluation strategy has also been developed to evaluate the effectiveness and efficiency of the proposed Regulations and to ensure that there is continuous improvement in environmental protection in Victoria. The evaluation strategy will consider the extent to which the Regulations have reduced the risks of harm to human health and the environment, and the regulatory burden and costs that they impose on duty holders.

PART 1 – INTRODUCTION AND GENERAL ANALYSIS

1 Introduction

This chapter outlines the purpose of this *Regulatory Impact Statement* (RIS) and the process adopted in the preparation of this RIS.

The Victorian Government is modernising the Environment Protection Authority Victoria (EPA), including its governance, legislative and regulatory framework. These reforms are being implemented through two legislative packages:

- The *Environment Protection Act 2017* (the EP Act 2017), which modernises EPA's corporate governance and strengthens its status as a science-based regulatory, and states that the objective of the EPA is to protect human health and the environment by reducing the harmful effects of pollution and waste.
- The *Environment Protection Amendment Act 2018* (the EP Amendment Act 2018) which will repeal the *Environment Protection Act 1970* (EP Act 1970) and amend the EP Act 2017 to establish a modern regulatory approach focusing on preventing waste and pollution impacts, rather than managing the impacts after they have occurred.

The EP Act 2017 has already been enacted, and the more significant changes contained in the EP Amendment Act 2018 that are intended to take effect on 1 July 2020. The EP Act 2017, as amended by the EP Amendment Act 2018, is referred to as the "new EP legislation" throughout this document.

The next phase of reform is to consider the nature of any new Environment Protection Regulations and Environment Protection Transitional Regulations (proposed Regulations). Such regulations may be required to support the new EP legislation and EPA to achieve its broad objective of reducing the risk of harms to human health and the environment from pollution and waste.

1.1 Purpose of this RIS

Deloitte has been engaged by the Victorian Government to prepare a RIS in relation to proposed Regulations to be made under the new EP legislation, intended to come into effect on 1 July 2020. A rigorous assessment of regulatory proposals ensures regulation best serves the Victorian community. This RIS has been prepared to outline the following key matters:

1. The need to eliminate (or otherwise reduce) the risks of harm to environment and human health in Victoria from pollution and waste.
2. Options for addressing the problem of risks of harm to environment and human health.
3. The costs and benefits of proposed options to address the problem.
4. The preferred options and the rationale for choosing the options.
5. Arrangements for implementing the proposed Regulations.
6. The evaluation strategy for the proposed Regulations.

A key factor underpinning this RIS is the introduction of a general environmental duty (GED) in the new EP legislation. The GED requires business, industry and the community (anyone conducting an activity that poses risks to human health and the environment) to understand and minimise those risks. The existence of the GED, as well as the other duties and requirements that are established by the new EP legislation, influences the need for, and nature of, supporting regulations.

1.2 RIS process

In accordance with the provisions of the *Subordinate Legislation Act 1994* (SL Act), a Regulatory Impact Statement (RIS) must be prepared for any proposed regulations (unless the criteria for an exemption is met, as prescribed in the SL Act).

Deloitte has prepared this RIS in accordance with the *Victorian Guide to Regulation*,¹² which provides a best practice approach to analysing any proposed regulatory intervention. This RIS estimates the impact of the proposed Regulations on Victorian businesses, community and environment. Rather than considering proposed regulations in terms of incremental changes from regulations that are currently in place, their impact has been estimated relative to a counter-factual scenario where the new EP legislation applies but there are no regulations to supplement it. This counter-factual scenario assumes, however, that business practices would continue to be influenced by the existing “state of knowledge” of good environmental practice and good management of harms. This includes the understanding of, and the arrangements organisations have in place to comply with, the current regulatory framework.

Key steps in the process to introduce the proposed Regulations are:

- Preparation of the RIS (this document).
- Public comment on the proposed Regulations.
- Addressing public comment.

These steps are articulated in more detail below.

1.2.1 Preparation of the RIS

The key purpose of this RIS is to assess the impact of proposed Regulations to be made under the new EP legislation. The general approach to the assessment was as follows:

1. Identification of the problem

This involved consideration of the nature and extent of the problem that proposed Regulations aim to address, including the need for government intervention, the risks of non-intervention and the objectives of such intervention. This included consideration of specific risks in areas such as air, water and noise pollution.

2. Identification of the options to achieve the objectives of the proposed Regulations

The proposed Regulations and alternative options were developed by Government in consultation with stakeholders (peak bodies, industry and community representatives) and informed by the RIS consultation (see Chapter 20 for details of consultation undertaken). The establishment of options allowed possible costs and benefits to be examined as part of the stakeholder consultation.

3. Stakeholder consultations

Stakeholder consultation was undertaken by Deloitte to gather relevant information on the impact of the proposed Regulations and possible alternatives on key stakeholders, including Victorian businesses and industry groups. The consultation process included:

- 25 one-to-one meetings with businesses and government agencies.
- 27 one-to-one meetings with industry groups.
- A web-based survey which received responses from 78 small, medium and large businesses, and 24 local council representatives (representing 19 different local councils).

Prior to and during the period of stakeholder consultation, Deloitte, in collaboration with DELWP and EPA, promoted the web-based survey to hundreds of organisations, businesses, local councils.

Additionally, DELWP and EPA undertook comprehensive stakeholder engagement to test the viability of different options considered for regulatory and non-regulatory controls. Consultation was undertaken with peak and industry bodies, environmental justice groups, community members, industry and licence holders.

4. Assessment of the costs and benefits

¹² Commissioner for Better Regulation 2016, *Victorian Guide to Regulation: A handbook for policy-makers in Victoria*.
<<http://www.betterregulation.vic.gov.au/Guidance-and-Resources>>

Assessment of the costs and benefits under all options, relative to a Base Case of no regulations, was undertaken consistent with the requirements of the *Victorian Guide to Regulation*. The analysis included the quantification, where possible, of benefits to businesses and the Victorian community from improved health and environmental outcomes. It also included the costs to businesses of complying with regulations and costs to Government of implementing and administering regulations. The method of analysis adopted differed across the different regulatory areas (problem areas) being considered. A fully quantified cost benefit analysis was used for some areas where there was adequate costs and benefits data, while multi-criteria analysis, breakeven analysis or fully qualitative analysis was used for other areas where data gaps were significant or benefits too difficult to quantify. The analysis reflected data held by DELWP and EPA, data gathered through independent research, and information provided by stakeholders.

5. Assessment of the other impacts

This RIS examines the likely impacts of the preferred options on small business and general competition amongst firms. This part of the RIS draws on stakeholder consultations.

6. Implementation, enforcement and evaluation

This RIS describes the arrangements for implementation, enforcement and evaluation of the preferred options.

7. Fee analysis

This involved an assessment of costs to be recovered through fees charged under the proposed Regulations and options for structuring those fees, consistent with requirements outlined in the Victoria's *Cost Recovery Guidelines*.¹³

1.2.2 Public comment

The proposed Regulations and this RIS will be released for a 60 day period to provide businesses, members of the public, and other interested parties, the opportunity to provide feedback on these items. The closing date for receipt of submissions is 31 October 2019. The process for public comment is outlined in the Foreword to this report. The proposed Regulations and RIS will be made available on Engage Victoria, which is the Victorian Government's Online Consultation platform, and EPA's website.

1.2.3 Addressing public comment

DELWP and EPA will consider all submissions received during the period of public review. DELWP and EPA will prepare a formal Response to Public Comment, which will summarise the submissions received. The formal Response to Public Comment document will also be made available on Engage Victoria and EPA's website.

1.3 Structure of the report

This RIS is structured into three main parts.

Part One provides a detailed overview of the proposed Regulations. This includes relevant background information, a general discussion of the nature and extent of the problem to be addressed by the Regulations, and results of the aggregate analysis of costs and benefits. This aggregate analysis focuses on the effects of the proposed Regulations and proposed options as a whole.

Given the proposed Regulations focus on specific topics, Part Two of this RIS provides individual analyses for each key topic: permissions, on-site wastewater management systems (septic tank systems), contaminated land, waste, litter, plastic bags, air, water, noise, vehicle emissions, cost recovery and fees. Each of these analyses provides a focused discussion of the problem, outlines the objectives of regulation, presents feasible options, and estimates the costs and benefits of that option.

Part Three provides the remaining chapters of the RIS, including the implementation strategy, evaluation strategy and consultation summary.

Each Part of this report is structured as follows:

Part one – Introduction and general analysis

¹³ Victorian Department of Treasury and Finance 2013, *Cost Recovery Guidelines* <https://www.dtf.vic.gov.au/sites/default/files/2018-01/Cost-Recovery-Guidelines-Jan2013_0.pdf>

- Chapter 1 - Introduction
- Chapter 2 - Background
- Chapter 3 - Nature and extent of problem
- Chapter 4 - Options
- Part Two - Analysis by specific problem area
 - Chapter 5 Introduction to problem areas
 - Chapter 6 - Permissions
 - Chapter 7 – On-site wastewater management systems (septic tank systems)
 - Chapter 8 - Contaminated land
 - Chapter 9 - Waste
 - Chapter 10 - Litter
 - Chapter 11 - Plastic bags
 - Chapter 12 - Air
 - Chapter 13 - Water
 - Chapter 14 – Noise
 - Chapter 15 - Vehicle emissions
 - Chapter 16 - Cost recovery and fees analysis
 - Chapter 17 – Preferred options
- Part Three - Implementation and evaluation
 - Chapter 18 - Implementation plan
 - Chapter 19 - Evaluation strategy
 - Chapter 20 – Stakeholder consultation

2 Background

This chapter provides information on Victoria's current approach to protecting the environment and human health, as well as the legislative reform process taking place.

Key points:

In 2015 a Ministerial Advisory Committee conducted an Independent Inquiry into EPA (the EPA Inquiry).

While the EPA Inquiry concluded that EPA and its governing legislation had served Victoria well in the past, it also found that the current legislative framework was not meeting the community's expectations, particularly in light of the major trends and emerging challenges that will affect EPA's role and activities going forward.

In response to these findings, major legislative reforms have been enacted. The Government's response committed to two legislative packages—the first comprising an Act to establish a new governance structure for a modern EPA, and the second comprising an overhaul of the EP Act 1970.

The primary objective of the legislative reform was to modernise and strengthen the legislative framework for environment protection and human health in Victoria, including establishing a legislative model based on prevention of harm.

A cornerstone of the new arrangements is the establishment of the GED. Under the GED, a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable. This is a similar model of protection to that established in Victoria's occupational health and safety laws.

2.1 Current legal framework

2.1.1 Acts

The protection of the environment and human health in Victoria is currently governed by the historic governing legislation, the EP Act 1970, and the new EP Act 2017.

The EP Act 1970 has been in place for nearly 50 years. It provides the legal framework to protect the environment in the State of Victoria. The EP Act 1970 establishes EPA and sets out its powers, duties and functions. The main matters covered by the EP Act 1970 are:

- Pollution of air, land and water
- Waste
- Litter
- Noise
- Motor vehicles.

The EP Act 2017, which came into effect on 1 July 2018, has modernised EPA's corporate governance and strengthened its status as a science-based regulator. It did this by legislating the role of a Governing Board, Chief Executive Officer and Chief Environmental Scientist. The EPA Act 2017 established the new legislative objective for EPA, being to "protect human health and the environment by reducing the harmful effects of pollution and waste." EPA currently administers the EP Act 2017 and the EP Act 1970, and any regulations, policies and Orders made under those Acts.

The new EP legislation is intended to come into effect on 1 July 2020, with the repeal of the EP Act 1970, and will, from that date, provide for a new modern approach that focuses on preventing the harmful effects of pollution and waste, rather than managing impacts after they have occurred. Further discussion about the reform process and new legislative framework is provided in Sections 2.3 and 2.4.

EPA also jointly administers:

- The *Pollution of Waters by Oils and Noxious Substances Act 1986*, the purpose of which is to protect the sea and other waters from pollution by oil and noxious substances.
- The *National Environment Protection Council (Victoria) Act 1995*, which establishes the National Environment Protection Council, comprising a Minister from the Commonwealth and each state and territory, the purpose of which is to ensure people are equally protected from air, water and soil pollution, and from noise, no matter where they live in Australia.

These two Acts will continue to apply after commencement of the new EP legislation and are not discussed further in this RIS.

2.1.2 Regulations

The following Regulations currently set out mandatory requirements under the EP Act 1970:

- Environment Protection (Distribution of Landfill Levy) Regulations 2010.
- Environment Protection (Fees) Regulations 2012.
- Environment Protection (Industrial Waste Resource) Regulations 2009.
- Environment Protection (Scheduled Premises) Regulations 2017.
- Environment Protection (Vehicle Emissions) Regulations 2013.
- Environment Protection (Residential Noise) Regulations 2018.

All of these Regulations except those for vehicle emissions will no longer be in force once the new EP legislation comes into effect, which is intended to be on 1 July 2020. Under section 501 of the new EP legislation, despite the repeal of the EP Act 1970, the Environment Protection (Vehicle Emissions) Regulations 2013 will remain in force from 1 July 2020 until 10 December 2023 unless otherwise revoked.

EPA also currently has a role in regulating greenhouse gas emissions. Its power to do so is established under the EP Act 1970 and the *Climate Change Act 2010* (CC Act). Under the requirements of section 17 of the CC Act, EPA must consider climate change in the decisions identified in Schedule 1 of the CC Act, being works approval and licensing decisions, as well as when recommending new or amended state environment protection policies and waste management policies. The duty does not alter EPA's existing powers and obligations as set out in the EP Act 1970 or the EP Act 2017. Rather, it requires the consideration of additional matters when making the decisions identified in Schedule 1 of the CC Act.

2.1.3 State Environment Protection Policies and Waste Management Policies

State environment protection policies (SEPPs) and waste management policies (WMPs) are legislative instruments made under the provisions of the EP Act 1970 to provide more detailed requirements and guidance regarding the application of the EP Act 1970.

SEPPs define the uses and environmental values to be protected in Victoria and the environmental quality objectives needed to protect these beneficial uses. They are enforced indirectly, and form the basis against which, for example, EPA issues notices, works approvals and licences.

WMPs set statewide objectives and directions for waste management. They are enforced indirectly in the same way as SEPPs are enforced, except for industrial waste WMPs which are enforced directly under section 27A of the EP Act 1970 (which sets out offences related to industrial waste).

SEPPs and WMPs will no longer have a formal role once the new EP legislation comes into effect (intended to come into effect on 1 July 2020). They will, however, continue to contribute to the state of knowledge on relevant risks and risk control measures that they address and will, whilst they remain relevant to each risk, support the operation of the duties under the new EP legislation.

2.1.4 Notifiable chemical orders

Notifiable chemical orders (NCOs) are legislative instruments created under the EP Act 1970. NCOs are created if the Governor in Council is of the opinion – on the recommendation of EPA – that an NCO is necessary to prevent or abate a serious environmental hazard from one or more chemicals.

An NCO will declare a chemical to be a notifiable chemical, and either totally prohibit, or create conditions relating to the storage, handling, use or supply, of that chemical. Contravention of the requirements set out in an NCO may lead to a finding of guilt for a criminal offence.

The following NCOs are currently administered by EPA:

- Order Relating to Notifiable Chemicals (Chlorine Compounds).
- Order Relating to Notifiable Chemicals (Arsenic and Arsenic Compounds).
- Order Relating to Notifiable Chemicals (Polychlorinated Biphenyls-PCBs).
- Orders Relating to Notifiable Chemicals (Organotin Antifouling Paint).

On the commencement of the new EP legislation, an NCO made under the EP Act 1970 is taken to be a Hazardous Substance Order made under the new EP legislation, unless otherwise revoked.

2.1.5 Guidance and other documents

EPA publishes a range of documents that provide guidance and/or set out obligations (particularly for industry) in more detail. These currently include:

- Best practice environmental management publications.
- Codes of practice.
- Guidelines for environmental management.
- Information bulletins and information sheets.
- Protocols for environmental management.
- Guidance for industry on how to lodge an application or fulfil reporting obligations (e.g. works approval guidelines, annual performance statement guidelines).

Some of these documents are referred to in SEPPs, WMPs and Regulations. EPA licence conditions and works approval conditions also require industry to comply with some of these documents. EPA also publishes other documents including:

- Policy documents setting out how EPA intends to approach its work. They explain the principles that the approach is based on. Examples include EPA's Compliance and Enforcement Policy (publication 1388) and Remedial notices policy (publication 1418).
- Reports on the findings of EPA's scientific studies, monitoring and assessment work, and other matters.
- Information on a topic for the broader community, such as EPA's Noise fact sheet (publication 1467).

These documents are expected to contribute to duty holders' existing state of knowledge of good environmental practice and good management of harms after the new EP legislation comes into effect (intended to come into effect on 1 July 2020). Existing documents will be archived on the EPA website and will still be accessible to duty holders, while hard copies will still likely exist on business premises (and therefore influence business practices) after the new EP legislation comes into effect.

2.2 Other Departments and agencies

Environment protection today involves a framework of regulation, policy setting and programs across government. Over 40 separate Acts cover environmental regulation in Victoria, involving a range of state government agencies and 79 local government authorities).¹⁴

¹⁴ Victorian Competition and Efficiency Commission 2007, *Inquiry into environmental regulation in Victoria*, cited in EPA Inquiry Report page 126.

Figure 2-1 Victorian Environmental legislation¹⁵



EPA works closely with DELWP and Sustainability Victoria to develop environment protection policy and legislation, and to deliver programs that support environmental protection.

DELWP provides whole-of-government leadership on environment protection, and also has specific regulatory responsibilities, for example, relating to biodiversity protection.¹⁶

Sustainability Victoria was established to ‘... facilitate and promote environmental sustainability in the use of resources’.¹⁷ It has a significant waste management role, with a range of formal responsibilities under the EP Act, including preparing the Statewide Waste and Resource Recovery Infrastructure Plan.¹⁸ Its functions focus on:

¹⁵ Victorian Competition and Efficiency Commission 2007, *Inquiry into environmental regulation in Victoria*, cited in EPA Inquiry Report page 127.

¹⁵ EPA Inquiry Report.

¹⁶ EPA Inquiry Report.

¹⁷ Section 6, Sustainability Victoria Act 2008.

¹⁸ Section 50AA, EP Act 1970.

- Educating and providing information for businesses and the community
- Facilitating and promoting environmentally sustainable practices, including resource efficiency
- Fostering sustainable markets
- Supporting demonstration projects and providing financial assistance to further environmental sustainability
- Monitoring and reporting on waste, water and energy targets.

The Department of Health and Human Services (DHHS) delivers policies, programs and services that support and enhance the health and wellbeing of all Victorians. DHHS's vision is to achieve the best health, wellbeing and safety of all Victorians so that they can live a life they value.

The Department of Jobs, Precincts and Regions (DJPR), emergency services, and local government also have responsibilities under the various acts covering environmental regulation in Victoria. In drafting the proposed Regulations and preparing this RIS, consultation with different state government agencies and local government authorities has been undertaken. Potential interactions of proposed Regulations and alternatives across different parts of Victoria's whole-of environment regulation and management framework have been considered.

2.3 Independent Inquiry into EPA findings

In 2015, a Ministerial Advisory Committee (MAC) conducted an Independent Inquiry into EPA (the EPA Inquiry).

The Minister for Environment, Climate Change and Water asked the MAC to examine and advise on the future of EPA – what it will need to address both present and future environmental risks. The MAC was asked to consider EPA's roles relating to public health, environment protection and the regulation of greenhouse gas emissions; the appropriateness of its governance structures and resourcing; the scope and adequacy of its powers; its role in environmental justice; and Victorians' expectations of EPA.¹⁹

The MAC observed that:

From its inception, EPA has played an important role in mitigating the effects of the worst forms of air, water and land pollution. Today Victorians experience many of the benefits from these efforts – with cleaner air to breathe, and environments in which to live and work, providing a much-envied liveability. EPA's work – to control pollution, increase awareness and support better practices – reduces impacts today and also means that a better legacy is passed on to future generations.²⁰

The Inquiry Report observed that the current environment protection regulatory regime has served Victoria very well. It was also noted that:

The community expects government to set a high priority on public health and safety, and to address environmental problems and market failures to promote other social objectives. And all sections of the community understand, and accept, that environmental regulation is essential to prevent harms from pollution and waste.²¹

However, the EPA Inquiry found that the legislative framework was not well equipped to meet the community's expectations, particularly in light of major trends and emerging challenges, including:

- The changing economy including the transition from a manufacturing to service-based economy.
- The expansion of the food and fibre sectors, with increasing scale, intensification and industrial processing, has complex environmental implications, both in the short and longer term.
- Rapid population growth and urbanisation: denser and closer living, increasing waste, increasing traffic, overburdened infrastructure, declining air quality, exposure to legacy contamination and the erosion of the

¹⁹ Independent Inquiry into the Environment Protection Authority, 2016, page iv-v.

²⁰ Independent Inquiry into the Environment Protection Authority, 2016, page v.

²¹ Independent Inquiry into the Environment Protection Authority, 2016, page viii.

buffers that once insulated residential and commercial zones from industrial and agricultural smells, noise, traffic and pollution.

- The changing environment - at its core, climate change is a pollution problem, the consequence of rising greenhouse gas emissions from human activity.
- Technological change, which brings new challenges such as e-waste, the impacts of intensive agriculture, and the unknowns of emerging nanotechnology and coal seam gas extraction.²²

In order to anticipate, manage and prevent environmental and health risks, the EPA Inquiry found that EPA needs a range of tools that reflect the community's expectations and regulatory best practice, and that equip it to adopt a proactive, preventative approach to pollution and waste. It recommended reforms to:

- strengthen prevention
- hold polluters to account
- strengthen management of legacy risks
- introduce a new approach to standard setting
- deploy a wide range of regulatory instruments
- strengthen regulation of the mining sector
- build local response capacity through local government.²³

The cornerstone recommendation of the EPA Inquiry was to introduce a general duty to minimise risks of harm to human health and the environment to promote the preventative focus for EPA (Recommendation 12.1).²⁴ The EPA Inquiry also made specific recommendations in relation to contaminated land and waste management.²⁵ For contaminated land, the EPA Inquiry recommended the following:

- DELWP develop a comprehensive statewide database of sites that pose a high risk to the community because of their past use, which should link to other relevant government data sources including information held by EPA. (Recommendation 14.1)
- Integrate and strengthen planning and environmental regulation of legacy contamination, through a reform process led by the DELWP to provide a more consistent, risk-based approach to risk screening, assessment and remediation requirements and ongoing compliance mechanisms. (Recommendation 14.2)²⁶

In relation to waste management, the EPA Inquiry noted that the widespread incidence of illegal dumping of wastes, to avoid landfill costs, is undermining both the regulatory and the revenue objectives of landfill levies.²⁷ The EPA Inquiry recommended the following:

- As part of reform of the Prescribed Industrial Waste Levy, give specific attention to addressing illegal dumping and supporting responsible disposal of asbestos (Recommendation 14.3).²⁸
- Reform the Prescribed Industrial Waste Levy (and the associated regulatory framework for transporting, storing and disposing of hazardous waste) to:
 - i. curtail the growing problem of illegal dumping of hazardous waste
 - ii. reduce mounting costs of additional compliance activity targeted to illegal dumping
 - iii. avoid further erosion in the Prescribed Industrial Waste Levy revenue base due to avoidance activity. (Recommendation 21.3)²⁹

²² Independent Inquiry into the Environment Protection Authority, 2016, page v-vi.

²³ Independent Inquiry into the Environment Protection Authority, 2016, page xii.

Independent Inquiry into the Environment Protection Authority, 2016, page xiii.

²⁵ Independent Inquiry into the Environment Protection Authority, 2016, page 261, page 384.

²⁶ Independent Inquiry into the Environment Protection Authority, 2016, page 261.

²⁷ Independent Inquiry into the Environment Protection Authority, 2016, page 261.

²⁸ Independent Inquiry into the Environment Protection Authority, 2016, page 261.

²⁹ Independent Inquiry into the Environment Protection Authority, 2016, page 384.

2.4 Legislative reform

The Government's response to the EPA Inquiry endorsed the vision of shifting EPA's approach to one of prevention of harm, and the reforms are intended to deliver modern, fit-for-purpose legislation to support this.³⁰

The Government has introduced reforms to environment protection legislation to better avoid and/or manage harm arising from six key problem areas where it has been identified that behaviour is currently leading to poor outcomes:

- Catastrophic events and other major failures at hazardous sites - better hazard management is required wherever there is potential for major pollution incidents posing high health risks and requiring costly emergency responses.
- Cumulative impacts of emissions from diffuse sources – in some areas, the cumulative impact of increasing numbers of sources of individually small emissions (to both air and water) is leading to 'hot spot' environmental problems.
- Spills and incidents from small businesses and individuals – poor practices are resulting in numerous accidental discharges that are individually small but significant in aggregate.
- Exposure to contaminants from legacy sites – identifying and managing existing contaminated sites with potential health risks remains a pressing and costly issue.
- Hidden pollution creating new long-term risks – ongoing pollution unobserved by the regulator (including illegal dumping) risks creating new, hidden, contaminated 'legacy sites'.
- Conflicts between adjacent land uses, and ongoing encroachment – encroachment of residential development into buffers around other land uses means planning disputes and tensions over environmental and public health impacts continue.³¹

In addition to the GED (see section 1.1), key features of the new legislative framework are:

- Introduction of a duty to notify EPA of pollution incidents.
- A new duty to manage contaminated sites, and in instances of significant contamination also notify EPA.
- The introduction of industrial waste duties and complementary offences, which require that businesses must demonstrate that reasonable steps were taken to ensure industrial waste is taken to a place with lawful authority. A new waste management obligation for priority wastes has also been introduced, with requirements regarding containment, isolation, transaction and transport of certain wastes. Reforms include a new penalty system incorporating custodial sentences in the most serious of offences.
- Introduction of a new tailored and proportionate framework of controls for dealing with hazardous or mismanaged wastes and wastes with materials recovery potential.
- Introduction of a three-tiered permissions framework consisting of registrations, permits and licences.
- Greater capacity for councils and police to respond to unreasonable and aggravated noise in various contexts.
- Duty to remediate harm – additional legal powers for EPA to work with site operators to plan for site closure and to require management of post-closure risks over extended periods of time.
- New volume-based litter offences with increased penalties.

The new legislative framework enables the Governor in Council to make regulations with respect to any matter to be prescribed, or necessary, to give effect to the new EP legislation.

The new EP legislation introduces a new legislative instrument called an Environment Reference Standard (ERS). The purpose of the ERS is to set environmental values for the community, in a clear and accessible way, to help achieve and protect the environmental outcomes sought by all Victorians. A draft ERS has been prepared, however it is not examined as part of the

³⁰ Andrews Labor Government Response to the Independent Inquiry into the Environmental Protection Authority, 2017. Available at <https://www.environment.vic.gov.au/sustainability/independent-inquiry-into-the-epa>

³¹ Internal Victorian Government document.

RIS as it is not a Regulation. It is subject to its own impact assessment, reflecting the scientific origins of the standards it contains. More information about the ERS is provided in Appendix 1.

2.5 Stakeholder consultation

The Victorian Government has undertaken significant stakeholder consultation to inform the modernisation of EPA to meet Victoria's environment protection and human health challenges.

In developing its findings and recommendations, the EPA Inquiry drew on the insights of the Victorian public, interest groups, industry, scientists, local government, other government partners and regulators, and a range of expert analysts and academics. Views were collected through an extensive program of consultation, including via stakeholder roundtables, community forums in ten regional and seven metropolitan locations, site visits around the state, direct meetings with state and local government officeholders, community representatives and industry leaders, and more than 200 written submissions. The EPA Inquiry also commissioned expert advice including independent social research to gauge community attitudes.³²

The Victorian Government also undertook three months of public consultation in 2017-18 on its approach to banning lightweight plastic shopping bags where 8,000 submissions were received. The main engagement tool with the Victorian community was an online survey conducted through Engage Victoria. The survey asked questions to gauge support for a ban, how a ban should be designed and implemented, and about other plastic pollution issues and how they should be dealt with. The Government also received written submissions from key stakeholders, including local government, environmental groups, industry and retailers.³³

DELWP and EPA also held a series of discussions, workshops, and focus groups with key stakeholders, industry representatives, community representatives and local government throughout late 2018 and into early 2019 to inform the development of subordinate legislation. The proposed Regulations were developed in consideration of stakeholder views at these forums, during the RIS consultation, and including stakeholder views obtained during the EPA Inquiry, plastic bag ban consultation, and the independent reviews of SEPP Waters and the Environment Protection (Residential Noise) Regulations 2018.

³² EPA Inquiry, 2016, page v.

³³ Department of Environment, Land, Water and Planning, *Reducing the impacts of plastic on the Victorian Environment*, available at Engage Victoria.

3 Nature and extent of problem

This chapter outlines the nature and extent of the problem and the objectives of government intervention.

Key points:

The problem to be addressed is the residual risks to human health and the environment from pollution and waste that will not otherwise be adequately addressed, either by the new EP legislation or through other mechanisms. There is a need to supplement the GED and other legislated obligations and duties (including duties to notify EPA of pollution incidents, to manage contaminated sites and to remediate harm) to enable effective implementation and operation of the new EP legislation.

Sources of pollution and waste from industrial, commercial and domestic activities exist in all aspects of Victorian life. While such activities are important to the economic and social well-being of Victorians, they can create a risk of harm to the environment and human health that is significant enough to warrant intervention.

The new EP legislation provides a broad and flexible legislative framework which aims to better manage waste and pollution risks. Establishing the GED shifts pollution and waste management in Victoria from a reactive to a preventative framework, which will require duty holders to minimise harm to the environment from waste generation activities and to avoid or minimise pollution, so far as reasonably practicable. The risks associated with waste will be further managed under new industrial waste and priority waste duties.

The general nature of these duties means that they cover a very wide variety of circumstances and risks, whereas the proposed Regulations focus on a subset of those risks where additional government intervention should be considered.

The targeting of particular risks through the proposed Regulations occurs where Regulations are the most effective and proportionate way to deal with the risk, having considered other possible statutory responses (such as ERSs, compliance instruments, other legislative regimes) or non-statutory responses (such as policies, guidelines, schemes, education, market responses). These residual risks are represented diagrammatically in the figure below.

In addition to such areas where there are significant consequences of harm, under the new EP legislation, there will remain a number of residual risks where additional government intervention should be considered.

- Necessary for legislation to function - Some obligations under the new legislative framework cannot function or would not be enforceable without prescription under regulation.
- Risk of mismanagement - There are some areas of harm to human health and the environment where there is a known risk of mismanagement by duty holders.
- Certainty and consistency - Greater certainty is required by duty holders to ensure consistent compliance with the duties and obligations under the GED and other EP legislation (including duties to notify EPA of pollution incidents, to manage contaminated sites and to remediate harm).

Lower level interventions, such as the provision of practical guidance, will often not be adequate by themselves to support the new pollution and waste framework.

This RIS considers whether Regulations and other supporting legislative instruments are needed to enable effective implementation and operation of the GED and other duties of the new EP legislation.

Figure 3-1 The overarching and specific problems



The approach to describing the nature and extent of the problem in this chapter has been separated into two parts. Firstly, this chapter outlines the ‘overarching problem’ of harms caused by pollution and waste. Secondly, it outlines the specific (residual) problem that might still exist once the new EP legislation has taken effect, and which is the subject of this RIS.

3.1 Overarching problem

The overarching problem driving the need for intervention by the Victorian Government is the risks of harm to human health and the environment caused by pollution and waste.

DELWP and EPA have identified six specific risks and causes of harm, where behaviour is leading to poor outcomes. These have the potential to cause harm to the environment (air, land and water), which can also cause harm to human health. These are summarised in Table 3-1.

Table 3-1 Risks and causes of harm

Risk and causes of harm	Potential sources of the problem
Catastrophic events and other major failures at hazardous sites.	Pollution of air, land and water; and stockpiling or mismanagement of waste. For example, harms caused by major fires at large industrial sites.
Cumulative impacts of emissions from diffuse sources.	Pollution of air, land, water and noise. For example, harms to human health caused by air pollution from vehicles.
Spills and incidents from small businesses and individuals.	Pollution of land and water. For example, spillage of dangerous chemicals on a worksite that enter environment.
Exposure to contaminants from legacy sites.	Pollution of land and water. For example, industrial sites that are repurposed for other uses can contain contaminants that are harmful

	for new inhabitants.
Hidden ongoing pollution (including illegal dumping) creating new hidden contamination "legacy sites".	Pollution of land and water, or mismanagement of waste. For example, dumping of soil that contains hidden asbestos.
Conflicts between adjacent land uses, and ongoing Encroachment.	Pollution of air, land and water, noise pollution. For example, noise emissions that would be considered to be unreasonable at industrial sites or music venues with surrounding residential properties.

As outlined in section 2.4, the Victorian Government has delivered a foundational response to these overarching problems through the introduction of new environment protection legislation in Victoria, and more specifically, the duties which exist under that legislation. Furthermore, the new EP legislation introduces a new statutory instrument known as an ERS to support the new EP legislation, which retains some aspects of SEPPs and WMPs and relates to how environmental values are identified and articulated (also see section 2.4 and Appendix 1).³⁴

It is important to understand that in the absence of the EP Act 1970 and the new EP legislation, some environment protection would nevertheless occur as a result of other legislation, policies and program delivery in Victoria. As discussed in section 2.2, over 40 separate Acts cover environmental regulation in Victoria. These instruments will continue to exist once when the EPA Act 1970 ceases to operate and the new EP legislation commences.

There would also be an existing 'state of knowledge' including the understanding of, and arrangements, organisations have in place to comply with the current regulatory framework, which includes:

- the EP Act 1970
- existing Regulations under the EP Act 1970
- formal instruments such as SEPPs and WMPs
- informal instruments such as guidance documents and other educational material developed by EPA and industry over the past few decades.

This state of knowledge means that there is an understanding of what good environmental practice or good management of an environmental harm and human health currently looks like. There will also be existing business practices and processes in place to meet current obligations. However, this does not mean that all duty holders would manage risks to the same extent, and new entrants to the industry may not have this knowledge at all. Without intervention, the positive impacts of this knowledge would likely decline over time.

3.2 Specific problem being addressed by this RIS

The new EP legislation is the cornerstone of the new Victorian environment protection regime. It seeks to address the overarching problem of risk of harms to human health and the environment from pollution and waste through a high-level framework of controls including the GED and other obligations and duties.

The general nature of the GED means that it covers a variety of circumstances and risks. This might be adequate for many of the risks to the environment and human health, particularly in preventing and/or prosecuting extreme or catastrophic instances where duty holders are clearly in contravention of the GED. It is also more likely to be adequate where alternative approaches to complying with the duty might be available. Other duties and obligations in the new EP legislation aim to mitigate some specific risks not covered by the GED. For example, the duties to notify EPA of pollution incidents and to notify EPA of, and manage, contaminated sites.

However, these duties and obligations have a range of limitations. Specifically, sole reliance on the GED and other duties set out in the EP Act 2017, in the absence of other interventions, may create the following kinds of residual risks:

1. **Reliance on the current state of knowledge built up by businesses and individuals under the old Victorian regime may be inadequate for the long-term future of environmental protection.** Even if compliance with the existing

³⁴ These ERS are not assessed as part of the Regulatory Impact Statement guidelines as they are not a regulation, rather a statutory instrument and thus subject to their own impact assessment.

regime was sufficient to satisfy the new EP legislation, without further intervention DELWP/EPA anticipate that there will be a decline over time by some duty holders in relation to activities undertaken and their approach to the management of risks of harm. Additionally, without further intervention, cost pressures, competition, and the entry of new stakeholders may result in a decline of compliance with the general duties and obligations and the risk of mismanagement.

2. **Reversion to compliance against the current (EP Act 1970) legislative framework may, in some instances, not be compliant with the new regime.** Businesses and individuals might undertake activities to manage the risks from pollution and waste that they create as a result of the knowledge and processes built up over many years of being subject to the regulatory regime under the EP Act 1970 (e.g. limiting air emissions only to licensed limits, rather than minimising so far as reasonably practicable). This may not satisfy the requirements of the new EP legislation, particularly where new duties (such as the duty to notify of contaminated land and duty to manage contaminated land) have been introduced.
3. **Certain duties and requirements outlined in the new EP legislation can only become enforceable with prescription in subordinate legislation.** These include, for example, definitions for priority waste classifications, or the activities prescribed to require a licence, permit or registration. Lack of subordinate legislation supporting the duties may leave them unenforceable and exposes humans and the environment to the full risks that these duties aim to protect. Legislated obligations and duties requiring further prescription to become enforceable are detailed further in Table 3-2.
4. **Subordinate legislation may also be needed to support EPA’s power to request particular actions from duty holders.** For example, absence of a permissions framework means EPA would be operating without a structured and transparent framework within which to request certain actions which address areas where there is a significant risk of harm e.g. request a generator of air emissions to model or monitor their air emissions.
5. **Relying only on the duties specified in the new EP legislation could result in unnecessary uncertainty about what constitutes compliance and in some cases this could result in either over- or under-compliance.** This may lead to either higher costs to business caused by over-compliance, or adverse environmental outcomes (such as an increase in pollution or mismanagement of waste materials) resulting from insufficient action. Without further direction, duty holders may have to determine for themselves – at their own cost – when and how to directly identify, assess and control risks. This problem may be overcome in the medium-long term through test-cases in the courts to establish precedents and an understanding of what the required standards of behaviour are, but this may take several years and be very costly.
6. **Duty holders lack information on the consequences of their actions, or the incentives to implement appropriate risk control measures that protect the environment and human health.** Duty holders might not reasonably see or understand the consequences of their actions (for example, because impacts might be dispersed such as in the case of vehicle emissions or not visible such as in the case of some pollution of contaminated land). Costs to the environment and human health from waste and pollution are often also externalised rather than borne by the duty holder. These costs are commonly referred to as externalities or spill-overs.
7. **The new EP legislation has limited capacity to achieve the Government’s objective of reducing reliance on landfills and encouraging resource recovery and reuse.** While the new EP legislation introduces tailored control for priority waste categories, it does not specify types of priority waste. The GED (which requires duty holders to take reasonable steps to prevent risk of harm to human health and the environment) is unlikely to readily apply to actions surrounding the generation, handling and disposal of non-hazardous waste.

Table 3-2 details why regulations are or may be needed to support certain areas of the new legislative framework.

Table 3-2 Legislated obligations and duties, and examples of reasons why regulations are (or may be) needed

Area of new EP legislation	Why regulations are or may be needed
Introduction of permission tiers for activities with different levels of risk and complexity.	Regulations are required to prescribe which activities require a development licence, pilot project licence, operating licence, permit or registration, and which activities may require a financial assurance. The permissions framework cannot function without regulations.

Area of new EP legislation	Why regulations are or may be needed
Contaminated land – a new duty to manage contaminated sites, and in instances of significant contamination, to also notify EPA.	Lack of prescriptive detail in the new EP legislation means there is a lack of certainty with respect to duty holders’ contaminated land management and notification obligations. If this detail were to be included in regulations, it would provide greater consistency and certainty to duty holders with respect to complying with some elements of the new EP legislation, particularly in relation to how contamination is assessed against ‘naturally-occurring concentrations’. There is also no prescriptive detail for what constitutes a notifiable contamination of land unless the cost of remediating the contaminated land is likely to exceed \$50,000. In time such costs may become clearer, however, in its initial stage, a more prescriptive determination of what is notifiable is desirable to meet the objectives of this notification duty.
Industrial Waste – among the new duties in relation to industrial waste, businesses will be required to demonstrate that reasonable steps were taken to ensure industrial waste is taken to a place or premises that is authorised to receive industrial waste.	The definition of “authorised to receive industrial waste’ under the new EP legislation is not sufficient. Without defining what a lawful place is, there will be significant uncertainty for duty holders in determining where they can deposit waste. This could lead to delays in the waste process as duty holders try to understand how to comply. This is likely to result in increased costs for duty holders (such as seeking EPA or specialist advice). It is also likely to result in higher costs of administering the legislation for EPA. Regulations are needed to prescribe the places and premises that are authorised to receive industrial waste.
Priority waste - new waste management obligations apply for priority waste and reportable priority wastes. There are additional duties surrounding the transport, management and disposal of these waste types.	The new EP legislation defines reportable priority waste as any industrial waste that is prescribed as such; the process by which would form the subject of regulations. Without regulations, priority wastes would not be prescribed and the duties and controls in the new EP legislation cannot function.
Waste levy – the new EP legislation sets out the waste levy scheme. The waste levy creates a further incentive for persons involved in waste management to investigate ways to reduce the amount of waste they generate.	Differential waste levies are charged based on the classification of waste types. Regulations are required to prescribe waste classifications in order for the waste levy scheme to function effectively under the new EP legislation.
Noise – the new EP legislation provides councils, residential noise enforcement officers and police with greater capacity to respond to unreasonable and aggravated noise in various contexts.	Without regulations, residents and enforcement officers would not have certainty and transparency regarding noise obligations (e.g. forms of noise, times of day), which could result in harms caused by noise and add unnecessary cost and effort to resolving residential noise disputes.
Fees.	In the absence of regulations, EPA (and, for some permission activities, councils) will not be able to charge fees, and regulatory costs would need to be recovered from general revenue, with consequent impacts on efficiency and equity.
Infringements.	Regulations are required to specify which offences are infringeable offences. Some offences would not be enforceable by EPA (and in some instances, councils) without prescription under regulation.
Vehicle emissions - under the new EP legislation, despite the repeal of the EP Act 1970, the Environment Protection (Vehicle Emissions) Regulations 2013 will remain in force during the period from 1 July 2020 until 10 December 2023 unless otherwise revoked. However, the preferred position of DELWP and EPA is to repeal these Regulations when they are introduced into the new regime.	No specific motor vehicle offences have been included in the new EP legislation. The significant human health and environment impacts posed by vehicle emissions and noise are cumulative and an individual vehicle’s level of pollution will not on its own trigger an obligation under the legislative framework because the controls are beyond what may be deemed reasonably practicable.

When identifying residual risks that require further controls in regulation, the following principles have been applied:

- Necessary for legislation to function - Some obligations under the new legislative framework cannot function or would not be enforceable without prescription under regulation.
- Significant impacts on human health and the environment - Some risks of harm to human health and the environment can lead to significant consequences and require further regulatory controls.
- Risk of mismanagement - There are some areas of harm to human health and the environment where there is a known risk of mismanagement by duty holders, which means further regulatory control is required.
- Certainty and consistency - Greater certainty is required by duty holders to ensure consistent compliance with the duties and obligations under the GED and other EP legislation

In summary, the problem to be addressed is that there will remain unacceptable residual risks to human health and the environment from pollution and waste following the application of the new EP legislation. There is a need to support the GED and other obligations to enable effective implementation and operation of the new EP legislation. This RIS seeks to address both the case for introducing further intervention, and the appropriate manner of that intervention.

Part 2 of this RIS provides more detailed information about the specific problem areas.

3.2.1 Drivers of the specific problem

There are a number of behavioural factors, incentives and information problems that drive the residual risks described above:

- Lack of information – If a duty holder does not have information on the human health or environmental risks because it is not readily available or is too costly to access or collect, they will make an uninformed decision. While there may be some scope for duty holders to learn from mistakes over time, catastrophic events can arise from just one uninformed decision, or there might not be opportunity to learn over time (for example, buyers of land might not need to make the same decisions again).
- Difficulty in assessing risk accurately – the GED requires duty holders to understand the risk of their activities causing harm to the environment and human health. There are a range of cognitive biases that mean risk may not be processed accurately. For example:
 - Optimism bias: causes a person to believe they are less at risk of experiencing a negative event compared to others resulting in overconfidence in risk judgements relevant to pollution and waste.³⁵
 - Neglect of probability bias: is the tendency of a person to disregard the probability of a particular future event occurring. In industries with high impact/low frequency events, duty holders may, due to neglect of probability bias, treat the probability of a catastrophic event as zero rather than very small.³⁶
- Duty holders don't face the full cost to the environment and human health of their decisions – As a result, duty holders may underinvest in preventing pollution and waste because:
 - Costs of pollution and waste are passed onto the environment and general community (e.g. through social welfare payments associated with medical and health costs, or reduced amenity of environment in which people live). These costs are often referred to as 'negative externalities' and occur when an activity imposes costs, which are not compensated for, on parties not directly involved in the activity.
- Some businesses may consider the cost of compliance to be high relative to the risk of the cost of cleaning up pollution and the cost of any sanctions that EPA might impose, and derive benefit from wilful non-compliance.

The extent to which these behavioural factors and incentive/information problems are controlled for or impact a duty holder depend on:

- The reputational incentives that duty holders face to ensure their own safety and profitability by taking steps to manage their risks. Reputation can impact on a duty holder's ability to attract and retain staff and its ability to sell products or operate in a particular marketplace.

³⁵ Shepperd, J. A., Carroll, page , Grace, J., & Terry, M., 2002, Exploring the causes of comparative optimism, *Psychologica Belgica*, 42, 65-98

³⁶ Baron, J., 2000, *Thinking and Deciding* (3d ed.), Cambridge University Press page 60-261

- General forms of technological improvement that bring reduced risks or reduce the cost of managing risks.
- Market-driven factors such as commercial insurance or actions of their competitors that incentivise a duty holder to take steps to manage their risks.
- The effectiveness of other regulatory controls could impact on the residual risk being addressed in this RIS. For example, Worksafe Victoria regulates the management and removal of asbestos in workplaces (under the Occupational Health and Safety Regulations 2017) which could change behaviour of businesses and reduce the likelihood or consequences associated with illegal dumping waste. Victorian planning regulations dictate the proximity of certain facility types, such as landfills, to sensitive land uses; this may impact business decisions about where to locate or activities taken to comply with the GED.

These behavioural factors, incentives and information problems are important factors in assessing whether regulations are necessary to address the problem (as well as how any regulations should be designed), and are frequently referenced in the discussions of residual risks for specific problem areas in Part 2 (Analysis by specific problem area).

3.3 Evidence of the problem

This section discusses the harm to the environment and human health caused by pollution and waste, and the costs that arise as a result. Evidence is provided to demonstrate the overarching problem, noting there are challenges of isolating harms and identifying evidence for the residual risks. It is particularly challenging to identify evidence for a situation that does not currently exist i.e. the expected residual risks once the new EP legislation takes effect (intended to commence effect on 1 July 2020).

Pollution and waste in their many forms are a problem because they can:

- Damage human health, imposing financial costs on the health care system and impacting quality of life including causing disease, premature death and reduction in mental health.
- Create economic loss, including increased business costs, business closures and loss of income, as a result of land being deemed unsuitable for certain uses, damaged products, causing disruption to business activities and transport.
- Impose remediation / clean-up costs in response to legacy contamination.
- Generate incident response costs, for example for emergency services, EPA and councils.
- Impose costs on the community such as school closures and the requirement to stay indoors in the case of toxic chemical fires.
- Negatively impact amenity and recreational value, for example due to reduced enjoyment of natural environment.
- Damage animal and plant health, including causing animal and plant death.
- Reduce biodiversity, including in some cases threaten entire species.

Costs incurred as a result of waste and pollution can be significant. Large scale examples range from the costs of the Hazelwood mine fire, estimated to exceed \$100 million³⁷, to the estimated costs of returning a former recycling site near Geelong to compliance with its planning permit or to conduct a total clean ranging from \$20 million to \$150 million³⁸. The cost of street sweeping services in Victoria, undertaken by local governments (with the cost ultimately borne by rate payers), was \$59 million in 2016-17.³⁹ Quantified total health costs from particulate matter emissions from the use of wood heaters in Victoria have been estimated at over \$8 billion over 10 years to 2028, or \$5.8 billion in present value terms (2017 dollars).⁴⁰

³⁷ Hazelwood Mine Fire Inquiry, available at <http://report.hazelwoodinquiry.vic.gov.au/executive-summary-2/hazelwood-mine-fire.html>.

³⁸ The Age, *Liquidation means taxpayers could be stung \$150m*, 18 December 2019.

³⁹ Sustainability Victoria, *Victorian Local Government Waste Services Report, 2016-17*, page 20.

⁴⁰ Regulatory Impact Solutions, *Policy Impact assessment for the variation to the Waste Management Policy (Solid Fuel Heating)*, 2017.

Figure 3-2 Former recycling centre and then illegal rubbish dump near Geelong



3.3.1 Data availability

More data is provided to demonstrate the harms and costs of the problems in the specific problem area chapters (Part 2 of this RIS).

There are limitations in regard to the data available on these problems, not only in Victoria but in other jurisdictions. Unlike other policy areas, such as occupational health and safety, the data on environmental damage or illness or fatalities as a result of pollution and waste is typically difficult to collect, since the nature of the harm to the environment or human health can be dispersed or long term. Furthermore, waste and pollution may be contributing not casual factors. Evidence is sometimes piecemeal and ad hoc. Some areas, such as air pollution, have better data available than others, such as water pollution or contaminated land and groundwater, where many gaps exist. This reflects the different monitoring frameworks that are in place, the level of health evidence accumulated, and also that some parts of the environment are inherently more difficult to monitor and understand than others.

The difficulty in obtaining evidence that enables a clear quantification of the problem, and particularly data that is specific to Victorian, may also indicate that the current regulatory regime goes some way to preventing risks of harm to human health and the environment. However, this relationship is difficult to prove or quantify.

Due to the intangible nature of some of these impacts, it is also not possible to quantify all the costs, particularly social and environmental costs. There also does not appear to be any comprehensive data on those more easily quantified costs. Costs have therefore not been aggregated or calculated in per person terms because to do so would imply that the data are more complete and rigorous than is actually the case.

Part 2 of this RIS provides more detailed discussion of the evidence of the problem for each specific area, subject to the limitations discussed here.

3.3.2 Enforcement and compliance data

This section provides an overview of EPA's data on the incidence of pollution reports from 2013 to 2018, which is an indicator of the size of the aggregate problem. While these reports relate to reported incidents, there are likely to be many incidents that go unreported to EPA.

EPA responds to over 11,000 reports of pollution each year. The vast majority of these reports are made by the community, although EPA also receives reports related to emergencies and pollution notifications from businesses.

It is important to note that these reports were received under the current legislative framework (i.e. under EPA Act 1970), and may reflect factors such as the effectiveness of EPA's compliance approach. They might also reflect external factors such as weather conditions e.g. dry, dusty conditions or fuel reduction burns taking place that lead to an increase in dust and odour-

related pollution reports. They do not, therefore, necessarily provide a complete picture of the extent of the underlying problem to be addressed through the proposed Regulations, but can provide an indication of some key problem areas.

Table 3-3 Pollution reports received annually by EPA

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Pollution reports from the community	10,400	10,490	9,376	9,201	10,577	13,244
Emergency reports	305	309	342	246	195	168
Business notifications	1,014	1,393	1,454	1,565	647	1,880
Total	11,719	12,192	11,172	11,012	11,419	15,292

Source: EPA Victoria Annual Reports 2016-17 and 2017-18.

The significant increase in pollution reports from 2016-17 reflects a large jump in noise reports from 2016-17 to 2017-18. This is driven by a range of factors including, for example, increasing activity associated with the growth of metropolitan Melbourne, increasing community awareness of noise, and the accessibility of the EPA reporting hotline. At the same time, there has been a steady decline over the past 5 years in emergency reports.

Table 3-4 shows the number of reports received in 2017, broken down by EPA region and complaint type. By far the most reports are received about odour, followed by noise, water and waste. This does not necessarily reflect the number of pollution incidents; it also reflects factors driving people to report pollution, such as how the pollution impacts them personally and how noticeable the pollution is. A lot of pollution that is not noticeable, such as underground contamination, or small spills that have a large cumulative impact across many such spills, is unreported.

Therefore while noise and odour may be the most frequently reported incidents, it does not mean they are likely to be the forms of pollution which are most costly to Victoria. A greater proportion of total costs is likely to be made up of cumulative impacts of emissions from diffuse sources rather than as a result of catastrophic events and other major failures at major industrial sites.

Table 3-4 Pollution reports received in 2017-18 by region and complaint type

	Metro	South Metro	South West	Gippsland	North West	North East	Not Assigned	Total
Odour	2,281	1,240	340	250	149	131	75	4,466 (29%)
Noise	1,578	415	237	100	98	99	199	2,726 (18%)
Water	1,095	393	172	84	131	101	136	2,112 (14%)
Waste	877	440	209	165	129	139	144	2,103 (14%)
Business notification	557	445	331	97	261	150	39	1,880 (12%)
Smoke	264	129	253	37	47	38	35	803 (5%)
Emergency report	77	28	12	13	10	23	5	168 (1%)
Not assigned	5	3	3	1	1	7	2	22 (0%)
Total	7,154	3,390	1,664	798	888	719	679	15,292

Table 3-5 provides a summary of EPA's compliance, enforcement and assessment activities from 2014-17. Overall, there has been an approximately one third drop from 2013 to 2017 in some of these activities, such as fewer noise/smoky vehicle notices and litter infringement notices being issued.

EPA data on clean up notices issued (180 in 2018) provide an indication of the cost of failing to prevent pollution. When issuing clean up notices EPA estimates the costs of clean up and ongoing management. From 2010 to 2018 estimated clean-up costs totalled \$287 million and included:

- \$9 million across 150 notices to remove illegally dumped waste (around \$60,000 per notice).
- \$23 million across 65 service stations requiring clean up (around \$350,000 per notice).
- \$150 million across 126 industrial sites (around \$1.2 million per notice).
- \$105 million across 22 petroleum storage sites (around \$4.7 million per notice).⁴¹

Table 3-5 EPA's compliance and enforcement activity, 2014-18

<i>Activity</i>	2013	2014	2015	2016	2017	2018
Industry programs						
Inspections	2,566	2,950	2,252	1,903	1,796	2,225
Pollution abatement notices	220	265	300	266	273	392
Clean up notices	125	206	233	188	153	180
Minor works pollution abatement notices	92	88	76	59	53	60
Prosecutions completed	-	1	6	12	11	22
Official warnings	33	36	94	122	99	110
Penalty infringement notices	28	29	64	57	112	83
Environmental audits completed	200	207	218	218	145	114
Works approvals issued	44	32	28	27	17	18
Applications exempt from the need for approval	-	19	36	38	34	33
Licenses amended/ transferred	62	61	74	75	67	82
Planning referrals advised on	532	795	787	711	743	807
Vehicle programs						
Noisy vehicle notice	4,705	2,141	1,731	995	966	1,676
Smoky vehicle notice	4,464	2,167	2,334	2,015	1,859	1,617
Infringement notices	55	13	36	57	12	64
Official warnings	14	4	15	11	12	14
Litter Programs						
Infringement notices	16,527	12,859	13,403	15,141	12,984	12,165

Source: EPA Victoria Annual Reports 2017-18, 2016-17, 2013-14 and 2014-15.

⁴¹ EPA information.

3.4 Risks of non-intervention

In the absence of government intervention, sole reliance for environmental protection is via the GED, other duties and obligations established in the new EP legislation, and established good environmental practices (state of knowledge). Although duty holders will still have incentives to address risks to human health and the environment (as discussed in Section 3.2.1 above), there remain many residual risks, which are set out earlier in this Chapter.

It may be possible to address some of these residual risks through expanded enforcement activity and the provision of additional guidance and education campaigns. However, the effectiveness of enforcement can be constrained in some cases (e.g. where pollution is dispersed or difficult to identify), and the costs of expanded enforcement could be prohibitive. Increased enforcement is also not relevant where the specific problem being addressed is that duties and obligations under the new EP are not enforceable without prescription in subordinate legislation.

Ultimately, these residual risks have the potential to result in an increase in the number of pollution or waste incidents that harm human health and the environment, and increased costs to duty holders and government. This creates substantial costs to society, including to the health system and the economy more generally. However, it is likely that, as a result of the existing state of knowledge (see section 3.1), outcomes would decline gradually rather than suddenly.

Risks of non-intervention are addressed for each specific problem area in Part 2 of this RIS.

3.5 Objectives of government intervention

The proposed Regulations aim to address the residual risk of harms to human health and the environment which may not be adequately addressed or controlled by the new EP legislation. They also aim to provide further detail to improve clarity, reduce regulatory burden or improve environmental outcomes.

4 Options

This chapter outlines the range of options that have been considered for addressing the problem and achieving the objectives outlined in section 3.5 above. A high-level discussion of the advantages and disadvantages of different potential options is provided in order to inform the development of a feasible set of options for each specific problem area.

Key points:

This RIS assesses a range of options to achieve the objectives set out in section 3.5. A broad range of approaches has been considered, ranging from regulations through to non-regulatory and market-based approaches, including options that reduce the burden imposed on business and/or the community.

The over-arching approach, as set out below, is that every specific problem area being assessed in the RIS includes, at a minimum, a comparison of regulations versus the Base Case. Lighter touch, non-regulatory approaches or market-based options are included in the set of feasible options for each specific problem area on a case-by-case basis:

- **Base Case** – “primary legislation, no regulations” scenario is included in the RIS for comparison purposes.
- **Regulations:**
 - Option 1 - A minimum set of regulations only for those matters where further prescription is required (through regulations) in order to make the new EP legislation effective upon its commencement.
 - Option 2 – Option 1 plus additional regulations to address the residual risk of harms which may not be adequately addressed or controlled by the new EP legislation or where further specificity is required to improve certainty, reduce regulatory burden or improve environmental outcomes.
- **Light touch regulations, non-regulatory approaches or market-based options** (where appropriate).

As part of the RIS process, it is necessary to consider different options that could achieve the Victorian Government’s objectives. The *Subordinate Legislation Act 1994*, the *Subordinate Legislation Act Guidelines*,⁴² and the *Victorian Guide to Regulation*⁴³ require that this includes a range of approaches, including co-regulation and non-regulatory approaches, and options that reduce the burden imposed on business and/or the community.

For every specific problem area being assessed in the RIS there is, at a minimum, a comparison of regulations versus the Base Case, as set out below. Some problem areas include multiple regulatory design choices where the Base Case is compared to different regulatory options. The design of the new EP legislation and nature of each specific problem area mean that some options are more or less suitable in relation to certain problem areas than others, or might only be suitable as complements to, rather than substitutes for, explicit government regulation.

- **Base Case** – “primary legislation, no regulations” scenario is included in the RIS for comparison purposes. Key features of the Base Case are:
 - It is a counter-factual scenario used to provide a common point of comparison for all options.
 - The new EP legislation applies, but there are no regulations or other approaches to supplement it.

⁴² Office of the Chief Parliamentary Counsel, *Subordinate Legislation Act Guidelines*.

⁴³ Department of Treasury and Finance 2016, *Victorian Guide to Regulation, A handbook for policy-makers in Victoria*

- Other legislation, policies and program delivery that make up the broad spectrum of environmental regulation in Victoria, new ERSs (see section 2.4 and Appendix 1 for further information about ERSs) and existing documentation as part of the “state of knowledge” as discussed in section 3.2 of this RIS would apply.
- **Regulations:** Regulations are created to establish a range of requirements that improve the effectiveness of the new EP legislation, or provide certainty as what a duty holder must do in order to comply with their duties and obligations. Two broad regulation approaches are used:
 - Option 1 - A minimum set of regulations only for those matters where further prescription is required (through regulations) in order to make the new EP legislation effective and/or operational upon its commencement.
 - Option 2 – Option 1 plus additional regulations to address the residual risk of harms which may not be adequately addressed or controlled by the new EP legislation or where further specificity is required to improve certainty, reduce regulatory burden or improve environmental outcomes.
- **Light-touch regulations, non-regulatory approaches or market-based options:** these included in the feasible set of options for each specific problem area on a case-by-case basis.

The following sections provide a discussion of each type of approach that could be used.

4.1 Regulatory approaches

Potential regulatory approaches include:

- Direct/explicit regulation: where compliance is mandatory, with sanctions for non-compliance.
- Lighter forms of regulation, such as licences^{44,45} or co-regulation, where industry develops its own standards or accreditation/ratings schemes with legislative backing from government.
- Quasi-regulation: where government assists with the development of industry standards, accreditation and/or rating schemes. Government can influence business to comply, but quasi-regulation does not form part of explicit government regulation.

Direct government regulation can include mandating performance standards, mandating processes to be followed, providing permissions, requiring record keeping, and prescribing matters of detail to enable the new EP legislation.

Direct/explicit regulation is most appropriate when, among other things, the problem is high-risk or of high consequence, where there is a history of non-compliance, or where community and industry requires certainty about legal requirements or sanctions for non-compliance. If few of these conditions are met, lighter forms of regulation (e.g. licences) or non-regulatory approaches should be considered.

For this RIS, the suitability of lighter-touch forms of regulation varies according to the problem area. For contaminated land, the problem is highly dispersed across many land owners. Knowledge about the location of contaminated land is incomplete and highly dispersed and, from EPA’s perspective as a regulator, it may be unclear who and how many land owners are responsible for contaminated land. In some cases, the problem is also high-risk and has high consequences. Lighter forms of regulation such as co-regulation are less likely to be suitable. For industrial waste, the industry players may be more identifiable than for contaminated land, but in a small part of the sector there has been a history of poor compliance; this also makes lighter touch forms of regulation or non-regulatory approaches less suitable.

4.2 Non-regulatory government policy interventions

Non-regulatory interventions that could be used in conjunction with the new EP legislation to address the problem of environmental harm include:

- Public information and education campaigns, Information disclosure
- Guidance.

⁴⁴ Licence conditions are categorised as a regulatory approach in this RIS because they share the characteristics of regulatory approaches in that they are mandatory and prescriptive.

⁴⁵ For the purpose of the general discussion in this chapter the term licences is a broad term referring to permits, licences, and registrations.

On their own these non-regulatory interventions are best suited to lower risk and lower consequence environmental or human health problems, or where lack of information, as distinct from deliberate non-compliance, is a key driver of the problem. They are unlikely to be appropriate as the sole intervention for activities involving higher risks of harm, and in dealing with problems where non-compliance is a significant issue, such as the storage of hazardous waste. However, they can be effective in conjunction with other interventions.

Public education and information campaigns have been used, sometimes quite effectively, in addressing risks to the environment and human health. Advertising campaigns that focus on the impact of litter on beaches and marine life are an example. Information campaigns can also enable the provision of significant practical information about the legislative requirements in a format that is clear and accessible. For example, EPA undertakes public campaigns that educate Victorians on how to protect the environment by reporting litter, pollution, smoky vehicles and illegal dumping.

Because they rely on voluntary action, public education campaigns often work well where individuals or businesses have a self-interest in acting in response to the information. This could be a financial or health-related self-interest, but could also include a desire to ensure that the environment and human health is protected for intrinsic reasons.

Guidance can also be provided by EPA to support duty holders to understand their obligations. Guidance can be provided in different forms. For example, guidance materials could contain information on the steps a business could take to satisfy the GED, or case studies and educational material about which businesses are required to hold different types of permissions.

Under the new EP legislation,⁴⁶ EPA can issue statutory guidance in the form of compliance codes to provide practical guidance to duty holders about the best ways to identify, assess and manage risks for particular industries or activities. Compliance codes will be developed by EPA in partnership with industry and technical experts and include public consultation. Compliance codes are non-mandatory, but a duty holder is taken to perform a duty or satisfy an obligation under the new EP legislation if they are appropriately complying with the relevant code. However, a failure to comply with a compliance code does not give rise to any civil or criminal penalty (duty holders can use other approaches than that which is outlined in the compliance code, as long as they are managing risks to an equivalent extent).

However, because they are not mandatory, compliance codes and other guidance materials need to be voluntarily adopted by businesses. Even if they are more comprehensive than the regulations, adherence will be more inconsistent than if regulations were in place because they are not mandatory. Thus this approach is more appropriate where the problem is more one of uncertainty or lack of understanding rather than deliberate non-compliance. Depending on the problem area, non-statutory and statutory guidance is likely to be most useful for complementing the other interventions.

Formal guidelines are also specifically contemplated by the new EP legislation, however in contrast to *guidance*, duty holders or EPA **must** have regard to these, if they are issued. For example:

- Section 141 of the EP Amendment Act 2018 enables EPA to issue *guidelines* setting out alternatives to waste disposal – which, if issued, must be considered by persons with management or control of priority waste for which alternatives to disposal must be investigated.
- Section 188 of the EP Amendment Act 2018 provides for EPA to issue guidelines for assessing proposed better environment plans, which are a form of voluntary agreement between a duty holder and EPA, outlining a voluntary pathway to compliance.
- Section 182 of the EP Amendment Act 2018 requires that when determining whether to accept a proposed better environment plan, EPA must take into account any guidelines issued under section 188.

⁴⁶ Section 100(1).

Information disclosure by businesses is also a possible option. An example of this in the environmental protection area is the requirement for liable entities with emissions above a certain level to report their emissions under the National Greenhouse and Energy Reporting scheme.⁴⁷

However, information disclosure is sometimes not a feasible approach, particularly where there is not an obvious consumer market that would benefit from increased information. One exception is possibly disclosure in relation to contaminated land, where there are potential buyers of contaminated land who might not otherwise have full information. However, in this case, the new EP legislation already requires significant information disclosure to the future persons in control or management of the land (via the duty to manage contamination in section 39), EPA and subsequently the public (via EPA).

4.2.1 Self-regulation

Self-regulation involves voluntary agreement within an industry to comply with industry-developed codes of conduct or standards. There is no government enforcement. It is possible that self-regulation could take the form of guidance prepared by industry groups to assist their members understand and meet their duties and obligations. However, such activity would in fact form part of what constitutes “reasonably practicable” as matters that are “known or ought reasonably to be known” about the risks and means of risk control, which is an element of the GED and duty to manage contamination. Additionally, it is considered unlikely that complete self-regulation would occur in the form of voluntary codes developed and maintained by industries. It is therefore not an option considered further in this RIS.

4.2.2 Market based instruments

Market based instruments are policy interventions that use the characteristics of well-functioning markets to deliver policy outcomes.⁴⁸ If properly designed, they can reveal important information to policy makers and provide incentives which align individual and public environmental and health objectives, helping government to achieve its objectives while avoiding the regulatory burden of more traditional regulatory intervention.⁴⁹ They include taxes, fees or levies, subsidies, and tradeable permits.

Market based instruments have the potential to be used to address residual environmental harms. For example, pollution generates negative externalities and the application of levies to defined outputs (of goods or services, or the externality itself) can reduce pollution. Many risk-creating activities are financially motivated and, as such, industry is likely to respond to financial incentives. Market-based instruments were considered in the drafting of the new EP legislation, and the legislation provides for an environmental protection levy and a waste levy.

Subsidies or similar incentives can also be used to target certain outcomes. For example, subsidies can be granted to businesses to invest in technology that reduces pollution, or provided to businesses based on outcomes such as reductions in pollution. Subsidies are costly to government and therefore any consideration of such approaches needs to take into account the Government’s broader budget position and objectives.

Tradeable permits or similar mechanisms have been applied in Victoria to address issues such as biodiversity conservation (e.g. the Bushbroker scheme) and salinity. They have been used elsewhere in areas including climate change and water discharges. However, establishing such markets can be complex and challenges include establishing the information base that will support a market, particularly where there are high search and information costs, bargaining and decision costs or policing and enforcement costs. This will often be the case for diffuse sources of pollution and other areas where environmental outcomes are substantially displaced in time or space from the “production” decisions.⁵⁰ In addition, some markets will not operate effectively if there is no property owner, or not enough sellers and buyers, or the price of the permit is too volatile.

⁴⁷ Clean Energy Regulator, National Greenhouse and Energy Reporting, available at <http://www.cleanenergyregulator.gov.au/NGER/About-the-National-Greenhouse-and-Energy-Reporting-scheme>.

⁴⁸ Victorian Guide to Regulation – Toolkit 1.

⁴⁹ Victorian Guide to Regulation, Toolkit 1: Purposes and types of regulation, page 16.

⁵⁰ Proceedings of the 6th Annual AARES national Symposium 2003, Opening Address, Roger Beagle.

http://www.aton.com.au/publications/Proceedings_AARES_2003.pdf

PART 2 – ANALYSIS BY SPECIFIC PROBLEM AREA

5 Introduction to problem areas

This Part of the RIS provides an analysis of the regulatory impacts associated with the following problem areas:

- Permissions
- On-site wastewater management systems (Septic tank systems)
- Contaminated land
- Waste
- Litter
- Plastic bags
- Air
- Water
- Noise
- Vehicle emissions.

Each chapter includes a discussion of:

- Background to each problem area
- Current legislative and regulatory framework
- New EP legislation
- Nature and extent of the (overarching and residual) problem
- Options being assessed in this RIS
- Assessment of options and identification of preferred option.

Proposed permissions regulations are analysed first, prior to other harms being analysed. This is because the establishment of a tiered system of permissions to support risk based and proportionate regulatory oversight is a cornerstone part of the new EP legislation and it also has interactions with a number of other proposed areas of regulation (see section 5.5 below for further discussion of interactions). On this basis, it is logical to discuss permissions first, and this also results in less repetition of explanatory detail throughout the document.

Analysis of cost recovery and fees is also included in this Part, but with its own chapter structure.

5.1 Approach to economic evaluation

All problem areas include the assessment of costs and benefits under a range of options relative to a Base Case of no regulation, consistent with requirements outlined in the Victorian Guide to Regulation.⁵¹

Because this RIS addresses a range of problems areas, some including a range of parts, and each with different data limitations and characteristics, the approach has been to use the most rigorous tool available for each problem area, estimating overall costs and benefits to the maximum extent feasible.

Wherever possible, the benefits to the environment and the community from improved environment protection controls, and costs to duty holders and the government of implementing and administering regulations, have been quantified.

Where most benefits and costs were able to be quantified, a CBA was undertaken.

There were, however, insufficient data to quantify and value all costs and benefits in all problem areas. This is particularly true for environmental and human health benefits. Despite this, all costs and benefits have been considered and, where quantitative data are not available, qualitative information is provided.

⁵¹ Department of Treasury and Finance, 2013, *Cost Recovery Guidelines*, January.

The assessment undertaken in these cases used various types of assessment methods, which vary depending on the size of the problem being addressed, the options being considered, and the extent of data available.

Assessment for each area involved a wide range of inputs, including EPA data, data from previous RISs and Policy Impact Assessments (PIAs), data gathered through the web-based survey and one-to-one interviews, and data gathered from a variety of publicly available sources. The method for collecting data via stakeholder consultation is outlined in Chapter 20.

The different assessment methods are outlined below.

5.1.1 Cost-benefit analysis (CBA)

As the preferred approach to assess policy options, CBA provides a robust method for evaluating the costs and benefits of a policy proposal in today's dollars to society as a whole. The estimated net benefits (total benefits minus total costs), together with any significant impacts that cannot be valued, are used to help identify the preferred option.

For this RIS, CBAs were calculated over a ten year timeframe, with 2020-21 as Year 1, and summarised in net present value (NPV) terms using a 7% discount rate.⁵² A benefit-cost ratio (benefits divided by costs) was also calculated.

5.1.2 Break-even analysis (BEA)

As noted in the Victorian Guide to Regulation, BEA can be used to establish how effective an option needs to be to offset its costs. Supporting reasoning and evidence needs to be provided to explain whether the proposal will likely deliver or exceed the 'break even' point. BEA requires units of benefit to be estimated.⁵³ For example, a BEA estimates the number of fatalities that would need to be prevented for an option to generate benefits that would offset or equal the costs of the option. A qualitative judgement is then made as to how achievable these benefits are in practice.

5.1.3 Multi-criteria analysis (MCA)

Most problems in this RIS have been assessed using MCA. MCA requires judgement of how the proposed options will contribute to a series of criteria that are chosen to reflect the benefits and costs associated with each option. Each criterion is assigned a weight reflecting its importance to the policy decision, and a weighted score is then derived for each option. The option with the highest weighted score is the preferred option. The MCA technique is outlined in Box 5.1.

Box 5.1 Multi Criteria Analysis

MCA refers to a range of techniques to assess policy options against decision criteria. MCA enables options to be compared in a way that utilises quantitative and qualitative evidence fully. The approach enables the inclusion of a wider range of criteria — including social and environmental considerations for example — than used in a typical financial analysis. In addition, the approach is transparent — necessarily subjective judgements and assumptions made to determine options and criteria, and to assign scores and weights are made explicitly. The preferences of the decision maker reflected in these judgements and assumptions can be readily changed in a sensitivity analysis or to incorporate alternative indicators of community preference.

Criteria

The options have been assessed based on a framework which considers the following criteria:

- **Effectiveness** – the degree to which the option is expected to reduce the specific harms or achieve other specific objectives.
- **Cost** – the degree to which the option imposes regulatory or administrative costs on businesses or the Government.

Weightings

⁵² As per category 2 of Department of Treasury and Finance's recommended discount rates, *Economic Evaluation for Business Cases Technical guidelines*, August 2013, page 25.

⁵³ Department of Treasury and Finance, 2013, *Cost Recovery Guidelines*, January, Figure 4.

The assessment has adopted the recommended standard approach of applying equal weights (50-50) in aggregate to criteria relating to benefits and those relating to costs.⁵⁴

Scale

The criteria rating scale has a range of -10 to +10, where a score of zero represents no change from the Base Case.

Table 5-1 MCA Scale

Score	Description
-10	Much worse than the Base Case
-5	Somewhat worse than the Base Case
0	No change from the Base Case
+5	Somewhat better than the Base Case
+10	Much better than the Base Case

It is important to note that the assessment of options in each problem area is conducted separately from the other problem areas. Therefore, the scores within each MCA are made by comparison to the Base Case for that problem, and the relative scores for each criterion/option reflect the relative size of the impacts in that problem area. For example, if option 1 in problem area A imposes costs of \$x and scores -2 for cost, then option 2 in problem area A would receive a score of -4 if it imposes double that cost. However, an option that imposes a cost of \$x in another problem area might not receive a score of -2 (because the score will depend on how that cost relates to the Base Case costs in that problem area).

5.2 Qualitative analysis

Qualitative analysis predominantly relies on qualitative evidence, with limited quantitative evidence. Reasoning and assumptions are needed to determine the preferred option, supported by evidence (such as findings from consultations) wherever possible. In this RIS, qualitative analysis is used where quantitative data is limited (making more robust methods such as CBA infeasible), and MCA or break-even analysis is less suitable: for example where the problem being assessed is relatively small, or where only one feasible option is being assessed against the Base Case. Qualitative analysis in this RIS makes reference to the criteria used in the MCAs although in a less structured manner and without assigning a score.

5.3 Approach to estimating benefits

The analysis assesses the benefits to society in the form of reduced risks to human health and the environment. In some cases, such as permissions, quantification of these benefits is possible due to the availability of reliable and relevant data. However, in most areas there were significant data limitations which made quantification of benefits infeasible. In these cases the nature and likely extent of benefits that are identified in these problem areas are discussed qualitatively. Evidence such as case studies, examples of incidents and publicly available information from other jurisdictions are used to provide support for the analysis of benefits.

5.4 Approach to estimating costs

The analysis estimates the costs of the proposed Regulations by estimating:

- Costs to businesses of complying with the proposed Regulations.
- Costs to the Government of implementing and administering the proposed Regulations (which, in some instances, is ultimately borne by businesses through fees).

⁵⁴ Commissioner for Better Regulation, *Guidance note: Multi-criteria analysis*.

The estimated costs include only those that are incurred in addition to what a business or the Government would incur under the new EP legislation, in the absence of Regulations. They also include only those costs that are in addition to what a business would likely incur due to sound business practice or to meet industry standards, even in the absence of a regulatory requirement. Finally, a ‘state of knowledge’ exists as discussed in section 3.1 of this RIS. This means that there is an understanding of what good environmental practice or good management of an environmental harm currently looks like. This is taken into account in estimating the additional cost that businesses would incur as a result of complying with new Regulations. For example, if some businesses would undertake certain actions even if not required by the proposed Regulations, the cost of these actions is not attributed to the Regulations. The Government will also have some knowledge and processes in place that mean its costs of administering the Regulations are less than would otherwise be the case. However, this does not mean that all duty holders will act in the same manner in response to this understanding, and new entrants to the industry may not be aware of this existing knowledge at all. The impact of this knowledge is expected to decline over time. Nonetheless, where this state of knowledge is relevant to a problem area, we have taken it into account in considering the level of costs that will be incurred.

Most cost information has been collected via stakeholder consultations, in particular the web-based survey. The method for collecting information through stakeholder consults is discussed in further detail in Chapter 20.

5.5 Interactions between problem areas

There are inevitably some interactions between problem areas, some material and others less so for the purpose of this RIS.

An interaction is where there is more than one regulatory tool being proposed to address the same broad option, in different areas of this RIS. Or proposed regulations to address a problem in one area could also have an impact on the size of the underlying problem in another area (i.e. it could reduce the size of the residual risk). Key examples are:

- Permissions (i.e. licences, permits and registrations) regulations being proposed to address broad problems in relation to on-site waste-water management systems, waste, water and air.
- Contaminated land regulations could reduce pollution of groundwater.

The following table outlines the main interactions, whether the interaction is material, and how the interaction has been managed for the purpose of assessing options in this RIS.

Table 5-2 Interactions between problem areas

Problem area	Description of interaction	Approach to managing interaction
Permissions	Proposed permissions regulations addresses residual risk for septic tanks, waste, water and air.	<p>There is a material interaction with proposed waste regulations that needs to be managed to avoid double counting of benefits. This is because waste facilities will be licensed and subject to the specific proposed waste regulations. The main area where double counting could potentially occur relates to proposed regulations for lawful place, which is dealt with in the Waste chapter. Our approach is to explicitly define the Base Case for waste (discussed in section 9.7) as including the proposed permissions regulations (discussed in section 6.6.3): the Base Case assumes permissions exist for lawful place, where the current licence cohort is transferred to new licensing arrangements and the new cohort is subject to new licences. Benefits and costs for lawful place regulations are assessed incremental to this Base Case. No other areas of waste are considered to have such material linkages as to require explicit treatment.</p> <p>There is also a material interaction with air for the same reason – in particular in relation to hazardous (“Class 3”) substances from operating licence holders. The proposed regulations for air pollution (discussed in section 12.8) consider the costs and benefits of this inclusion separately. However, the benefits of improved air quality from reduced emissions (of all air pollutants) of licence holders are also considered in the permissioning chapter, as are the costs of compliance. As such, the costs and benefits outlined in section 12.8 have been, to some extent, double counted, since they overlap with the permissioning regulations and can’t be accurately separated.</p> <p>The interaction with water is considered minimal because of the targeted areas being proposed for regulations in these areas – no specific action is needed to manage this interaction for the purpose of this RIS. Similarly, the permissioning framework interacts</p>

		with proposed regulations for on-site wastewater management systems. However, interactions are minimal, because they affect entirely separate cohorts of duty holders. The costs and benefits of these proposed regulations are considered entirely separately from the rest of the permissioning framework.
On-site wastewater management systems	Proposed regulations could reduce land contamination and pollution of waterways (via leakage of pollutants) and their associated risks to human health.	While acknowledging that there is an interaction, it is considered minimal as on-site wastewater management systems are responsible for only a very small component of the land contamination and water pollution problems. For Water, proposed vessel discharge regulations target the residual risk of a very specific activity where there is no interaction with on-site wastewater management systems. Therefore no specific action is needed to manage this interaction.
Contaminated land	Contaminated land regulations somewhat address the problem of groundwater pollution.	Contaminated land regulations address, in part, the problem of groundwater pollution. This is a different problem from pollution to the marine environment, which is the problem addressed by proposed water regulations. Therefore, there is no interaction between these problem areas.
Waste	Proposed waste regulations could reduce residual risk for land contamination and pollution of waterways (leakage of pollutants) and air (vapours and smoke pollution).	For Water, regulations clarify the industrial waste provision in the new EP legislation to include vessel discharges, so there is an interaction. This is addressed through discussion in the Water chapter, but is considered such a small part of the regulations that it is not material to the Waste analysis.
Water	Proposed vessel discharge regulations could reduce residual risk for waste and litter.	While acknowledging that there is an interaction, the interaction is minimal as the waste regulations focus on other types of waste (e.g. priority wastes) while the litter regulations focus on regulations for materials that might become litter. Therefore no specific action is needed to manage this interaction.
Plastic bags	Proposed plastic bag regulations could reduce residual risk for litter and water (reduce litter in marine and inland water environments).	Plastic bag litter is a key part of the total litter problem, and the RIS acknowledges this in background discussion in the Plastic bag chapter. However, because the litter regulations are in relation to materials that might become litter, there is limited overlap between the two areas. Therefore no specific action is needed to manage this interaction.

Interactions can also exist within a particular problem area, where some proposed options within the problem area interact with one another by addressing the same broad problem. Although multiple interactions likely exist across a number of problem areas, they are likely to be insignificant. The one exception to this is waste, since interactions are likely to be somewhat significant. For instance, there is a high degree of interaction within the options considered for reportable priority waste: Interactions exist between the cohort options (deciding which types of waste fall within this category) and the transport options (prescribing transaction and transport controls for the category). These interactions, where identified, are addressed in the waste chapter.

6 Permissioning

This chapter outlines why a permissioning regime is necessary and the regulations that are proposed to apply it.

Key points:

- Industrial activities account for a considerable share of Victoria’s air, land and water emissions and impact on amenity. These activities pose a significant risk to human health and the environment.
- In order to address these risks, the new EP legislation establishes a new permissioning framework to complement the GED. The framework allows the EPA to establish greater certainty of control for activities which pose significant risks of harm to human health and the environment, and where the consequences of non-compliance are greatest. There are three permission tiers established in the new EP legislation: licences, permits and registrations.
- The new EP legislation also enables the EPA to require duty holders to hold a financial assurance. This is a financial instrument which allows EPA to recover clean-up costs from duty holders following pollution incidents or where duty holders abandon a site or become insolvent.
- However, the new EP legislation does not specify the activities that would require duty holders to obtain a permission. The permissions framework under the new legislative framework therefore cannot function without prescription under regulation. Financial assurance also cannot be required unless specified in the Regulations.
- The preferred option to address this residual risk is to prescribe in regulations a set of activities which would require a permission or a financial assurance in the following circumstances:
 - Duty holders would be required to obtain permissions for activities which require some form of permission (or exemption) under the existing legislative framework, under various heads of power (most notably, the Scheduled Premises Regulations).
 - A number of additional activities that do not require a permission under the existing legislative framework, but which EPA has judged pose a significant risk to human health and the environment, would also require a permission or financial assurance.
- The preferred option enables EPA to establish greater certainty of control for activities which pose the most significant risks of harm to human health and the environment.

6.1 Background

Industrial activities are a driver of Victoria’s economic prosperity, but can pose a significant risk to human health and the natural environment. A comparatively small number of industrial activities account for a considerable share of Victoria’s atmospheric emissions, as well as emissions to land and water. They also have potentially significant impacts on amenity (e.g. noise and odour). A certain level of pollution is an inevitable by-product of many otherwise socially and economically productive and beneficial industrial activities.

The current licences and works approvals framework (explained below) requires operators of certain premises to obtain an EPA permission to construct or significantly modify works or to operate certain premises. The framework enables EPA to manage the risks associated with those high-risk activities proactively and transparently. The EPA Inquiry found that “targeting this type of pollution and waste (with a high risk of harm) provides obvious benefits, warranting the increased costs associated with the stronger control that licences and works approvals offer a regulator”. The Regulatory Impact Statement for the *Environment Protection (Scheduled Premises) Regulations 2017* (the Scheduled Premises Regulations) estimated the net benefit of these regulations to be in the order of \$2 billion over ten years. Further, the EPA Inquiry recommended “measures to strengthen their (licences and works approvals) effectiveness” to work alongside the GED.

6.2 Current legislative and regulatory framework

The current framework establishes works approvals and licences as the main regulatory tools for permissions.

Under the Scheduled Premises Regulations, licences are mandatory for all scheduled premises unless exempted. The Scheduled Premises Regulations defines the types of premises that are subject to these tools. EPA administers permissions for

a range of activities, ranging from those requiring significant ongoing oversight (e.g. where a works approvals or licence may be required) to specific instance-based activities or transactions (e.g. outdoor event music noise approvals, waste transport). These permissions are issued under the EP Act 1970, with reference to the Scheduled Premises Regulations, State Environment Protection Policies and Waste Management Policies.

A works approval is required when the occupier of scheduled premises seeks to develop or modify those premises and, in doing so, may increase or alter the emissions or the types of wastes that their premises handles. This tool allows EPA to influence the design of the new or altered operation at the design stage. The Scheduled Premises Regulations identify which industrial or commercial activities require an EPA works approval before they are built or modified, and then licensed by EPA to operate. Works approvals are defined as 'development licences' under the new EP legislation. Licences (defined as 'operating licences' under the new EP legislation) cover the actual operation of the site, and set operating conditions, waste discharge limits and waste acceptance conditions, as appropriate.

The permissions framework in the new EP legislation replaces the current framework and will complement the GED and waste duties where there is a need for:

- Greater certainty of control: where the risks and consequences of harm to human health and the environment are the greatest.
- Targeting non-compliance risks: in sectors that attract criminal activity or present strong financial drivers to not comply with the law.
- Certainty for business regarding compliance as well as monitoring and reporting requirements.
- A simple, low-burden means of providing authority to receive industrial waste and for supporting efficiency in the waste framework.

An example of an activity that is high risk and has potentially high rates of non-compliance is set out in the box below.

Box 6.1 Stockpiling of waste

Stockpiling of waste

Inappropriate stockpiling and mismanagement of materials at waste and resource recovery facilities creates a risk of catastrophic fires and the pollution of the air, soil and waterways. Large fires at these facilities create high levels of hazardous air pollutants, including particulate matter, while the burning of materials and firefighting efforts can result in firefighting foams and a range of chemical contaminants entering local waterways. The frequency of fires at resource recovery facilities has increased over the past decade, and the industry is currently the subject of a Victorian Parliamentary Inquiry (Legislative Council Planning and Environment Committee Inquiry into Recycling and Waste Management).

One such example of this occurring was a fire at a resource recovery facility (SKM Coolaroo) which took approximately three weeks to extinguish. During the fire, nearby residents were evacuated from their homes, four people were hospitalised and 12 required medical attention. Businesses within the vicinity closed, and local residents were asked to remain indoors or attend a relief centre for respite. Water used to bring the fire under control entered local waterways, causing fish deaths at a nearby lake due to extremely low levels of dissolved oxygen. High levels of E. coli were observed in local waterways, likely due to contamination of municipal recyclables with organic material.

In its 2018 Policy Impact Assessment for *Management and Storage of combustible recyclable and waste material*, DELWP estimated that each high-risk fire of combustible recyclable and waste material cost business and society \$6 million, while each extreme risk fire cost between \$34 million and \$100 million.

6.3 New EP legislation

Under the new EP legislation, there will be a three-tiered permissions framework that allows more proportionate controls to be applied, based on the nature of the risks. The three tiers are:

- **Registrations:** these are a simple, generic mechanism and will be automatically granted upon application (although they can be revoked), and may include standard conditions for the relevant activity. They are suited to activities that pose moderate-to-low risks and where applying standard controls across a sector may help raise the standard of compliance and minimise risks to human health and the environment. Registrations may also be used as a simple, efficient and clear means of providing authorisation to receive industrial waste as required by the new legislation and enabling other duty holders in the chain of waste custody (i.e. producers and transporters) to easily discharge their duty to take waste to a place which is authorised to receive it.
- **Permits:** these will have largely standardised assessment processes and are suited to medium-high risk activities with low complexity. Permits will need to be applied for and will be assessed on a case-by-case basis.
- **Licences:** these will apply customised conditions to manage complex activities that need the highest level of regulatory control due to their significant risk of harm to human health and the environment or a high potential for mismanagement. This tier will include development licences (previously referred to as 'works approvals'), operating licences (previously referred to as licences) and pilot project licences (previously referred to as research, development and demonstration approvals). Licences will be subject to regular reviews (around every five years) and will no longer be granted indefinitely.

The new EP legislation permits the EPA to determine that provision of a financial assurance be a condition of a prescribed permission. Financial assurances can also be a condition of site management orders, environmental action notices or other orders relating to environmentally hazardous substances.

6.4 Nature and extent of problem

The absence of a permissions framework would mean a critical part of the new EP legislation does not come into effect. This would result in a substantial residual risk existing across a range of waste and polluting activities. While the GED will require all duty holders to minimise harm to the environment from waste generation activities and to avoid or minimise pollution, so far as reasonably practicable, the residual risks after discharge of the GED would be too high in the absence of a permissions framework due to the highly hazardous nature of some substances being used or emitted and the potential for non-compliant behaviour in some sectors.

While the new EP legislation introduces a three-tiered system for permissions, there is no specificity about what activities would or would not require a permission. For example, the new EP legislation does not prescribe what constitutes a *development activity*, *operating activity*, *pilot project*, *permit activity* or *registration activity*.

This means that, in the absence of regulations, no activities are prescribed activities for the purpose of the permissions framework, meaning that the requirement to be authorised before engaging in these activities cannot function. Prescription of activities will give effect to the permissions framework and determine the number and type of activities to be regulated beyond the duties' requirements.

With no permissions framework, no activities would be licensed by EPA (including those that are currently set out under the Scheduled Premises Regulations), sites or projects would not be subject to a development approval process, and businesses would not need to provide financial assurances (unless attached to another instrument, such as a site management order or a notice).⁵⁵ There would be no framework to provide regular and transparent information to the public about compliance from the highest emitting activities. In the absence of other interventions to support the new EP legislation, EPA would not have mechanisms available to ensure the appropriate design, monitoring and management of activities with high risks of harm to human health and the environment. If no regulations are made to support the new EP legislation, then the approximately 670 licensed premises (under the Scheduled Premises Regulations 2017) would cease to require a licence.

⁵⁵ Scheduled premises are currently required to have financial assurance as part of licences are landfills, PIW management (including PIW composting), container washing, and bulk storage facilities. Additionally, financial assurance can be a requirement of a works approval or pollution abatement notice associated with any of these activities, as well as for contaminated sites requiring long-term management or on-site soil containment.

(Source: <https://www.epa.vic.gov.au/our-work/licences-and-approvals/financial-assurances#QandA>)

The specific harms and costs associated with problem areas to be addressed by the new permissioning framework are discussed in detail in Chapter 7 (On-site wastewater management systems), Chapter 9 (Waste), Chapter 12 (Air pollution), Chapter 13 (Water pollution) and Chapter 14 (Noise).

6.5 Options

EPA and DELWP have developed options that consider how permissioning can best complement the GED. The options also consider the findings of EPA's 2017 Scheduled Premises review, which involved a detailed assessment of the risks associated with industrial premises types.

Two options have been considered. These are:

- Option 1: Incorporating activities that are subject to some form of permission or exemption under the existing legislative framework into the new permissioning framework.
- Option 2: Incorporating activities that are currently subject to some form of permission or exemption into the new permissioning framework, plus selected other activities.

An option to significantly expand the permissioning cohort has not been considered in the cost-benefit analysis. EPA considers that a significant expansion of permissioning cohorts would limit the 'space' allowed for the GED to operate. Under the GED, all businesses (not only those holding an EPA permission) will be required to take reasonable steps to minimise risks to human health and the environment. EPA considers that activities which present a lower risk and/or involve less complexity, could be managed more effectively by the GED than the permissioning framework. Future reviews of the proposed Regulations will include further review and consideration of the efficacy of the GED for other activities, and will consider changes to the permissioning cohorts in the future.

An option to remove or 'downgrade' activities from the permissions framework is also not considered further in this RIS. Before considering whether to move activities from one tier of permissioning to another, or remove them from the permissioning framework altogether, EPA and DELWP considers it appropriate to examine the impact of the GED, and its effect on residual risks of activities. Making these determinations based on criteria which are clear, equitable and defensible can only follow a period of monitoring and evaluation of the GED and its effectiveness. This approach is also consistent with the principle of minimising disruption for existing duty holders and prioritising supporting them in the transition into the new framework. EPA may also look to make determinations (which are enabled in the new EP legislation) which will allow certain cohorts or classes of duty holders to obtain a lower-burden permission in accordance with certain requirements.

The options outlined are also limited to prescribing the types of activities that would require a permission of financial assurance, rather than to prescribe conditions. EPA and DELWP made the decision to minimise prescription of conditions in regulation and to specify the conditions within the permission itself. This supports duty holders in understanding their obligations, and allows EPA to be flexible in its use of conditions.

In accordance with the principle of minimising disruption and allowing the GED to demonstrate its effectiveness, thresholds for currently scheduled activities have also been maintained. These thresholds are likely to be evaluated in future reviews taking into account the GED's impact on the residual risk of the activities. For new activities, risk-based thresholds have been selected based on the understanding of scaled risks posed by an activity to ensure the appropriate, proportionate tool is applied.

6.5.1 The Base Case

Under the Base Case, the new EP legislation would take effect from 2020, but there would be no further regulations to define the activities that would require a permission or may require duty holders to hold a financial assurance. The GED would apply under the Base Case (as would a number of other duties and obligations) meaning that businesses would still be required to minimise the risk to human health and the environment, so far as reasonably practicable.

Under the Base Case, it is anticipated that there would be a gradual deterioration in the compliance of duty holders that are currently subject to EPA permissions (such as works approvals, licences and waste transport permits). This would lead to a

gradual increase in risks of harm to human health and the environment. This increase in risk reflects ‘compliance decay’ of duty holders, which would occur in the Base Case scenario where permissions are no longer required.⁵⁶ However, the threat of reputational damage, legal action and/or financial loss may limit the extent of this decay.

6.5.2 Option 1 - Minimal application of new permissioning framework

Under Option 1, selected activities that are currently subject to some form of EPA permission or exemption will be incorporated into the new permissioning framework.

- **Development Licence:** All activities currently requiring a works approval, as per the Scheduled Premises Regulations, would require a development licence.
- **Operating Licence:** All activities currently requiring a licence under the Scheduled Premises Regulations would require an operating licence.
- **Financial Assurance:** All activities currently requiring a financial assurance under the Scheduled Premises Regulations, would also be required to go through the financial assurance risk screening criteria under Option 1, except for the following:
 - **Container washing:** This activity has been excluded following an EPA review which found that there was no need to include a financial assurance requirement for container washing, since it doubled-up with another financial assurance category
 - **Contaminated sites – long term management:** This activity has been excluded because there are now tools under the new EP legislation (e.g. Site Management Orders) that can require a financial assurance to apply to that site.
- **Permit:** Selected activities that currently require an EPA or council permission or approval under different heads of power (including the Scheduled Premises Regulations, EP Act 1970, SEPP N2, SEPP Waters and Industrial Waste Management Policies) would require a permit under Option 1. Municipal landfills, which are currently exempt, would also require a permit.
- **Registration:** This will cover selected activities that are currently excluded from requiring a permission under the Scheduled Premises Regulations through a general exemption.

Further detail on the activities that would be subject to a permission or financial assurance are outlined in the table below.

Table 6-1 Option 1 Permissioning activities

Development/operating licence/FA	Permit	Registration
Development licence: All activities currently requiring a works approval.	Consignment authorisations (Waste into Victoria and Waste out of Victoria) Outdoor concerts - Authority may allow later operations (outside of hours)	Biomedical storage by a council, health service or ambulance service Temporary asbestos storage Temporary storage of 1000 litres or less of designated waste not generated at the premises
Operating licence: All activities currently requiring a licence. [A full list of works approval and licence activities can be found in Schedule 1 of the Environment Protection (Scheduled Premises) 2017 regulations. Examples include: landfills, sewage treatment works and power stations.]	Outdoor concerts - Authority may allow outdoor venue to conduct more than six concerts in a year Municipal landfills serving <5,000 people Supply or use of wastewater/biosolids Temporary plant for on-site waste treatment	Waste transport vehicle permits (for all other wastes requiring a transport permission).

⁵⁶ If operators of currently scheduled premises were no longer required to hold operating licences and/or development licences (formerly works approvals), 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.

	Discharge of waste to aquifer
Financial Assurance	On-site wastewater management systems (Council-issued permit)
All activities currently requiring a financial assurance (as per the Scheduled Premises Regulations) except for:	Operation of premises where more than 5,000 animals are confined, and waste is discharged solely to land. ⁵⁷
<ul style="list-style-type: none"> • Container washing • Contaminated sites – long term management 	Operation of saleyards/holding pens with a throughput of at least 10,000 animal units per year, which discharge solely to land.
	Waste transport vehicle permits (for vehicles carrying prescribed waste codes).

6.5.3 Option 2 – Limited expansion to permissioning cohorts

Under Option 2, the permissioning cohort is expanded to incorporate selected new activities identified by EPA that represent a significant risk to human health and the environment.

- **Development Licence:** As Per Option 1 plus the inclusion of waste and resource recovery (WRR) facilities that require an Operating Licence or a Permit throughout their operating life.
- **Operating Licence:** As per Option 1, plus the inclusion of WRRs receiving more than 4,000 tonnes of waste (including combustible recyclable waste) in any month or storing more than 10,000 cubic metres at any time.
- **Financial Assurance:** All activities requiring a financial assurance under Option 1 would also require one under Option 2. WRRs operating above certain thresholds would also require a financial assurance.
- **Permit:** As per Option 1, plus the inclusion of selected activities that previously did not require an EPA permit, permission or exemption.
- **Registration:** As per Option 1, plus the inclusion of selected activities that previously did not require a permission, or fell below thresholds specified in the Scheduled Premises Regulations.

Further detail on each of the proposed activities under Option 2 that would be subject to a permission or financial assurance is outlined in Table 6-2.

Table 6-2 Option 2 Permissioning activities

Development/operating licence/FA	Permit	Registration
Development licence:	<u>As per Option 1, plus</u>	<u>As per option 1, plus:</u>
As per Option 1, plus:	<ul style="list-style-type: none"> • WRRs receiving or processing more than 4,000 tonnes of waste (excluding combustible waste) in any month or storing more than 10,000 cubic metres at any time 	<ul style="list-style-type: none"> • WRRs storing between 5 and 5,000 cubic metres of waste (whether or not combustible) at any time. • Dry-cleaning • Glass re-processors (who reprocess glass waste at a design capacity below the threshold set in the Scheduled Premises Regulations)
Operating licence:	<ul style="list-style-type: none"> • WRRs receiving or processing less than 4,000 tonnes of waste (including combustible waste) in any month and 	
As per Option 1, plus:		

⁵⁷ Includes piggeries, sheep feedlots, cattle feedlots, goat feedlots, goat dairies or dairy freestalls where more than 5,000 animals are confined for the purposes of agricultural production

⁵⁸ WRRs are not permitted to receive, store or process any waste which is reportable priority waste for the purposes of section 143 of the Act, regardless of whether they fall into the licence, permit or registration tier

<ul style="list-style-type: none"> WRRs receiving or processing more than 4,000 tonnes of waste (inc. combustible waste) in any month or storing more than 10,000 cubic metres at any time 	<ul style="list-style-type: none"> storing between 5,000 and 10,000 cubic metres at any time Supply or Use of Reportable Priority Waste and liquid wastes Containment of Category D soils on project site 	<ul style="list-style-type: none"> Waste tyre storage facilities (that fall below thresholds specified in the Scheduled Premises Regulations) Organic waste processing facilities (that fall below thresholds specified in the Scheduled Premises Regulations) e-waste reprocessing facilities (that fall below thresholds specified in the Scheduled Premises Regulations)
<p>Financial assurance:</p> <p>As per Option 1, plus:</p> <ul style="list-style-type: none"> WRRs, which require either an Operating licence or a Permit throughout their operating life. 		

6.6 Cost benefit analysis

To identify a preferred option, the costs and benefits of Options 1 and 2 have been assessed relative to the Base Case.

The costs and benefits associated with the proposed permissioning regulations have been calculated under the assumption businesses are not fully compliant with the GED and other environmental laws. It is assumed that businesses would achieve a greater (but not full) level of compliance with permissioning regulations in place. This is because the permissioning framework is primarily designed to increase the compliance of high-risk activities with the GED and other environmental regulations, rather than impose additional restrictions on duty holders. The permissions framework is expected to increase compliance because it will provide EPA with a structured and transparent framework within which to request certain actions which address areas where there is a significant risk of harm e.g. request a generator of air emissions to model or monitor their air emissions. Specifically, the conditions of a permission will provide specificity and certainty to duty holders about what they must do in order to comply with their obligations under the GED with regards to certain key risks. Setting permission requirements for certain activities also allows EPA to enforce against consistently poor performers or those who may deliberately not comply with their obligations. The permissions framework also allows for greater oversight by EPA to help identify areas where understanding of environmental obligations and compliance with the environment protection framework may be poor and helps EPA target its response to drive compliance.

The extent to which this greater compliance results in a reduction in emissions and incidents was considered in the 2017 Regulatory Impact Statement for the Scheduled Premises Regulations.⁵⁹

6.6.1 Benefits

Reduction in harmful air emissions brought about by licences

In 2017, there were 172 scheduled premises classified as emitters of potentially harmful air emissions.⁶⁰ The requirement for operators to obtain development and operating licences is designed to reduce air emissions through ensuring appropriate design of relevant operations (through development licences) and compliance with maximum emission requirements (through operating licences). These measures reduce quantifiable harms to people and the environment. Following the approach of 2017 Regulatory Impact Statement for the Scheduled Premises Regulations, the benefits of reductions in air emissions are estimated by taking the marginal cost of air emissions, and multiplying them by the estimated change in emissions for each site brought about by the introduction of operating licences and development licences. Air emission values are based on estimated health impacts of selected pollutants discharged (see Appendix 4).

⁵⁹ EPA 2017, *Regulatory Impact Statement: Environmental Protection (Scheduled Premises) Regulations 2017*.

⁶⁰ EPA 2017, *Regulatory Impact Statement: Environmental Protection (Scheduled Premises) Regulations 2017*.

The change in air emissions for each premises is estimated by examining 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 to the Base Case.⁶¹

The estimated benefit is the same for Options 1 and 2, because the activities requiring licences are the same under the two options. Although Option 1 does not include operating licences for WRRs that accept waste above a certain threshold volume, these facilities are typically not significant emitters of harmful ongoing, point-source air emissions. However, mismanagement at a WRR facility could result in a fire which could have significant short-term impacts on air quality for the area and which could pose a threat to workers at the site, as well as residents and occupants of neighbouring properties. The benefit of this avoided harm from fires is considered under the 'Reduced cost of fires at WRRs section below.

The benefits of reduced air emissions are assumed to increase gradually over time, reflecting 'compliance decay' occurring in the Base Case, but not under Options 1 and 2.

Reduction in harmful water emissions brought about by licences

In 2017, there were 170 scheduled premises classified as emitters of potentially harmful emissions to water.⁶² Discharges from these premises can introduce contaminants into waterways and disturb natural waterflows.

The reduction in harm from water emissions is estimated using a similar approach to air emissions: by taking the marginal water emission values (see Appendix 4) and multiplying these by the estimated change in emissions for each site brought about by the introduction of operating licences and development licences (relative to the Base Case). The change for each site is estimated by examining 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.⁶³

The estimated benefit is also the same for Options 1 and 2, since the activities requiring licences are all the same except Option 1 does not include operating licences for WRRs that accept waste above a certain threshold volume. These facilities are typically not significant emitters of harmful water emissions from ongoing, day-to-day operations, although fires at these facilities may cause water pollution e.g. from contaminated run-off of the water used for firefighting activities. The benefit of this avoided harm from fires is considered under the 'Reduced cost of fires at WRRs section below.

The benefits of reduced water emissions are assumed to increase gradually over time, reflecting 'compliance decay' occurring in the Base Case, but not under Options 1 and 2.

Reduced cost of pollution incidents for business, government and the community

Another benefit of the new permissioning framework is the anticipated reduction in costs incurred by businesses relating to incident management and clean-up. These cost savings relate to:

- **'make-good' costs**, where businesses need to, for example, mobilise personnel to clean up and limit the spread of pollution. For each incident, businesses are estimated to incur make good costs of \$126,530 (in \$2018).⁶⁴
- **administrative costs in dealing with EPA** – for instance, responding to EPA inspections, remedial notices and sanctions, and liaising with EPA to ensure that neighbouring properties are not affected. For each incident, businesses are estimated to incur administrative costs of \$28,500 (in \$2018).⁶⁵

⁶¹ This follows the same approach as EPA's *Regulatory Impact Statement: Environmental Protection (Scheduled Premises) Regulations 2017*. Estimates from this report have been updated to 2018 dollars, and adjusted to reflect a reduction in the number of scheduled premises in Victoria from 670 to 663.

⁶² EPA 2017, *Regulatory Impact Statement: Environmental Protection (Scheduled Premises) Regulations 2017*. EPA, DELWP and Deloitte were not able to obtain better estimates than this, however they are considered to be conservative given they are unlikely to have reduced over time (after adjusting for inflation).

⁶³ This follows the same approach as EPA's *Regulatory Impact Statement: Environmental Protection (Scheduled Premises) Regulations 2017*.

⁶⁴ Ibid.

⁶⁵ Ibid.

Following an environmental and/or human health incident, EPA staff manage the response and inspect and assess the site. Furthermore EPA must work to remediate the site and clean up external impacts (such as impacts on groundwater or through contamination of surrounding land). For each incident, EPA incurs costs of \$1,337 (on average) to manage the short-term response, and \$1,737 to remediate the site and surrounds.⁶⁶

The proposed 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.

The estimated benefit is marginally higher for Option 2, relative to Option 1. This is because the number of premises subject to permissions varies across the two options, meaning that the number of avoided incidents will increase as the cohort of activities duty holders captured by the permissioning framework expands (see Table 6-3).

The number of avoided incidents under Option 1 was based on EPA estimates from the 2017 Scheduled Premises RIS. Deloitte estimates the number of avoided pollution incidents would be approximately 20% higher under Option 2, relative to Option 1. This reflects EPA's ability to impose conditions (including financial assurances) on (and have greater oversight of) a larger number of duty holders. EPA estimates that there would be an additional 15 fixed sites requiring a licence, 50 sites requiring a permit and 3,000 sites requiring a registration under Option 2 (relative to Option 1).

Table 6-3 Estimated number of avoided pollution incidents, relative to the Base Case for Options 1 and 2

Option 1	Year 1	Year 2	Year 3	Year 4	Year 5+
Avoided pollution incidents	4	7	11	15	19
Option 2	Year 1	Year 2	Year 3	Year 4	Year 5+
Avoided pollution incidents	5	9	13	18	22

Reduced cost of fires at WRRs

An added benefit of Option 2 is an anticipated reduction in the number of stockpile fires that occur at WRRs.

These facilities present a significant fire risk.⁶⁷ By introducing licence or permit conditions for these facilities, and increasing EPA oversight, it is anticipated that the number of fires occurring at WRRs would be lower than it would under the Base Case. The average combined cost to the business, government and community of a fire at a WRR is conservatively assumed to be \$4 million.⁶⁸

By enabling EPA to impose conditions on WRRs (such as how certain wastes are stored), and have greater oversight of their activities, the number of fires occurring at WRRs is expected to be lower under Option 2. Imposing financial assurances could also increase accountability of site operators, leading a greater level of compliance.

The estimated number of avoided fires per year, under each of the options is displayed in the table below. In the ten years to 2017, there were an estimated 136 recorded fires at Victorian WRRs.⁶⁹ In the absence of empirical evidence to indicate how fire risks at WRRs could be mitigated through EPA's permissioning framework, Deloitte has estimated that one fire would be avoided per year under Option 2. This is considered to be a conservative estimate, given the number of fires since 2017. Under Option 1, the equivalent number of avoided fires is zero, since WRRs are not captured by the permissioning framework.

⁶⁶ Ibid.

⁶⁷ For more information, see: <https://www.epa.vic.gov.au/business-and-industry/guidelines/waste-guidance/combustible-recyclable-and-waste-materials>

⁶⁸ See 'Total annual costs for Victoria from stockpile fires' – Waste Chapter

⁶⁹ DELWP 2018, *Management and storage of combustible recyclable and waste material: Policy Impact Assessment*

Table 6-4 Estimated reduction in incidents, relative to the Base Case, for Options 1 and 2

Option 1	Year 1	Year 2	Year 3	Year 4	Year 5+
Prevented fires at WRRs	0	0	0	0	0
Option 2	Year 1	Year 2	Year 3	Year 4	Year 5+
Prevented fires at WRRs	0	1	1	1	1

Other benefits

The following benefits have not been quantified in the cost-benefit analysis.

Increased certainty for duty holders

During consultation some duty holders identified noted that they derive benefits from operating licences and works approvals. These include: greater certainty over environmental obligations, reduced over-compliance activities, and risks and costs associated with under-compliance. Furthermore, some commented that the permissioning system promotes a level playing field and promotes competition by setting minimum environmental standards across particular industries.

Improved information for EPA to assess environmental risks and harms of activities

The introduction of registrations means that EPA will have better access to information on the location of activities which pose a moderate risk to human health and environment. With this information, EPA can improve its understanding of the local pollution impacts of these activities.

Preventing taxpayers from incurring clean-up costs

Requiring businesses to hold a financial assurance ensures that clean-up costs from pollution incidents are borne by the duty holders that caused the incident, rather than taxpayers. This benefit is greater under Option 2 which requires WRRs to hold financial assurances. To provide an idea of the scale of costs that this may prevent for taxpayers, clean up and emergency costs are estimated to be \$150,000 per small/moderate fire, \$3 million per large fire, and \$5 million per very large fire.⁷⁰

6.6.2 Costs

6.6.2.1 Industry costs

Development licence applications

Development licence requirements will oblige duty holders to address potential environmental risks prior to establishing a premises, or undertaking major works on their existing premises. Similar to the current works approvals process, duty holders must first notify EPA of a planned development, and make an application for an approval to undertake the works. Businesses may be required to modify or abandon planned works if the application is rejected, which could lead to further costs.

Applying for a development licence imposes costs including labour and consultants' fees, and capital costs. Each development licence approval is estimated to impose a cost of \$33,461 per year.⁷¹

This cost is higher under Option 2. It is estimated that businesses would undertake an average of 30 development licence applications per year for Option 1, and 33 development licence applications per year for Option 2. This estimate has been based on the average number of annual works approvals between 2014 and 2018.

⁷⁰ DELWP 2018, *Management and storage of combustible recyclable and waste material: Policy Impact Assessment*

⁷¹ These estimates are based on schedule-wide estimates determined in 2009 and updated to 2018 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009. There was insufficient data collected from industry consultation on this RIS to reasonably update these estimates, and it is not known how these costs might have changed over time.

Industry development licence delay costs

Businesses can also encounter delay costs during the development licence process. When delays occur, they are typically encountered during the consultation stage, and during reviews by Victorian Government agencies. This can include standby costs (those incurred due to delays in production while waiting for approval), and holding costs (costs associated with holding of property, equipment or land while a decision is awaited).

Delay costs apply to an estimated 20 per cent of works approvals, and cost an average of \$515,390 (in \$2018).⁷² Applying this cost in current values to the estimated number of development licences suggests an average delay cost of \$103,078 for each of the average 30 development licences per year (Option 1) and the 33 development licences per year (Option 2).

Delay costs are likely to vary significantly from one project to the next. As such, we have considered the impact that higher delay costs would have on the net benefit in the sensitivity analysis.

Industry development licence compliance cost

Compliance costs reflect the burden of complying with the development licence conditions over and above what the original design would cost. For example, a development licence may specify that a filter be added to a new chimney stack, or that lining be installed under a premises to stop chemicals leaking into groundwater.

It is estimated that on average, development licence compliance would add \$29,694 (in \$2018) to each of the average 30 development licence applications completed by businesses each year.⁷³

However there is significant variation in the compliance costs associated with development licences. Costs will vary depending on the nature and scale of any additional or modified works specified in the licence conditions (if any are specified). As such, we have considered the impact that higher average compliance costs would have on the net benefit in the sensitivity analysis.

Industry costs of development licence exemptions

Under certain circumstances, businesses may be able to apply for a development licence exemption to avoid the burden and conditions associated with a full application. The process to apply for an exemption is typically less time consuming and administrative. The cost of applying for a development licence exemption is estimated to cost, on average, \$16,000 per application.⁷⁴

It is estimated that, under the proposed options, there would be 40 development licence exemption applications received by EPA each year. This cost is assumed to be the same under Options 1 and 2, since there is no variation in the activities that would require a development licence exemption.

Reporting costs for operating licence holders.

Annual reporting costs are associated with demonstrating compliance with licence conditions, and provision of information to EPA. These costs can include record keeping and reporting. It is estimated that reporting costs total \$22,291 per year, on average, for each business holding an operating licence.⁷⁵

Compliance with operating licence conditions.

⁷² The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009. There was insufficient data collected from industry consultation on this RIS to reasonably update this estimate.

⁷³ This cost estimate is based on average works approval compliance costs (updated to 2018 prices) from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009. There was insufficient data collected from industry consultation on this RIS to reasonably update these estimates, and it is not known how these costs might have changed over time.

⁷⁴ This estimate reflects the median works approval exemption application cost of businesses who had recently completed one (survey data).

⁷⁵ These estimates are based on schedule-wide estimates determined in 2009 and updated to 2018 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009. There was insufficient data collected from industry consultation on this RIS to reasonably update these estimates, and it is not known how these costs might have changed over time.

Compliance costs are directly related to the achievement of the intended outcomes of the permissioning framework. Industry costs include monitoring the environmental effects of activities to ensure that licence conditions are not breached (in addition to those required for annual reporting).

Substantive compliance costs include upgrades to equipment, or providing training to employees. It is estimated that compliance with licence conditions costs \$29,387 per year, on average, for each business holding an operating licence.⁷⁶

Industry costs of permit applications

Under Options 1 and 2, duty holders will be required to apply for permits in order to undertake activities specified in regulations. For a number of the proposed permit activities in Options 1 and 2, there is currently a different form of permission required, or a submission must be made to EPA to seek an exemption.

For example, some of the proposed permit activities (including operation of biosolids or wastewater reuse schemes) are eligible for an exemption from the requirement to hold a licence. EPA currently determines whether the activity or scheme meets acceptable technology, deposit, discharge and/or emissions specifications by assessing an Environment Improvement Plan (EIP), which is prepared by the duty holder. Of the businesses that responded to our survey, those which had recently completed an EIP estimated the cost to be in the order of \$14,000 per EIP (median value). As a proxy for estimating the cost of permit applications, with direction from EPA, this cost has been applied to the following activities that are proposed for the permit tiers:

- Municipal landfills serving <5,000 people (Option 1 and 2).
- Supply or use of wastewater/biosolids (Option 1 and 2).
- Temporary plant for on-site waste treatment (Option 1 and 2).
- Discharge of waste to aquifer (Option 1 and 2).
- Operation of piggeries which discharge solely to land (Option 1 and 2).
- Operation of saleyards/holding pens which discharge solely to land (Option 1 and 2).
- WRRs handling 5,000 cubic metres (or more) on the premises at any time (Option 2 only).
- Containment of Category D soils on project site (Option 2 only).
- Supply or Use of Reportable Priority Waste and liquid wastes (Option 2 only).

EPA has also estimated the cost of permit applications to business for other activities, based on the level of information and complexity:

- Consignments of waste into Victoria are estimated to cost businesses \$500 per application.
- Waste transport vehicle permits (per vehicle) are estimated to cost \$1,000 per application.⁷⁷
- Outdoor noise permits are estimated to cost \$2,000 per application.

The number of permit applications undertaken per year has been estimated by EPA based on the estimated cohorts for each proposed activity. Estimated cohort sizes are outlined in Appendix 5.

Industry costs of Registrations

Under Options 1 and 2 a large number of duty holders will need to register with EPA.

The registration process for each business is estimated to take up to one hour. Relatively limited information about the activity is required to complete the process. Therefore, the cost of each registration has been conservatively estimated at \$50 (including overheads and on-costs of 50%). The average Victorian hourly wage rate is \$34 per hour.⁷⁸

⁷⁶ These estimates are based on schedule-wide estimates determined in 2009 and updated to 2018 prices, from The Allen Consulting Group, *The cost of environmental regulation in Victoria*, 2009. There was insufficient data collected from industry consultation on this RIS to reasonably update these estimates, and it is not known how these costs might have changed over time.

⁷⁷ The median cost for a vehicle transport permit for businesses who responded to the survey was \$1,000

⁷⁸ Source: Payscale (2019), accessed from: <https://www.payscale.com/research/AU/Country=Australia/Salary>

Unless otherwise specified in the Permission, Registrations will need to be renewed after 5 years. The number of ongoing registrations (requiring renewal every five years) and other permits applications received each year (which expire after a shorter time frame) for each activity has been estimated by EPA.

This cost will vary under Options 1 and 2, since there are more activities that would require a registration under Option 2. Under Option 1, EPA estimates that there would be in the order of 3,500 registrations required at any one time, comprising mostly of waste transport vehicles.⁷⁹ Under Option 2, there would be an additional 3,000 registrations required, comprising mostly dry cleaners and WRRs.

6.6.2.2 Government costs

EPA has estimated the annual costs of administering the new permissioning framework. It is important to note that Government will recover costs for almost all permissioning activities through its proposed fees structure, and costs will therefore be borne by duty holders (see Chapter 16: Cost recovery and fees analysis).

Costs to government (in \$2018) have been calculated as follows:

- **Administration of operating licences:** EPA will incur 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. This also includes investigation and enforcement activity to ensure that licensees are complying with their licence conditions. It is estimated that administering the licensing system will cost, on average, \$14,300 per year for each operating licence.⁸⁰ EPA estimates that the number of operating licences under Option 1 is 663, while for Option 2 the number is 678.
- **Administration of financial assurances:** To ensure that licensees are complying with financial assurance conditions, EPA will administer a monitoring and checking system. This is estimated to cost \$1,417 for each of the financial assurances that EPA administers on average each year.⁸¹ EPA estimates that the number of financial assurances would be 104 under Option 1, and 170 under Option 2.⁸²
- **Administering registrations:** EPA will incur costs in administering and renewing registrations. Costs are estimated to vary based on the type of registration. EPA estimates that, on average, it will cost \$208 to administer a new registration, and \$38 to renew a registration.⁸³ The number of registrations has been estimated based on the total registration costs calculated in Appendix 7 and the cohort sizes outlined in Appendix 5.
- **Administration of permits:** EPA will incur costs in administering, renewing, amending and permits. Costs are estimated to vary based on the type of permit (simple, complex, consignment and vehicle). EPA estimates that, on average, it will cost \$421,799 per year to administer permits under Option 1, and \$384,082 per year to administer permits under option 2. This cost includes estimated EPA costs for applications, transfers, amendments surrenders exemptions and renewals, and has been estimated based on the total permit costs calculated in Appendix 7 and the cohort sizes in Appendix 5.
- **Administering development licences:** Under Options 1, it is estimated that there would be 30 development licences processed on average each year, costing (on average) \$50,335 per application. Under Option 2, it is estimated that there would be 33 development licences processed each year.⁸⁴
- **Administering exemptions for development licences:** EPA will encounter costs when processing applications for development licence exemptions, although these are expected to be less burdensome for Government to process

⁷⁹ The number of approximately 3,500 vehicle registrations is an estimate based on internal EPA data on the number of vehicle permits administered by EPA under the current framework, the types of waste which are being transported under these permits and multi-year data showing an increasing trend in the number of permits being applied for. This estimate takes into account the fact that a small number of existing waste transport permits are for higher-hazard waste types which will continue to require permitting in the future (not registration), and does not include these.

⁸⁰ See Appendix 7 – List of Fees

⁸¹ Source: EPA 2017, *Regulatory Impact Statement: Environmental Protection (Scheduled Premises) Regulations 2017*. This estimate is used in place of the fees outlined in Appendix 7, reflecting uncertainty over the number of financial assurances issued annually under the proposed Regulations.

⁸² 170 under Option 2 is an upper-bound estimate. EPA estimates that there are 170 duty holders that may be assessed against the FA risk-screening criteria, but it is possible that not all of those would subsequently be required to obtain an FA.

⁸³ See Appendix 7 – List of Fees

⁸⁴ See Appendix 7 – List of Fees

than applications for development licences themselves. Under Options 1 and 2, it is estimated that the total annual cost to process exemptions for development licences is \$272,506, based on an estimated 40 applications per year.⁸⁵

- **Administering pilot project licences:** EPA estimates that, for Options 1 and 2, there will be (on average) 5 applications per year costing approximately \$20,052 per application.⁸⁶

6.6.3 Results

The results of the cost-benefit analysis are outlined below.

Table 6-5 Total costs and benefits of Options 1 and 2 (\$million net present value, 2020 to 2029), relative to the Base Case

Benefits	Option 1	Option 2
Reduction in air emissions	1,560.4	1,560.4
Reduction in water emissions	600.7	600.7
Reduced cost of pollution incidents for business, government and community	15.4	18.2
Reduced cost of fires at WRRs	0.0	24.4
Total benefits	2,176.6	2,203.6
Costs		
<u>Costs to business</u>		
Operating licence – annual reporting costs	103.8	106.1
Operating licences – annual compliance costs	136.8	139.9
Development licence – cost of licence applications	7.1	7.8
Development licence – delay costs	21.7	23.9
Development licence – compliance costs	6.3	6.9
Development licence – exemptions	4.5	4.5
Registration cost	0.3	0.5
Financial assurance – administrative costs	19.3	22.7
Permit costs – administration	4.5	11.5
<u>Costs to Government</u>		
Administration of operating licences	66.6	68.1
Administration of pilot project licences	0.7	0.7
Administration of permits	2.7	3.0
Administration of financial assurance	1.0	1.7
Administering registrations	0.9	1.7

⁸⁵ See Appendix 7 – List of Fees

⁸⁶ See Appendix 7 – List of Fees

Administering exemptions for development licences	1.9	1.9
Administration of development licences	10.6	11.7
Total costs	388.6	412.6
Net Benefit (\$)	1,787.9	1,791.0
BCR	5.60	5.34

The key findings of the cost-benefit analysis are:

- Options 1 and 2 both have a large net benefit, in the order of \$1.8 billion over ten years. These are relatively similar in scale, reflecting the relatively large cohorts that would be required to obtain a permission under either option.
- Option 2 has a marginally larger benefit than Option 1, reflecting a predicted reduction in the number of fires occurring at WRRs and reduction in other pollution incidents. Those facilities would require a licence or permit under the new framework.
- Option 2 also has a higher cost to business and Government faces additional administrative costs under this option, which are mostly recovered through fees. Businesses also face higher costs to apply for permissions, as well as compliance and delay costs.
- Option 2 has a lower BCR than Option 1. While the marginal benefits of Option 2 are higher than the marginal costs (leading to a higher NPV than Option 1), they would need to be higher by a factor of at least 5.6 in order to generate a higher BCR. This is not the case, reflecting the relatively conservative assumptions surrounding the reduced cost of fires occurring at WRRs.

On balance, Option 2 is expected to provide the greatest net benefit to Victoria, and is therefore the preferred option. By prescribing the activities for which duty holders would be required to obtain a permission or a financial assurance, Option 2 enables EPA to establish greater certainty of control for activities which pose the most significant risks of harm to human health and the environment through its permissioning framework.

6.6.3.1 Sensitivity analysis

A sensitivity analysis of the preferred option was conducted on discount rates, as well as the following estimated costs. These costs were chosen for the sensitivity analysis either because they have a high degree of variability, or represent a significant share of the overall cost:

- **Higher operating licence compliance costs:** In the core analysis, compliance with licence conditions is estimated to cost \$29,387 per year, on average. The sensitivity analysis assumes that operating licence compliance costs average \$60,000 per year.
- **Higher operating licence reporting costs:** In the core analysis, licence reporting costs are estimated to be \$22,291 per year, on average. The sensitivity analysis assumes that reporting costs average \$50,000 per year.
- **Higher delay costs:** In the core analysis, delay costs are estimated to apply to an estimated 20% of works approvals, and cost an average of \$515,390 (in \$2018). The sensitivity analysis assumes that delay costs impact 40% of development licences, and cost an average of \$1 million.
- **Higher development licence compliance costs:** It is estimated that on average, development licence compliance would add \$29,694 (in \$2018) to each of the 30 development licence applications completed by businesses each year. The sensitivity analysis assumes that compliance costs are \$100,000 per development licence application.

Lower bound costs were not considered in the sensitivity analysis, because they would not alter the overall finding of the CBA for the preferred option (i.e. the positive NPV and the BCR being greater than 1).

The impact on the net present value is summarised in the table below. Under each scenario, the net present value remains positive.

Table 6-6 Option 2 NPV sensitivity analysis (\$m 2018)

NPV sensitivity	Scenario						
	Discount rates	Core analysis	Higher operating licence compliance costs	Higher operating licence reporting costs	Higher development licence delay costs	Higher development licence compliance costs	All assumptions combined
Low (4%)		2,133.4	1,965.0	1,981.0	2,053.9	2,125.9	1,734.6
Mid (7%)		1,766.3	1,620.5	1,634.3	1,697.4	1,759.8	1,421.0
High (10%)		1,491.4	1,363.9	1,376.0	1,431.2	1,485.7	1,189.3

7 On-site wastewater management systems (Septic tank systems)

This chapter outlines the problems associated with on-site wastewater management systems, and assesses regulations being proposed to address the residual risk.

Key points:

- On-site wastewater management systems (“on-site systems”) are an efficient and cost effective way for managing wastewater in sparsely populated areas that extend beyond Victoria’s sewerage networks.
- On-site systems can pose a significant risk to the environment, public health of communities, and to local amenity. In particular, this occurs when systems (1) have deteriorated, (2) are poorly maintained, (3) are not fit for purpose, or (4) are not properly located.
- Under the new EP legislation there are no specific requirements or duties relating to on-site systems. The GED would apply to operators of on-site systems, however failure to comply with the GED is only an offence for those conducting a business or undertaking. Therefore, the GED would not be enforceable against operators of domestic on-site systems.
- The new permissioning framework enables EPA and (if required) councils to oversee the regulation of on-site systems, in a manner similar to the current process. Under section 81 of the new EP legislation, councils can issue permits but the legislation does not define the ‘permit activity’ or specify the form, manner or fees for an application for a permit. The new EP legislation also does not specify any matters that council must take into account when determining whether to issue a permit, the circumstances where a permit must be refused or enable councils to take proceedings for specific related offences.
- Councils would not be able to adequately continue their regulatory role in managing the risks posed by on-site systems, without prescription under regulations.
- The preferred option is for councils to continue to issue permits to construct, install or alter on-site systems with flow rates less than 5,000 litres per day. This is the current approach under the EP Act 1970.

7.1 Background

In Victoria, sewage is treated through reticulated sewerage systems⁸⁷ or on-site systems.

On-site systems can pose a significant risk to the environment, public health of communities and to local amenity. In particular, this occurs when systems (1) have deteriorated, (2) are poorly maintained, (3) are not fit

⁸⁷ Reticulated sewerage systems are a network of collection of pipes, mains pipes and pumping stations that take sewage off-site to a treatment plant and are the responsibility of water authorities (VAGO 2006, p19).

for purpose, or (4) are not properly located so that wastewater is not contained and disposed of effectively on-site but discharges from the property polluting surrounding soils, waterways or groundwater.

7.2 Current legislative and regulatory framework

An on-site system⁸⁸ is defined under the EP Act 1970 as “a system for the bacterial, biological, chemical or physical treatment of sewage, and includes all tanks, beds, sewers, drains, pipes, fittings, appliances and land uses in connection with the system.”

Under the EP Act 1970, councils are responsible for issuing permits for the construction, installation, and alteration of on-site systems with flow rates less than 5,000L per day, and may also impose conditions. Councils may refuse a permit if the site of the proposed system is unsuitable or the area for the treatment and disposal of effluent is not sufficient.

Furthermore, councils must refuse to issue a permit if the treatment system is not of a type approved by EPA. Currently, EPA approves system types in line with Australian Standards 1546.1 to 1546.4. Treatment system brands and models must be certified by an accredited conformity assessment body as conforming to the relevant Australian Standard. The four approved types are:

- AS/NZS 1546.1: 2008 – On-site domestic wastewater treatment units – Septic tanks
- AS/NZS 1546.2: 2008 – On-site domestic wastewater treatment units – Waterless composting toilets
- AS 1546.3: 2017 – On-site domestic wastewater treatment units – Secondary treatment systems
- AS 1546.4: 2016 – On-site domestic wastewater treatment units – Domestic greywater treatment systems.

Councils may also impose maintenance requirements on the occupiers of premises with on-site systems. This is not always the case, and practices can vary by council. Under the EP Act 1970, councils are given powers to take enforcement action on persons who fail to obtain a permit for a septic tank system, breach a condition of a septic tank permit, or occupiers of premises for not maintaining their on-site systems.

Councils are expected to develop and implement a domestic wastewater management plan (DWMP), under SEPP (Waters), which is updated by councils at intervals of no more than five years. DWMPs are expected to identify the public health and environmental risks associated with the on-site systems, and set out strategies to minimise those risks. DWMPs should also identify existing unsewered allotments that do not (or cannot) retain sewage on site, and identify solutions to prevent off-site discharges and minimise impacts to groundwater.

In Victoria, the installation of new on-site systems must also occur in compliance with two other Acts: the *Planning and Environment Act 1987* and the *Building Act 1993*.

- A planning permit may be required for a new on-site system under the *Planning and Environment Act 1987*, for which Council is the responsible authority.
- When installing an on-site system, it must be done so in accordance with the *Plumbing Regulations 2018* – which outlines the criteria required to be licenced as a plumber that can carry out sanitary work under the *Building Act 1993*.

⁸⁸ The EP Act 1970 refers to ‘septic tank systems’, a term which is interchangeable with ‘on-site wastewater management system’ as defined under the draft regulations, and abbreviated to ‘on-site system’ in this RIS.

Currently, on-site systems that handle or are designed to handle flow rates of more than 5,000 litres per day are regulated by EPA through works approvals and, in some cases, operating licences.

7.3 New EP legislation

There are no specific requirements or duties relating to on-site systems in the new EP legislation. The primary reason for this is to ensure consistency in the way that risks to human health and the environment are managed across hazardous or complex activities – which is through the permissioning framework. The new permissioning framework enables EPA and (if required) councils to oversee the regulation of on-site systems, in a manner similar to the current process.

Under section 81 of the new EP legislation, councils can issue permits but the legislation does not define the 'permit activity' or specify the form, manner or fees for an application for a permit. The new EP legislation also does not specify any matters that council must take into account when determining whether to issue a permit, circumstances where a permit *must* be refused or enable councils to take proceedings for specific related offences.

The GED would apply to operators of on-site systems, however failure to comply with the GED is only an offence for those conducting a business or undertaking. Therefore, the GED would not be enforceable against operators of domestic on-site systems.

7.4 Nature and extent of problem

7.4.1 Residual risk

The residual risk in relation to on-site systems relates to the lack of certainty for councils. Further definition of the legal framework is required for councils to adequately continue undertaking their regulatory role.

Under the new EP legislation, councils can issue permits, but councils' role in the management of on-site systems require prescription under regulation of the on-site systems permit framework. In the absence of regulations for on-site systems, the problems associated with pollution from on-site systems are likely to significantly increase, and likely to result in increased human health and environmental harms, and reduced local amenity.

7.4.2 Size of problem

Tens of thousands of Victorian households in unsewered townships are serviced by on-site systems. Many of these are poorly maintained and pose a significant risk to the environment and human health, with numerous reviews of the management of on-site systems indicating that the scale of the problem is very significant. However, the precise scale of the problem is unknown.

In 2006 the Victorian Auditor-General's Office (VAGO) found that the impacts of poorly performing on-site systems on the environment and public health were unclear, because of the lack of water quality monitoring, and poor information collation and sharing of available data.

In 2018, a report from VAGO identified a number of issues relating to the management of domestic on-site systems within two councils in metropolitan Melbourne (Yarra Ranges Council and Mornington Peninsula Shire). VAGO found that approximately 22,000 properties in the Yarra Ranges Council and 30,000 properties across the Mornington Peninsula Shire Council use on-site systems, and that many of these systems were at high risk of failure due to their age or poor maintenance.⁸⁹ VAGO found that the two councils:

⁸⁹ Victorian Auditor General's Office, *Managing the Environmental Impacts of Domestic Wastewater*, September 2018, p27. The VAGO report only focussed on two councils close to metropolitan Melbourne, with high population and a high proportion of unsewered properties and it is not possible to extrapolate the number of septic tanks in Victoria across all 79 councils in Victoria from this sample.

- Have limited assurance that they are effectively managing the risks posed by poorly performing on-site systems, and that the environment and their local communities are protected from the potential threats from inadequately treated domestic wastewater.
- Have not adequately addressed information gaps about on-site systems in high- risk unsewered townships because of limitations in the councils' risk assessment processes.
- Do not have comprehensive and accurate information about on-site systems. Significant gaps in councils' information include the ongoing performance of on-site systems in safely treating and maintaining domestic wastewater on site; and number, location and performance of 'legacy' systems (which were installed prior to the introduction of the current permit system).
- Have not been able to accurately determine which unsewered areas water corporations should prioritise for sewerage as a result of inadequate information about legacy systems.

However, it should be noted that there are no state-wide estimates of failure rates of on-site systems, meaning that the size of the problem in Victoria is difficult to quantify.

7.4.3 Harms

On-site systems can impact entire local communities. Wastewater that is not contained and disposed of effectively on-site but discharges off-site causes risks to:

- Human health - where drinking water and recreational water bodies are contaminated from mismanaged wastewater, or where effluent discharge may cause disease outbreaks.
- Environmental health - where discharge to surface water and groundwater can cause significant harm to aquatic fauna and vegetation.
- Amenity - causing odour, unsightly discharges and seepage leading to reduced amenity and potential reduction in property values.⁹⁰ This can be a particular issue in unsewered townships with a higher number of legacy systems, and in areas where residents typically encounter greater levels of hardship.

The 2018 VAGO report stated that there is limited data about health impacts from poorly performing on-site systems. However, there is some evidence that highlights the risk they pose to human health and the environment. For example, failing systems were identified as the likely source of sewage contamination that led to the Wallis Lakes Hepatitis outbreak in 1997.⁹¹

7.5 Options

In developing these options, DELWP and EPA have considered what would be required for the effective implementation and operation of an on-site system management framework, upon the commencement of the new EP legislation. The two options considered below represent two variations of such a management framework, with varying degrees of council oversight.

Under the Base Case, there would be no permits required to install or alter an on-site system with a flow rate less than 5,000 litres any day.⁹²

⁹⁰ VAGO 2018, page 25.

⁹¹ Geary 2004; https://www.researchgate.net/publication/43449867_Process_performance_and_pollution_potential_A_review_of_septic_tank-soil_absorption_systems .

⁹² Systems with a flow rate of more than 5,000 litres a day are classified as industrial wastewater treatment in the new EP legislation, and require an EPA development and operating licence.

- Under Option 1, councils would issue permits to construct, install or alter on-site systems with flow rates less than 5,000 litres any day. In doing so, councils would be required to consider:
 - whether the site is environmentally sensitive or is otherwise unsuitable;
 - whether the system is unsuitable for the site or proposed use;
 - whether the proposed use of the on-site system is inconsistent with the design specifications of the system;
 - whether the area available for the treatment or disposal of the effluent resulting from the system is not suitable or sufficient;
 - the findings of any land capability assessment.

Councils would be required to refuse an application to install if the system is not of a type approved by EPA or does not meet the specifications required by EPA.

Under Option 1, the ongoing operation and maintenance on-site systems will be addressed primarily through the GED. Councils would also be required to refuse an application to alter on those same grounds,

- Under Option 2, councils would issue two types of permits, to:
 - construct, install or alter on-site systems with flow rates less than 5,000 litres any day (as per option 1); and
 - operate and maintain existing on-site systems with flow rates less than 5,000 litres any day. Permits would be renewed periodically (once every 5 years).⁹³ In order to comply with permits, occupiers of premises with on-site systems would need to ensure that the system was operating appropriately and was being maintained to an acceptable standard.

A non-regulatory option was not considered feasible by DELWP and EPA. If no permissioning regulations were made, on-site systems would not be required to meet specified standards and conditions, meaning that they would pose a significant risk to human health and the environment.

DELWP and EPA also considered the appropriateness of the 5,000 litres any day threshold, however as with other permissioning thresholds, considered it was desirable to leave thresholds unchanged to minimise disruption for duty holders and councils, and to allow the GED to demonstrate its effectiveness.

7.6 Assessment

MCA is used to assess options for the regulation of on-site systems.

7.6.1 Effectiveness

Under **Option 1**, duty holders would be required to seek council permission to construct / install a new on-site system, or to alter or modify an existing on-site system. Option 1 is anticipated to reduce the risk of harm to human health and the environment, over and above the Base Case, by ensuring that all new or modified systems are of an approved type, and are suitable for the proposed site.

However, Option 1 may be less effective in addressing any issues relating to existing on-site systems that are not being properly maintained, are failing, or have not been installed appropriately but councils are unaware of. Permits would cease once the installation or alteration of the on-site system is completed and its operation is approved by council. There would be private incentives to encourage maintenance, such as maintaining property value and greater amenity. The GED would also apply, however offences for breaches of the GED do not apply to all persons – only those conducting a business or undertaking. The GED is unlikely to be as

⁹³ New EP legislation states that a permit may be renewed for a period of not more than 5 years.

effective as requiring duty holders to hold and routinely renew permits to operate on-site systems. A score of +5 is given relative to the Base Case.

Under **Option 2**, duty holders would also be required to apply to local council for permits to operate on-site systems, and obtain renewals of those permits every five years. This option is anticipated to further reduce the risk of harm to human health and the environmental, over and above Option 1, by enabling councils to assess and manage the risks (including by imposing permit conditions) on any on-site system within the municipality – and requiring operators to adequately maintain the system in order to be issued a permit. However, it is unlikely that each council would be able to identify and rectify all failing systems within their municipality, since councils typically have incomplete records of legacy systems. Furthermore, although some occupiers of premises with aging on-site systems may be able to make some improvements, many may not have sufficient financial resources to upgrade or replace those systems to meet current standards. Operators of systems found to not comply with requirements would be unable to obtain a permit to operate. A score of +7 is given relative to the Base Case.

7.6.2 Cost

Cost to local councils

Under both Option 1 and Option 2, local councils will bear the following costs:

- **Indirect costs:** Local councils will incur overhead costs in administering a permit system. These include annual fee setting and budgeting, training, communications and website maintenance and vehicle overheads. In some instances, councils also may need to respond to complaints, issue notices for non-compliance, and respond to appeals made through the Victorian Civil and Administrative Tribunal (VCAT).
- **Direct permit costs:** Local councils will incur costs for each permit application. The activities which would contribute to the cost of administering a permit are: receipt and assessment of application, initial site assessment, installation inspection, final inspection, follow-up of non-compliance issues (where applicable), follow-up of non-payment (where applicable), and processing fees.

Deloitte Access Economics consulted with officers from six local councils⁹⁴ to obtain estimates of the cost of administering permits for on-site systems under the current legislation (the EP Act 1970). This information can be used to estimate the annual cost to local councils under Option 1. Most council officers indicated that councils were often not able to recover all costs from administering on-site wastewater permits, reflecting pressure to keep fees low, and the additional costs associated with more complex applications. Further costs may also be incurred by councils in relation to granting permit exemptions, as well as transferring and amending permits, although these matters are likely to arise infrequently.

The table below summarises the responses of the council officers. The average annual direct and indirect cost is \$51,400 per council, per year. Importantly, councils can recover some of the cost of administering permits for on-site systems. However, many council officers indicated that full cost recovery was difficult, largely reflecting the complexity (and resultant extra effort) of some applications. Therefore, these council costs will be borne by both duty holders (for costs that are recovered) and councils (for any costs which cannot be recovered).

⁹⁴ Comprising two councils on Melbourne's peri-urban fringe, three regional city councils and one rural council.

Table 7-1: Annual costs per council for administering permits to install or modify on-site systems.

Variable	Low-high	Simple average
Annual number of construct/install permits per council	31-120	58
Annual number of modification permits per council	7-35	12
Average cost per construction permit (direct and indirect)	\$490-\$1,000	\$754
Average cost per modification permit (direct and indirect)	\$245-\$600	\$398
Total annual costs per council (direct and indirect)	\$25,370 - \$121,500	\$51,400

Source: Deloitte consultation. Note that average costs represent a simple average of 'per-system' costs provided by councils.

For Option 2, councils would also incur direct and indirect costs for administering operating permits. However, the costs per permit might differ, as would the number of permits that would likely be administered each year. Some councils have in excess of 10,000 on-site systems operating in their municipality, and under Option 2, each one would require an operating permit to be renewed every five years.

The cost of Option 2 is significantly higher than Option 1. Assuming that one-fifth of all existing on-site systems receive an operating permit (or renewal) in any given year, the average annual direct and indirect cost would total **\$581,200 per council, per year**. For councils with a large number of existing on-site systems, this cost could exceed \$1 million per year. Under Option 2, local councils would be able to recover some of the cost of administering operating permits for on-site systems (compared to under the Base Case where councils would not have the power to recover the costs of their activities).

Table 7-2: Estimated council cost for administering permits to operate on-site systems.

Variable	High-low	Average
Estimated number of on-site systems installed with a permit	1,100 – 6,000	3,740
Estimated number of on-site systems installed without a permit	1,660 – 7,000	3,743
Estimated number of operating permits p.a. (assumed to be 20% of total existing on-site systems)	800 – 2,200	
Estimated average cost per operating permit (direct and indirect)	\$190-\$600	
Total annual costs per council (direct and indirect)	\$152,000 – \$1.1 million	\$581,206

Source: Deloitte consultation.

Cost to duty holders

Under **Option 1 and Option 2**, duty holders will bear the following costs:

- **Fees paid to council for permits to install new on-site systems:** Costs to council are estimated above (noting it may not be full cost recovery).
- **Fees paid to council for permits to install modify existing on-site systems:** Costs to councils are estimated above.
- **Costs of a land capability assessment:** Duty holders typically have to undertake a land capability assessment prior to installing an on-site system. These assessments, which are undertaken by

consultants, allow council officers to assess the risks that an on-site system presents to public health, the environment, and local amenity. Land capability assessments are estimated to cost between \$1,000 and \$2,000.

- **Costs of complying with permit conditions:** Homeowners may also face additional costs over and above the fees paid to council for complying with permit conditions. These costs may include any re-work required on installations, and any costs involved with disputes or reviews. These compliance costs would vary significantly across permit applications. These costs are additional to the costs that would be incurred in the absence of any regulations.

Under **Option 2**, duty holders will bear the following additional costs, over and above the costs of obtaining permits to install or modify a new system:

- **Fees paid to Council for permits to operate on-site systems:** Costs to council are estimated above (noting it may not be full cost recovery).
- **Costs borne by duty holders to bring systems to an acceptable standard:** Property owners with existing on-site systems may also face significant costs to bring on-site systems up to an acceptable standard and comply with an operating permit. For older systems, some or all components may need to be replaced. Local council officers estimated that the average cost of works required to bring an on-site system up to an acceptable standard may be between \$5,000 and \$15,000. Local council officers also estimated that as many as 60-80% of existing systems may require work in order to operate at an acceptable standard. Assuming an average upgrade cost of \$10,000 per system, then a municipality with 3,000 properties would have a total cost to property owners of between \$18 million and \$24 million.⁹⁵

Based on the costs to duty holders and local councils identified above, a score of -1 is given for Option 1 relative to the Base Case, and a score of -8 is given for Option 2.

In terms of practicality (which is not explicitly considered in the MCA), Option 1 presents a more practical option, insofar as it represents a continuation of the status quo for local councils, duty holders and EPA. It would ensure that councils maintain oversight of all new and modified on-site systems within their municipality. Under this option, the operation and maintenance of on-site systems and problematic legacy systems would be managed under the GED, possibly enforced by councils themselves. Option 2, however, would present greater implementation challenges for councils:

- For council areas where financial hardship is a significant issue, the costs of obtaining an operating permit for an on-site system, as well as the cost to comply with permit conditions, would present a significant financial burden for many residents.
- Councils would face a significant backlog of legacy on-site systems that have never been assessed by council, but would require an operating permit. Managing this backlog would be made more difficult because some councils have no records for many legacy systems.

⁹⁵ This assumes 100% level of compliance because if an activity is prescribed to be a permission activity, then the person who has attained the permission must comply with all conditions / requirements set out in the permission.

7.6.3 MCA summary

Based on the MCA, the preferred option is for councils to continue to issue permits to construct, install or alter on-site systems with flow rates less than 5,000 litres per day (Option 1). This is the current approach under the EP Act 1970. Option 2 is not preferred because while it is likely to be more effective in addressing harms to human health and the environment caused by existing on-site systems, DELWP and EPA consider that these benefits would not be sufficient to outweigh its significantly higher costs (assuming full compliance). Table 7-3: MCA analysis summary for on-site systems

Criteria (and weight)	Option 1	Option 2
Effectiveness (50%)	5	7
Cost (50%)	-1	-8
Total weighted score	2	-0.5

8 Contaminated land

This chapter assesses regulations being proposed to provide more detailed prescription regarding what is required to comply with the new duties to manage contaminated land, and provide notification, in specified circumstances, where it exists. Consideration is also given to prescribing control measures for non-aqueous phase liquids and exemptions to notifiable contamination.

Key points:

- Contaminated land was identified by the EPA Inquiry as one of the critical challenges for environmental protection in Victoria.
- Alongside the GED, the new EP legislation establishes new duties to:
 - Manage contaminated land
 - Notify EPA of contaminated land in certain circumstances.
- However, the following residual risks will continue to exist after the new EP legislation has taken effect:
 - Uncertainty around the compliance standard required with respect to their contaminated land management and notification obligations, tending to under-compliance particularly in relation to how contamination is assessed against 'naturally occurring concentrations'. Significant impacts to harm to human health and the environment in relation to non-aqueous phase liquids (NAPL) contamination and as a result of EPA not receiving adequate information through the duty to notify.
- The GED and the duty to manage are insufficiently targeted to adequately control the risks presented by NAPLs, particularly given the persistence and highly harmful nature of NAPL and potential to result in long-term multigenerational human health and environmental impacts. Duty holders are unlikely to observe the full impacts or fully understand the longer-term human health and environmental impacts of NAPL contamination.
- The new EP legislation adopts two alternatives for definition of notifiable contamination for the purposes of supporting a proportionate response: the option to specify particular thresholds in the regulation, or otherwise, if no such threshold is specified, default to a dollar value threshold based on likely remediation costs. As the duty is new and EPA's current knowledge on the number of contaminated sites is limited, using the dollar value threshold alone could impose a burden on businesses and individuals not commensurate to the information objectives sought in initial implementation of the new duty. This could lead to higher regulatory burden with marginal benefit to human health or the environment at this point in time.
- The preferred options to address these residual risks are:
 - In relation to the duty to manage: prescribe regulations to allow EPA to make determinations on background levels on a case by case basis and prescribe specific control measures for NAPL contamination.
 - In relation to the duty to notify: prescribe in regulation an alternative risk-based definition of notifiable contamination, establish specific exemptions to notifiable contamination and the requirement for duty holders to provide a management response with their notification to the EPA.

8.1 Background

Land use across Victoria covers a broad range of activities, including residential, commercial and industrial use, agricultural use for production of food and fibre, and conservation activities to protect biodiversity.⁹⁶ Human activities such as industrial and agricultural uses have resulted in a legacy of contaminated sites across Victoria. The number, location and condition of Victoria's contaminated sites are largely unknown⁹⁷, however EPA estimates there are upwards of 30,000 sites with varying levels of risk to human health and the environment across Victoria.⁹⁸

Based on the estimated stock of contaminated land and the risk profile, the number of contaminated land sites under each category of risk is estimated to be:⁹⁹

- High Risk (NAPL) - 1,400 sites
- High Risk (Vapours) - 3,300 sites
- High Risk (Groundwater contamination offsite) - 1,800 sites
- High Risk (Groundwater contamination on-site) - 9,400 sites
- Medium Risk (Unsafe for current use, high contaminant levels) - 7,400 sites
- Medium Risk (Unsafe for current use) - 1,500 sites
- Low Risk (Safe for current use) - 4,100 sites
- Low Risk (Below thresholds) - 1,200 sites.

In accordance with the new EP legislation, land is contaminated if 'waste, a chemical substance or a prescribed substance is present on or under the surface of the land and the waste, chemical substance or prescribed substance – is present in a concentration above the background level, and creates a risk to human health or the environment'. These substances can include toxic and/or carcinogenic chemicals, chemicals which generate harmful vapours and other harmful substances.

Land contamination is typically the result of current or historical activities at, or adjacent to, the site. The VAGO report *Managing Contaminated Sites*, notes that there are typically 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.
- Volatile contaminants in the soil and groundwater which can generate vapours which migrate through the soil profile and may accumulate in overlying structures such as dwellings.

Victoria's growing population will continue to drive demand for residential, recreational and commercial land within existing urban and regional centres. To meet this growing demand, there will be a requirement to manage, and potentially remediate, contaminated infill sites for other uses.

8.2 Current legislative and regulatory framework

Current land contamination requirements set out in the EP Act 1970 are outlined in the form of SEPPs and an Industrial Waste Management Policy (IWMP). The current framework for contaminated land can be described as 'reactive' rather than 'proactive' in managing human health and environmental risks from contamination. The

⁹⁶ Commissioner for Environmental Sustainability Victoria, State of the Environment 2018 (2018) available at <https://www.ces.vic.gov.au/reports/state-environment-2018>.

⁹⁷ Commissioner for Environmental Sustainability Victoria, State of the Environment 2018 (2018) available at <https://www.ces.vic.gov.au/reports/state-environment-2018>.

⁹⁸ EPA estimate based on analysis of industrial development of Victoria.

⁹⁹ EPA estimates.

current framework typically only requires the clean-up and remediation of sites when a change of land use occurs, or when EPA discovers the existence of contamination and issues a notice requiring the clean-up. The lack of effective disclosure obligations within the existing framework can result in duty holders withholding information from EPA and potentially affected stakeholders.

Consequently, there is the potential that many human health and environmental risks under the current contaminated land legislative framework are not being appropriately managed, and may in some cases be intensifying over time. Land contamination risks can be present for many years and can migrate, resulting in a wider range of people being potentially exposed over time and compounding health impacts.

A summary of the legislative and regulatory framework underpinning the management of contaminated land in Victoria is provided in Table 8-1. Supporting legislative and regulatory frameworks outside the EP Act 1970, including the *Planning and Environmental Act 1987*, that pertain to contaminated land are identified in Appendix 3.

Table 8-1 Current legislative and regulatory framework – contaminated land

Name	Description
SEPP (Prevention and Management of Contamination of Land) (SEPP (PMCL))	<p>Identifies general uses of land in Victoria (“beneficial uses”) and provides a mechanism for determining whether these uses are being protected, including indicators and objectives of use in assessing impacts. Also sets out requirements for the prevention of contamination and links the environmental audit system and the statutory planning system.</p> <p>SEPP (PMCL) incorporates reference to the National Environment Protection (Assessment of Site Contamination) Measure (NEPM ASC), amongst other external standards, in relation to establishing environmental quality indicators or objectives.</p>
SEPP (Waters)	<p>The new SEPP (Waters) commenced on 19 October 2018 and provides a single instrument to guide water quality management in Victoria. SEPP Waters replaced SEPP (Groundwaters of Victoria) 1997 and Variation to SEPP (Groundwaters of Victoria) 2002, which previously set policy for groundwater quality.</p> <p>SEPP (Waters) also sets out the management approach to NAPL, and requires duty holders to clean up NAPL pollution and remove or control the NAPL source in so far as reasonably practicable.¹⁰⁰</p>

Like many other environmental issues, the regulatory framework for legacy contamination has developed incrementally as risks become better understood through improved science and understanding and in response to critical incidents and threats to human health.¹⁰¹

Recent reviews of Victoria’s contaminated land framework have identified a range of limitations and issues with respect to the management of human health and environmental risks associated with legacy contamination. For example, the recent EPA Inquiry identified the need for a comprehensive reform process to provide a

¹⁰⁰ State Environmental Protection Policy (Waters), Clause 54.

¹⁰¹ Independent Inquiry into the Environment Protection Authority, 2016, page 52.

consistent, risk-based approach to the screening, assessment and remediation of contaminated land and the need for a comprehensive state-wide database of sites that pose a significant risk to the community.¹⁰² Furthermore, the 2011 VAGO report into the management of contaminated sites in Victoria found that key elements of the existing legislative and regulatory framework lacked sufficient clarity, and significant gaps exist with respect to the identification, management, reporting and clean-up of contaminated sites.¹⁰³

8.3 New EP legislation

In addition to the GED, the new EP legislation sets out a range of duties, prescriptive elements and new instruments for managing contaminated land in Victoria. The duties for contaminated land include the new duty to manage contaminated land and duty to notify of contaminated land.

The new EP legislation defines land as contaminated if waste, a chemical substance or a prescribed substance is present on or under the surface of the land in a concentration above the 'background level' and creates a risk of harm to human health or the environment. Unless prescribed in regulation, determined in accordance with the regulations or set out in an ERS, Section 36 of the new EP legislation defines 'background levels' of waste, chemical substances or prescribed substances as 'naturally occurring concentration'.

A more 'proactive' approach has been established, with earlier management of contaminated land risks and a broadening of duty holders' responsibilities to include anyone with management or control of contaminated land. The new framework also seeks to support duty holders with investigation and clean-up activities with a focus on highest risk contamination, while also supporting duty holders to understand and manage lower contamination risks where clean-up may not be required or warranted.

Duty to manage contaminated land

The duty to manage contaminated land compels duty holders to manage or control contaminated land to minimise risks to human health and the environment so far as reasonably practicable. It also requires duty holders to share relevant information regarding the risks of contamination to any persons likely to be affected by the contamination. This duty includes the following requirements:

- Identification of any contamination that is known or should reasonably be known.
- Investigation and assessment of the contamination.
- Provision and maintenance of reasonably practicable measures to minimise risks of harm to human health and the environment, including clean-up activities where necessary.
- Provision of adequate information to any person that may reasonably be considered to be affected by the contamination, or who is reasonably expected to become responsible for the management or control of the contaminated land.

Duty to notify of contamination

The duty to notify of contamination requires duty holders to notify EPA of notifiable contamination as soon as practicable as the duty holder becomes aware of the notifiable contamination. Section 37 of the new EP legislation defines notifiable contamination, in relation to contaminated land, to mean contamination that is:

- a) Prescribed notifiable contamination, or
- b) If the regulations do not prescribe notifiable contamination by a particular waste, chemical substance or prescribed substance, contamination for which the reasonable cost of action to remediate the land is likely to exceed \$50,000 or any other prescribed amount.

¹⁰² Independent Inquiry into the Environment Protection Authority, 2016, page 261.

¹⁰³ Victoria Auditor-General's Office, *Managing Contaminated Sites* (2011), page 13.

In notifying EPA of notifiable contamination, a duty holder must report on:

- The location of the land.
- The activity resulting, or suspected as resulting, in the contamination.
- The nature and extent of the contamination.
- The nature of the risk of harm to human health and the environment from the contamination.

Duty holders are exempt from the duty to notify of contamination if they are aware that a notification has already been made to EPA in accordance with Section 37 of the new EP legislation or if the notifiable contamination is a prescribed exempt notifiable contamination.

8.4 Nature and extent of problem

8.4.1 Residual risk

The following residual risks will exist after the new EP legislation has taken effect:

- Duty holders will require greater consistency and certainty with respect to their contaminated land management and notification obligations. In the absence of this consistency or clarity duty holders may incur unnecessary costs in order to meet their duties. By specifying the legislative intent of the new EP legislation through the supporting regulations for this new scheme, uncertainty with respect to duty holders' contaminated land management and notification obligations may be reduced without comprising the policy intent, leading to businesses being better supported to meet their duties without incurring unnecessary costs.
- Significant impacts to harm to human health and the environment in relation to non-aqueous phase liquids (NAPL) contamination and as a result of EPA not receiving adequate information through the duty to notify.

Table 8-2 sets out the residual risks that are likely to remain in relation to contaminated land after the new EP legislation commences.

Table 8-2 Summary of residual risks

Area	Residual risk
What constitutes 'background levels' of contamination for individual waste or chemical substances.	Relying only on the duty to manage as specified in the new EP legislation could result in uncertainty for duty holders in determining background levels. Without further direction, duty holders may have to determine for themselves, at their own cost, their obligations under the duty to manage. This will likely result in excessive cost burden.
Specific control measures for NAPL	In the absence of prescribed risk control measures for NAPL it is unlikely duty holders would seek to address the risk and clean-up and remove the NAPL source to the extent reasonably practicable - particularly given the complexities and costs involved in the clean-up of NAPL. This may result in increased and significant long-term risks to human health and the environment.
How anticipated remediation costs are to be calculated for the purposes of determining what is notifiable contaminated land or exemptions to notifiable contamination.	As a new scheme aimed primarily at filling a significant information gap in EPA's knowledge of the extent of contaminated sites, there is a chance that that the default

threshold of remediation exceeding \$50,000 may capture a wider number of sites than required for EPA to address contamination issues in a proportionate manner in this first phase of the new contaminated land scheme. There may also be some instances where the cost to remediate contamination is below \$50,000 (and therefore not captured by the duty to notify) but the contamination poses a significant risk to human health and/or the environment.

The manner and form of notification, specifically a description of the duty holder's management response.

In the absence of more detailed prescription, EPA is unlikely to have adequate information to efficiently monitor and manage high-risk contaminated sites. EPA would be faced with additional costs and resources in order to undertake its role and also may not be able to identify and adequately respond to high priority sites that are not being managed appropriately, which could lead to increased risk of harms to human health and safety.

These residual risks are discussed in further detail below.

Duty to manage – determining background levels

The 'background levels' for wastes and other chemical substances, in the absence of any prescription, are defined within the new EP legislation as the 'naturally occurring' concentrations of the substance on or under the surface of land.

Generally, this approach will be appropriate for contaminants for which the risks to human health or the environment are reasonably understood and quantifiable. For example, investigation levels for all contaminants of concern listed in Table 1A of Schedule B1 to the NEPM ASC have been agreed between all Australia jurisdictions. These values, known as "investigation levels" or "screening levels" mark the starting point at which further investigation may be required to ensure the site is fit for its current use or a proposed use and the environment is being sufficiently protected. These values can play an efficient role in generally setting the background levels applicable to a site, based on its use and for assessing what, if any, management actions are required under the duty to manage contamination.

However, not all contaminants of concern are listed in the NEPM ASC, meaning an alternative means of determining the background level is required. If only a negligible concentration is present for a substance not listed in NEPM ASC, then *any* presence will be regarded as being above "naturally occurring", which means a duty holder would then need to assess whether that negligible presence creates a risk to human health or the environment. This need to rely on a risk assessment to know if the duty to manage applies is inherently complex and risks increasing uncertainty for potential duty holders¹⁰⁴ as to when to act and how much effort is required. It also imposes costs on potential duty holders that are disproportionate to the actual risks.

Further, naturally occurring levels of a particular substance can differ considerably across Victoria irrespective of the values settled upon in the NEPM ASC.

¹⁰⁴ The word *potential* has been used here because the setting of background levels may influence whether or not a duty to manage the contamination exists.

A particular region may have elevated levels of a specific substance in the soil due to the underlying natural geology or due to historical industrial land uses. For example, arsenic is a naturally occurring element in the soil and rocks of Victoria's gold mining areas including Bendigo and Ballarat. The long history of gold mining in the Goldfields region has also resulted in leftover material such as rock, sand and earth which may or may not have higher concentrations of arsenic than the surrounding soils and rocks.¹⁰⁵ Interventions to protect human health, such as raising public awareness on safe use of land (e.g. using raised garden beds with imported soil to grow vegetables, and land use planning controls) exist in such regions and may be more appropriate for meeting the duty to manage than remediation or other similar controls.

Determining whether a site is within or above the 'naturally occurring' concentration threshold, especially when not listed in the NEPM ASC, can be difficult due to the complexity of assessing soil and water concentrations against 'natural' levels. Furthermore, many regions of Victoria (e.g. the broader Goldfields region and surrounds) and urban residential in-fill areas of inner Melbourne may have elevated levels of substances already known by EPA to *not* pose a significant risk to human health or the environment.

Duty holders who suspect they may have a land contamination risk will likely require the services of expert land contamination and environmental consultants for advice and, potentially, to undertake sampling and assessment activities to determine their obligations under the duty to manage. The absence of prescribed background levels of waste and chemical substances may necessitate duty holders undertaking multiple soil and groundwater samples and assessments to determine substance concentration levels against 'naturally occurring' levels.

Conservative values are adopted in the NEPM ASC in order to account for a wide range of potential uses of land, but these conservative values can restrict the efficient allocation of land for highest-value and best uses. For sites that present very low contamination risks, the resultant conservative values used to define background levels might affect duty holders' ability to access finance and/or gain legal and planning approvals for site works or changes to land use. Potential buyers of a site may also have difficulty gaining access to finance. In the absence of specific guidance, financial institutions and planning regulators, when accepting legislative definitions around 'naturally occurring' levels, may be overly conservative in assessing the risk of harm to human health or the environment when assessing their finance/planning risks – even where a site potentially represents a very low contamination risk to human health or the environment. Consequently, financial institutions may restrict lending and/or planning regulators may be more conservative with their respective approvals in a manner that is disproportionate to the actual risks.

Duty to manage – prescribing control measures for NAPL

Under the new EP legislation, only general management approaches and risk control measures are stated – the EP Act does not assign measures for specific waste or chemical substances.

NAPL contamination can pose a significant and long-term risk to human health and the environment if not appropriately managed due to its toxicity, limited solubility, and significant migration potential in soil, groundwater and surface waters. When released from spills or through leaking underground storage systems, NAPL provide an ongoing source for the dissolution of substances into groundwater resulting in a spreading dissolved phase plume.

¹⁰⁵ Environment Protection Authority Victoria, *Industrial Waste Resource Guidelines – Arsenic in mine tailings, sand and rock* (2009).

NAPL and dissolved phase plumes can pose risks due to vapour intrusion, groundwater extraction and use, seepage of contaminated groundwater (for example into adjacent basements), ecological risks from the discharge of contamination into surface waters, and explosion from the accumulation of vapours.¹⁰⁶ Due to the range of exposure pathways, NAPL has the potential to have long-term (multi-generational) and significantly detrimental impacts on human health and the environment.¹⁰⁷ To reduce these risks, the NAPL and its source should be cleaned-up and removed to the extent practicable. However, the characteristics of NAPL, combined with the particular geologies present in Victoria, make it extremely difficult and potentially expensive to remediate or clean up completely.

Under the current SEPP (Waters), land owners managing NAPL are required to clean-up and remove NAPL source in so far as reasonably practicable. However, under the GED and duty to manage within the new EP legislation, duty holders are not explicitly compelled to clean-up and remove the source of a NAPL contaminant. Given the persistence and highly harmful nature of NAPLs, and potential to result in long-term multigenerational human health and environmental impacts, the GED and duty to manage are insufficiently targeted to adequately control the risks presented by NAPL. Duty holders are unlikely to observe the full impacts or fully understand the longer-term human health and environmental impacts of NAPL contamination.

Consequently, in the absence of prescribed risk control measures for NAPL it is unlikely duty holders would always seek to address this risk and clean-up and remove the NAPL source to the extent reasonably practicable. Given the complexities and costs involved in the clean-up of NAPL, duty holders are unlikely to appropriately follow EPA issued non-mandatory guidelines. This may result in increased and significant long-term risks to human health and the environment. This may, in turn, result in higher future healthcare costs associated with human exposure to NAPL, higher future management costs on the part of duty holders, potential impacts on third parties on sites adjacent to where the NAPL source is located, and higher administrative costs (and potential clean-up and remediation costs) to government. The nature of the contamination (the extent of which is often unknown until a site assessment is undertaken), the cost of remediation and the long-term human exposure pathways mean that market-based incentives (such as effects on re-sale values) are unlikely to moderate clean-up behaviour.

Duty to notify – definition of notifiable contamination

The intent of the duty to notify is to inform EPA of significant and high-risk instances of contamination that warrant EPA's involvement in the management of the contamination. This may involve advice or direct action on the part of EPA.

The \$50,000 default notification threshold under the new EP legislation, based on current general knowledge of remediation costs, may be relatively low for this first iteration of this new duty. The legislative intent of the duty to notify, to address the considerable gap in EPA's knowledge of the extent of contaminated sites in Victoria, may not be commensurate to the contamination risk upon the commencement of the new EP legislation.

¹⁰⁶ NSW Environment Protection Authority, *Technical Note: Light Non-Aqueous Phase Liquid Assessment and Remediation* (2015), page 1.

¹⁰⁷ Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, *Technical Report No. 34: A practitioner's guide for the analysis, management and remediation of LNAPL* (2015), page 2.

Furthermore, sites that are subject to an environmental audit under the new EP legislation or sites issued with clean up or abatement notices would in effect automatically trigger the requirement to notify EPA. It is estimated that there are approximately over 3,500 such sites.¹⁰⁸

The default notification threshold risks imposing an unnecessary regulatory burden on duty holders where sites pose low to moderate risk (but where the remediation may exceed \$50,000) and a significant administrative burden on government from administering the notification scheme. Given the unknown number, location and condition of Victoria's contaminated sites, it is extremely difficult to estimate how many sites across Victoria will be captured by the current duty to notify threshold. However, it is likely to result in a significant proportion of low-risk contaminated sites being subject to notification.

Alternatively, there may be some situations in which the cost to remediate contamination is below \$50,000, but the contamination poses a significant risk to human health and/or the environment.

Duty to notify – manner and form of notification

The new EP legislation requires duty holders to include information on location, the activity resulting in the contamination, and nature and extent of the contamination when submitting a notification to EPA. However, there is no prescribed requirement for duty holders to specify how the contamination is being, or is planned to be, managed.

Understanding how duty holders are responding to the contaminated land is important for EPA to assess and prioritise those sites which represent the greatest risk to human health and environment, and where EPA support and oversight is required in a timely manner.

The lack of information outlining a duty holder's management response may impede EPA's ability to effectively and efficiently monitor and manage high-risk contaminated sites. Without an understanding of the duty holder's management response, EPA would be faced with additional costs and resources to determine the nature and timing of action. Without sufficient information to triage notifications, EPA may not be able to identify and adequately respond to high priority sites that are not being managed appropriately. There is a need to address these risks by requiring duty holders to submit information that is relevant to EPA's prioritisation of contaminated sites.

8.4.2 Size of problem

This section, along with the discussion of harms and costs in sections 8.4.3 and 8.4.4, provides evidence of the size of the contaminated land problem in Victoria. Evidence is provided for the overarching problem. The new EP legislation is expected to address a significant proportion of the overarching problem. The proposed Regulations are intended to address the residual risk i.e. that part of the problem that still remains after the new EP legislation takes effect.

As noted above, the number, extent and location of contaminated sites in Victoria, in general, is largely unknown.¹⁰⁹ Despite a significant focus of community and government concern, there is a lack of consistent

¹⁰⁸ Based on number of sites issues with an environmental audit since the commencement of the audit system in 1990, and the number of sites currently issued with clean-up or pollution abatement notices; EPA, *Priority Sites Register* (2019) <https://www.epa.vic.gov.au/your-environment/land-and-groundwater/~/_media/Files/Your%20environment/Land%20and%20groundwater/PSR/Priority-Sites-Register-Web-Report-January-2019.pdf>; EPA, *Environmental auditing - Environmental audit reports online* <<https://www.epa.vic.gov.au/our-work/environmental-auditing/environmental-audit-reports-online>>.

¹⁰⁹ Victorian Auditor-General's Office, *Managing Contaminated Sites* (2011), page 13.

evidence regarding the extent of contaminated land in Victoria and the risks it poses to human health and the environment. As noted in the VAGO audit of the management of contaminated sites in Victoria, the “ability to assess and mitigate health, environmental and financial risks associated with contamination is also being hampered by the lack of complete and reliable information on the number and location of contaminated sites, and the nature and extent of contamination.”¹¹⁰

Reflecting the nature of Victoria’s industrial development, contaminated sites and suspected contaminated sites are spread across the state. Contaminated sites are typically concentrated in and around former industrial locations in Melbourne and major regional centres. In regional and rural Victoria, towns with significant historical industrial and agricultural activities - such as sheep dipping, minerals extraction and processing, and the unregulated use of pesticides and herbicide - may also have large numbers of potentially contaminated sites.

EPA has identified around 60 types of land use and activities that are considered to have a high potential for contamination, covering light and heavy industrial land uses, agricultural activities and utilities. There are also a range of activities, which may be incidental to the main site activity, where the potential for contamination arises. This may include infilling of land, chemical and fuel storage, warehousing and waste disposal. EPA estimates that approximately 30% of significant contamination relates to fuel storage – in many instances this is not at a recognised fuel or transport industry site (such as a service station).¹¹¹

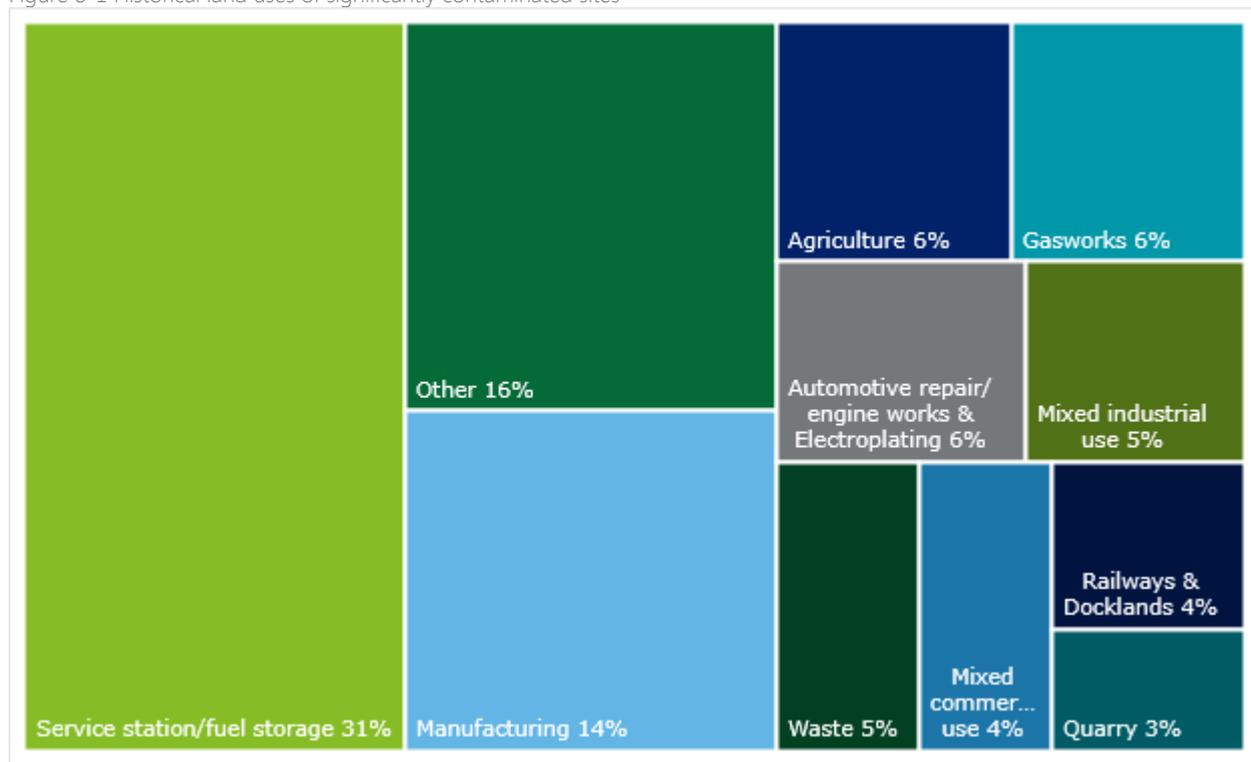
Overall, EPA estimates that there are approximately 30,000 contaminated sites within Victoria that present varying levels of risk to public health and the environment.¹¹² An overview of the historical land uses contributing to significantly contaminated sites within Victoria is presented in the figure below.

¹¹⁰ Victorian Auditor-General’s Office, *Managing Contaminated Sites* (2011), page viii.

¹¹¹ EPA assumption based on NSW *Guidelines for Implementing the POEO (Underground Petroleum Storage Systems) Regulation 2008*.

¹¹² EPA estimate based on analysis of industrial development of Victoria.

Figure 8-1 Historical land uses of significantly contaminated sites



Source: EPA internal data.

Further complicating the assessment of Victoria’s contaminated land is the fact that some regions may have elevated levels of substances due to the underlying natural geology which may or may not pose human health and/or environmental risk. In some instances, naturally occurring concentrations of a substance may exceed concentrations resulting from industrial uses.

Naturally occurring substances and minerals are highly variable, and determining anthropogenic contamination can be difficult even after multiple sampling and site assessments. For example, research conducted by RMIT University for the Victorian Background Soil Database indicates that naturally occurring arsenic concentrations in the Greater Melbourne, Ballarat, Geelong and Mitchell regions can vary from 0 to 1,200mg/kg of soil.¹¹³ As indicated in the figure below, over 450 locations have varying levels of Category C soil contamination,¹¹⁴ with 50 locations above the NEPM ASC health investigation level for residential areas.¹¹⁵ Consultations with

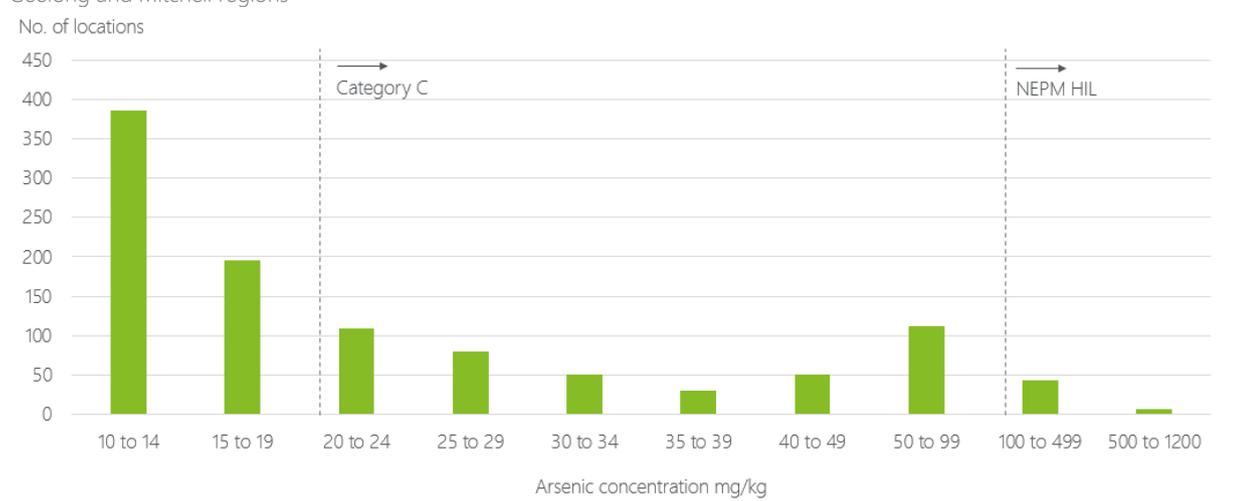
¹¹³ Mikkonen, H.G., Bentley, page D., Barker, A.O., Dasika, R., Wallis, C.J., Clarke, B.O., Reichman, S.M., 2018. Victorian Background Soil Database, Version 1.0. RMIT University, Melbourne, Australia. <http://doi.org/10.4225/61/5a3ae6d48570c>

¹¹⁴ Category C contaminated soil includes substances such as zinc, copper and arsenic. Category C contaminated soil is a prescribed industrial waste under EPA’s Industrial Waste Resource Guidelines and must be disposed at a licenced landfill. Arsenic concentration between 20mg/kg and 500mg/kg are classified as Category C. EPA, 2009, *Industrial Waste Resource Guidelines*, page 5.

¹¹⁵ The National Environment Protection (Assessment of Site Contamination) Measure sets contaminant thresholds for health investigation for varying land uses. Standard residential areas with garden/accessible soils have a health investigation level of arsenic of 100 mg/kg. National Environment Protection Council, *National Environment Protection (Assessment of Site Contamination) Measure 1999: Schedule B7 Guideline on Health-Based Investigation Levels*, page 36

contaminated land practitioners indicated that determining elevated contamination levels relative to background levels could require an additional two to four site assessments in some regions in the absence of prescribed background levels.

Figure 8-2 Number of locations with various levels of naturally occurring arsenic concentrations in the Greater Melbourne, Ballarat, Geelong and Mitchell regions



Data from Mikkonen, H.G., Bentley, P.D., Barker, A.O., Dasika, R., Wallis, C.J., Clarke, B.O., Reichman, S.M., 2018. Victorian Background Soil Database, Version 1.0. RMIT University, Melbourne, Australia. <http://doi.org/10.4225/61/5a3ae6d48570c>

Given the inherent uncertainty around the number, state and location of Victoria’s contaminated sites, it is not possible to estimate with any rigour the number of sites that will be captured by the ‘notifiable contamination’ definition under the new EP legislation. Similarly, it is not possible to quantify with any precision the number of high-risk contaminated sites within Victoria. Many duty holders are likely unaware of the extent of contamination on their land and the potential remediation costs, and would need to engage an environmental consultant to undertake a site assessment and prepare a land management plan, including an estimate of the likely cost to manage and/or remediate the site.

While it is not possible to reliably estimate the total number of duty holders likely to be captured by the existing notifiable contamination, it is expected that a larger proportion of contaminated sites would meet the \$50,000 threshold than may be warranted in terms of meeting the policy intent of the new duty, particularly in its first iteration. For example, consultation with industry for this RIS indicates that disposal of soil with Category C contamination can cost approximately \$120 per cubic metre. The disposal of 800 cubic metres (or approximately 1,200 tonnes, which is a relatively small volume of contaminated soil), would result in land remediation costs of almost \$100,000, in addition to costs to extract and replace the soil, other site testing and assessment activities and related consultancy fees. However, if the contamination was in an area restricted to the general public and soil contaminant was contained underground and not migrating, then the risk to human health would potentially be negligible. Compliance with the duty to manage contaminated land would be suitably protective without requiring EPA’s direct involvement through a notification.

8.4.3 Harms

Contaminated sites can pose both immediate or longer-term risks to human health and/or the environment. This can depend on the nature and extent of the contamination, how the site is used and the potential exposure pathways.

Contaminated sites that pose an imminent risk have concentrations of contaminants that may endanger human health and the environment unless immediate attention is undertaken. Sites may also pose a long-term risk to

human health or the environment if they contain levels of contaminants where exposure over a long period is known to result in a risk.¹¹⁶

VAGO notes that the human health risks from contaminated land cover a wide range from minor health problems, such as allergic reactions and hypersensitivity, to serious health problems, such as respiratory illness, reproductive problems, cancer and birth defects.¹¹⁷ The risks to human health largely depend on the contaminant and its concentration, the exposure pathway, the level of exposure, and the vulnerability of the exposed population.

Harms to the environment generally result from contaminants leaching into the soil, groundwater and surface water, leading to the degradation of soil, water and air quality and affect the potential range of uses of the site. For example, contamination of soil may inhibit or prevent vegetation growth, destroy crops, and increase risks of erosion. As noted above, NAPL contamination can pose a high risk to human health and environment. High risk NAPL substances such as hydrocarbons (i.e. liquid fuels) can cause harm to organisms through vapour inhalation, ingestion of contaminated water and contact to skin. Depending on the type and level of exposure, hydrocarbons can cause a range of issues, including dermatosis, skin cancer and poisoning through inhalation. Chronic exposition may cause weariness, headache, blood production malfunction and irritation to eyes and lungs. Chronic exposure of skin might lead to degeneration of liver, kidneys and spleen. Fuels such as benzene can also lead to cancer. Liquid fuels are also toxic to the ecosystem, particularly fish and invertebrates.¹¹⁸ Accumulation of vapours from some forms of NAPL may also pose an explosion risk.¹¹⁹

Furthermore, contamination of groundwater can prevent it from being used for drinking, irrigation or stock supplies, or may present a risk of vapour intrusion into buildings. Contamination of soil can result in odours making recreational areas unusable, or degrade the aesthetic values of an area (for example, by destroying native vegetation).

8.4.4 Costs

The presence, and management, of land contamination can result in a range of short- and longer-term financial and economic costs, including:

- Direct financial costs associated with the assessment, management and remediation (including clean-up and disposal of contaminants) of sites to ensure land that was contaminated by past activities is safe and suitable for a proposed new use
- Direct healthcare system costs associated with the treatment of adverse human health outcomes attributed to the exposure of contaminants in soil and ground and surface waters
- Costs to the economy in the form of lost productivity from illnesses related to exposure of contaminants
- Costs to the economy in the form of reduced productivity from loss of productive agricultural and industrial land
- Reduced land values for sites exposed to contamination or located adjacent to contaminated sites
- Loss and degradation of recreational areas affected by contamination

¹¹⁶ Victoria Auditor-General's Office, *Managing Contaminated Sites* (2011), page 1.

¹¹⁷ Victoria Auditor-General's Office, *Managing Contaminated Sites* (2011), page 1.

¹¹⁸ Konečný F. et al., *Contamination of soils and groundwater by petroleum hydrocarbons and volatile organic compounds – Case study: ELSLAV BRNO*, Bulletin of Geosciences (2003), vol. 78 (3), pages 229-230.

¹¹⁹ NSW Environment Protection Authority, *Technical Note: Light Non-Aqueous Phase Liquid Assessment and Remediation* (2015), page 1.

- Ecological costs and degradation of natural ecosystems from discharge of contamination into soil and ground and surface waters.

The nature and extent of contamination and the associated risks and exposure pathways are unique to each site. Correspondingly, the mitigation and management response (and associated costs) are specific to each site and the specific waste and chemical substances present. In the absence of a detailed audit of state-wide land contamination, it is not possible to reliably quantify the annual costs to Victoria from land contamination.

Direct costs to sample and assess land contamination varies significantly based on the local geological characteristics of soil or water and contaminants tested. Interviews with contaminated land experts indicate that consultancy fees for a high-level site assessment can range from approximately \$5,000 to \$30,000, while a more complex assessment such as a groundwater assessment costs approximately \$50,000.

Limited data exists on costs such as healthcare costs associated with exposure to contaminated land or water, impacts of contamination on land values, reduced value of natural ecosystems or loss of recreational areas. The costs of managing and remediating contaminated land are typically borne by private duty holders, and are therefore not well known to government. However, while there is no broad scale data on the cost to the Victorian community from contaminated land, there are a range of high-profile cases that demonstrate the management and remediation costs can be significant where contamination needs to be managed. In considering these costs, it is important to note that as the new EP legislation is expected to address most of the overarching problems for contaminated land, the costs of the residual problem will be significantly smaller than the costs of the overarching contamination problem. Examples of management and remediation costs include:

- EPA spent approximately \$2 million cleaning up four high-risk residential sites contaminated by foundry waste left in an old quarry within the City of Maribyrnong.¹²⁰
- EPA was required to spend approximately \$6.6 million on the remediation of two sites within the City of Maribyrnong and City of Brimbank.¹²¹
- Maribyrnong City Council has spent approximately \$1 million annually for several years to manage a high-risk contaminated site.¹²²
- EPA analysis of 49 environmental audits involving groundwater contamination found that an average of \$1.8 million (representing total remediation costs) was spent by each site proponent.¹²³
- Brimbank City Council was required to spend approximately \$2.6 million over the course of three years to clean up a single high-risk site, and a further \$5 million since 1997 on another high-risk site.¹²⁴
- The leaking of methane from a nearby landfill into the Brookland Greens housing estate in Cranbourne resulted in significant clean-up, remediation and legal costs for City of Casey and EPA. In 2008-09 alone, the council committed approximately \$21 million to a range of clean-up and remediation measures aimed at mitigating the risk of the landfill gas leak. In addition, the landfill gas leak led to a class action suit against the City of Casey and EPA at a cost of \$23.5 million.¹²⁵ In the long term, the total cost of rehabilitating the landfill is expected to exceed \$100 million. The methane leak may have been avoided by the construction of a landfill liner at an estimate cost of \$500,000 in 1992.¹²⁶

¹²⁰ Victorian Auditor-General's Office, *Managing Contaminated Sites* (2011), page 38.

¹²¹ *Ibid*

¹²² *Ibid*, page 39.

¹²³ EPA estimate based on assessment of data provided by environmental auditors, from 2002 to 2017.

¹²⁴ Victoria Auditor-General's Office, *Managing Contaminated Sites* (2011), page 39.

¹²⁵ <https://www.smh.com.au/national/estate-residents-get-23-5-million-compo-20110325-1c9f3.html>.

¹²⁶ Victorian Ombudsman, *Brookland Greens Estate – Investigation into methane gas leaks* (2009), page 27.

- 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 and partially built homes and relocation of residents, generating a significant social and emotional cost to the local community and a financial cost to the State Government of several million dollars. As a direct result, the Government introduced legislative measures, such as the environmental audit system, into both the planning and environment protection frameworks to prevent a recurrence of this type of incident.

The examples provided are where the clean-up is undertaken and funded by government. These examples are likely to be at the higher end of the scale of clean-up costs required because they were high risk sites requiring government intervention. Investigating and cleaning up contaminated sites is, in most cases, the responsibility of the polluter or current site owner.

The majority of remediation is market driven and borne by private duty holders and is therefore unknown to government. For example, it is common for residential developments to be built on land that was previously used for potentially contaminating activities such as service stations and agriculture. In instances such as this, remediation costs are typically borne by the new owner or developer.

The cost to clean up a service station can range from tens of thousands of dollars up to over a million dollars depending on the nature and extent of contamination.¹²⁷ Anecdotally, one petrol station business previously estimated that remediation typically costs anywhere from \$500,000 to more than \$1 million for each site.¹²⁸ This is generally because petrol stations have issues with NAPL contamination, where its removal (to the extent reasonably practicable) is estimated between \$250,000 and \$1,000,000 per instance, depending on the nature of the site and source and leakage. However, consultations indicated extreme instances up to \$15 million can also occur.¹²⁹

8.5 Assessment

This section assesses the feasible options for addressing the different problem areas. Problem areas are assessed in two separate parts:

1. Duty to manage contaminated land
2. Duty to notify of contaminated land.

8.5.1 Assessment method

MCA is used to assess options for the contaminated land problem area because insufficient information is available to allow a fully quantitative CBA to be undertaken. MCA is selected because it a straightforward method for assessing multiple different options against a set of criteria.

8.6 Duty to manage contaminated land

8.6.1 Options

This RIS considers three distinct options to address the residual risk. When developing these options, EPA and DELWP considered ways to address the subjective elements associated with the duty to manage contaminated land, and the processes required to meet that duty.

¹²⁷ EPA, *Policy Impact Assessment: Prevention and management of contamination of land in Victoria* (2002), Pp1-2.

¹²⁸ Sydney Morning Herald, 'Dirty' petrol station sites fuel community anger with push on for clean-up, available at <https://www.smh.com.au/environment/dirty-petrol-station-sites-fuel-community-anger-with-push-on-for-clean-up-20111216-1oysl.html>.

¹²⁹ Cost estimates obtained through consultation with contaminated land experts.

The options considered in addressing the residual risks associated with the duty to manage contaminated land are:

- **Base Case - do nothing:** no regulations to complement the GED and duty to manage.
- **Option 1 – prescribe a mechanism for EPA to determine background levels:** Option 1 involves the introduction of a prescribed mechanism in regulation that enables EPA to determine the background level of a specific waste or chemical substance on a case by case basis. A determination by EPA may be limited to a specific place or premises or class of places or premises, and/or may be of specific or general application. An example may be for EPA to make a determination of arsenic background levels around Goldfields regions.
- **Option 2 – Option 1 plus prescribe the clean-up and removal of NAPL:** Option 2, in addition to the determination mechanism under Option 1, also includes prescribing in regulation specific control measures for NAPL contamination. This would require a duty holder, in so far as reasonably practicable, to clean-up NAPL and remove or control the source of the NAPL if the source is located on land. This would be a translation of Section 54 of the existing SEPP (Waters).
- **Option 3 – non-statutory guidance:** Option 3 involves the development of non-statutory guidance material to provide duty holders with assistance in determining the ‘naturally occurring’ concentrations of waste and chemical substances under the new EP legislation, similar to the NEPM ASC Schedule B guidelines for the assessment of site contamination. Option 3 would also involve development of non-statutory guidance material on preferred control measures for NAPL contamination. This guidance would not be mandatory.

8.6.2 Detailed assessment

8.6.2.1 Effectiveness

Under **Option 1 (prescribe a mechanism for EPA to determine background levels)**, duty holders will have the same requirement to comply with the GED and the duty to manage as per the Base Case. Option 1 provides greater guidance and certainty to duty holders with respect to establishing background contamination levels for specific waste and chemical substances and in specific regions. However, it does not change or affect a duty holder’s requirement to mitigate human health and/or environmental risks under the GED and Duty to Manage. As such, **Option 1** is not anticipated to achieve improved human health and environmental outcomes over and above the Base Case. Overall, a score of 0 is given relative to the Base Case.

Option 2 (Option 1 plus prescribe the clean-up and removal of NAPL) will reduce risks to human health and environment by reducing instances of NAPL contamination mismanagement relative to Option 1 and the Base Case. As reported above, there are approximately 1,400 high risk NAPL sites across Victoria. **Option 2** has the potential to reduce and avoid long-term and significant impacts to human health and the environment by addressing the residual risk posed by NAPL contamination through the clean-up and removal of the NAPL source and avoiding future discharges of contamination into soils and surface and groundwater.

While it is not possible to quantify the reduced harm to human health and the environment given the lack of data on Victoria’s contaminated sites and the range of exposure pathways and long-term impacts associated with NAPL contamination, the effectiveness of **Option 2** to reduce harm to human health and environment is anticipated to be high relative to the Base Case. In the absence of a statutory requirement, the complexity and cost involved in the clean-up and removal of NAPL contamination is likely to result in the significant sub-optimal remediation of NAPL contamination. Overall, a score of +8 is given to Option 2 relative to the Base Case.

Option 3 (non-statutory guidance), by providing non-statutory guidance material, is likely to have marginal beneficial human health and environmental outcomes relative to the Base Case. It is likely that some duty holders may follow some guidance with respect to the clean-up and removal of NAPL contamination, thereby reducing some of the residual risks associated with NAPL contamination. However, given the cost and complexity involved in adequately mitigating NAPL contamination, and that guidance is not mandatory, **Option 3** is not expected to materially change duty holder behaviour. As such, Option 3 is not expected to be

nearly as effective as Option 2 in reducing harms to human health and the environment. A score of +1 is given relative to the Base Case.

8.6.2.2 Cost

Cost to duty holders

Option 1 (prescribe a mechanism for EPA to determine background levels) is likely to provide greater certainty to duty holders with respect to establishing background contamination levels for specific waste and chemical substances and in specific regions. Industry consultations confirmed that a background level determination, where there was a reasonable suspicion of the presence of contamination, would provide greater certainty to duty holders in establishing their responsibilities under the duty to manage. For example, in regions where it may be uncertain if elevated concentrations of substances are due to natural or anthropogenic occurrences, an EPA determination would help duty holders avoid up to two or three site assessments. As discussed in section 8.4.4, a single assessment may cost a minimum of \$5,000 to \$50,000, depending on the geological surrounds and site complexities.

Due to a lack of land contamination data and uncertainty as to which substances or regions may be the subject of a determination, it is not possible to estimate the number of sites that would be affected by a background level determination. Particularly, small to medium businesses and residential home owners are likely to be supportive of the regulations enabling EPA to make a background determination because they are likely to have less understanding of the legislative requirements, less established systems and processes and fewer resources available to undertake processes such as site assessments. Larger industrial businesses with established environmental management systems and site assessment processes are likely to be less impacted.

Option 1, by reducing the ambiguity in determining the contamination status of a specific site in a specific location, is also expected to assist in providing greater assurance to third parties (such as financial institutions and planning regulators) regarding the risks posed by the waste and chemical substances found on a site.

Under **Option 2 (Option 1 plus prescribe the clean-up and removal of NAPL)**, the prescribed requirement to clean-up and remove NAPL contamination is expected to result in significant compliance costs to affected duty holders relative to the Base Case and Option 1. However, duty holders affected by NAPL contamination are likely to represent a small proportion of total duty holders captured by the duty to manage.

The clean-up and removal of NAPL is a costly and complex activity. Interviews with industry representatives undertaken for this RIS indicated an approximate total cost of \$1,250,000 per incident can be expected, although costs can vary widely depending on the extent of contamination and underlying geology. Demonstration of clean-up and removal to the extent reasonably practicable can typically take up to five years, depending on the nature of the site, source and leakage. However, as discussed above, industry representatives noted upper-end instances where clean-up and removal of NAPL has cost \$15 million, albeit very rarely.

Option 2 requires duty holders to demonstrate clean-up and removal of NAPL contamination to the extent *reasonably practicable*. This likely requires duty holders to undertake additional remediation and management activities over and above what may be required under the Base Case. This may require duty holders to explore a range of technologies and options before demonstrating compliance with Option 2.

Stakeholder consultations indicate that **Option 2** is likely to increase total NAPL remediation costs in the order of around 50% over and above that required by the GED and duty to manage. Industry operators have indicated that they would typically choose alternative, less expensive management responses (to the clean-up and removal of NAPL) that also ensure compliance with relevant regulatory requirements if allowed, particularly in instances where the risks are deemed to be low. However, a level of assessment and monitoring would still be required given the nature of NAPL. Thus the average incremental cost of **Option 2** (based on consultations) is estimated at approximately \$500,000 per instance compared to the Base Case, however this cost will vary

significantly depending on the nature and scale of the contamination. It is very difficult to estimate the number of annual NAPL contamination instances. However, if 50 sites with NAPL contamination are cleaned up and remediated each year, this would result in a total incremental cost to duty holders of \$25 million each year, noting that the annual cost would likely decrease over time as the number of legacy sites with NAPL contamination is reduced and treatment methods improve.

Option 2 would also likely result in additional administrative costs to duty holders in liaising with EPA and potential lost revenue if duty holders are required to delay operations at sites in order to remediate. This delay cost is difficult to estimate as it will depend on factors such as the complexity of the NAPL contamination, the required remediation, and nature of the business.

In contrast to the above, **Option 3** is not anticipated to result in any additional costs to duty holders relative to the Base Case, however it may assist duty holders to save costs through avoiding unnecessary monitoring and assessment activities. **Option 3** may provide duty holders with greater certainty with respect to establishing background contamination levels for specific waste and chemical substances and in specific regions. However, depending on the nature of the guidance, it is likely duty holders will still need to undertake some sampling and monitoring to assess their sites' background levels and associated risks.

Cost to government

Option 1 (prescribe a mechanism for EPA to determine background levels) will involve some costs to government associated with determining prescribed background levels of waste or chemical substances on a case-by-case basis. These costs will depend on the substance and region being considered, and the availability of quality data. The process will likely involve some combination of:

- Analysing extant data and studies for relevant regions across Victoria
- Reviewing existing standards including existing investigation levels under NEPM ASC
- Engaging internal and external expertise
- Publishing the determination.

The above investigative process is a core function of the EPA; the costs of establishing a determination are expected to be met through existing internal resources and are unlikely to be material. It is unclear how many determinations are likely to be made by EPA.

Under **Option 2 (Option 1 plus prescribe the clean-up and removal of NAPL)**, government will incur the same costs as Option 1. However, unlike Option 1, **Option 2** has the potential to avoid some future monitoring, legal, and remediation costs to government associated with the management of NAPL contaminated sites.

As reported above, the remediation of NAPL is complex and resource intensive. In the event that a site clean-up may be mismanaged, EPA can incur significant costs monitoring and assessing such sites, in addition to legal fees in relation to contesting and enforcing duty holder compliance. Prescribing the clean-up and removal of NAPL contamination has the potential to significantly reduce government costs associated with monitoring and assessing the management and clean-up of NAPL contamination because it will require duty holders to undertake specific control measures for NAPL contamination. **Option 2** is therefore expected to have a lower cost to government than Option 1.

Option 3 (non-statutory guidance) will involve costs to government in the form of developing and issuing guidance material. While it is reasonable to expect that EPA may adopt some material from existing publications such as the NEPM ASC, as for Option 1 the time and resources involved will depend on the extent of guidance material published and the range of substances and regions covered. Guidance material may also require updating guidelines as scientific understanding improves overtime. The cost of implementing **Option 3** is expected to be less than for Option 1.

Providing duty holders with greater certainty and direction through guidance material will likely improve consistency in how duty holders comply with the duty to manage, compared to the Base Case. This may reduce

some costs to government through avoided or reduced monitoring and assessment. However, given the guidance is non-mandatory, this cost offset is not expected to be smaller for Option 3 than Option 2.

Overall cost summary

Under **Option 1 (prescribe a mechanism for EPA to determine background levels)** there will be costs to government although these will be partially offset by avoided monitoring and assessment costs over time. Duty holders will have lower costs in complying with the duty to manage relative to the Base Case. A score of -1 is given compared to the Base Case.

Option 2 (Option 1 plus prescribe the clean-up and removal of NAPL) has the potential to avoid significant future government costs associated with the monitoring, management and clean-up of NAPL contamination, However, it is expected to impose significant compliance costs on a small proportion of affected duty holders relative to the Base Case. A score of -7 is given compared to the Base Case.

Option 3 (non-statutory guidance) is expected to represent a lower cost burden to government than Option 1, however is likely to lead to higher costs for duty holders compared to Option 1 because some duty holders will adopt the guidance, but lower than under Option 2 where there are prescribed requirements. Option 3 will impose similar costs as Option 1 and 2 in relation to prescription of background levels for the duty to manage. Overall, Option 3 is scored -2 for costs.

8.6.3 MCA summary

The preferred option is to prescribe a mechanism for EPA to determine background levels and prescribe specific control measures for the management of NAPL contamination (**Option 2**). **Option 2** has the potential to avoid significant future government costs associated with the monitoring, management and clean-up of NAPL contamination. While **Option 2** is anticipated to result in significant costs to duty holders, it is also expected to reduce and avoid long-term and significant impacts to human health and environment by addressing the residual risk posed by NAPL contamination through the clean-up and removal of the NAPL source.

Table 8-3 Summary of MCA assessment under the duty to manage

Criteria (and weight)	Option 1 Determination mechanism	Option 2 Option 1 plus NAPL removal	Option 3 Provide guidelines
Effectiveness (50%)	0	8	1
Cost (50%)	-1	-7	-2
Total weighted score	-0.5	1	-0.5

8.7 Duty to notify of contaminated land

8.7.1 Options

This RIS considers two distinct options to address the residual risk. When developing these options, EPA and DELWP considered the opportunities to refine the triggers for and actions required under the duty to notify of contaminated land in the new EP legislation. Options were developed such that they give greater consideration to the risk of harm to human health and the environment from land contamination.

The options considered in addressing the residual risks associated with the duty to notify of contaminated land are:

- **Base case – do nothing:** no regulations to support the duty to notify. Under this option, the notifiable threshold of \$50,000 would apply.
- **Option 1 – prescribe an alternative risk-based notification threshold:** As a new duty to Victoria, the new EP legislation provides for two alternative ways of setting the contamination threshold: a dollar value as the default threshold (comparable to the approach adopted in Queensland); or through regulations that prescribe notification thresholds (akin to the NSW model) which override the default threshold. Option 1 adopts the latter, prescribing risk-based contamination thresholds in regulations based on NEPM investigation levels and provisions in the *NSW Contaminated Land Management Act 1997*. This would replace the notifiable threshold of \$50,000. Risk-based thresholds, consistent with the NEPM ASC, will take into account:
 - On-site contamination levels in soil
 - Contamination levels of neighbouring land
 - Foreseeable contamination of neighbouring land
 - Presence and exposure risks of respirable asbestos fibres in or on soil
 - Actual or foreseeable contamination of groundwater or surface water
 - Vapour intrusion.
- **Option 2 – Option 1 plus prescribe exemptions and a requirement to submit a management response:** Option 2, in addition to prescribing an alternative notification threshold as per Option 1, includes prescribing exempt circumstances for the duty to notify and a requirement for the duty holder to submit the current and/or planned management response to the contamination with their notification.

An option to not introduce any regulations was also considered. This option was not progressed, since DELWP and EPA ultimately determined that, in order to enhance consistency with other Australian jurisdictions, notification triggers would need to be refined in regulations.

DELWP and EPA also consider that guidance material is not an appropriate option for addressing residual risks associated with the duty to notify, since contravention of the duty to notify can give rise to a criminal offence.

8.7.2 Detailed assessment

8.7.2.1 Effectiveness

Option 1 (prescribing an alternative risk-based notification threshold) is expected to significantly reduce the cost to government of administering notifications under the new EP legislation. The default notification threshold of \$50,000 under the new EP legislation is considered a low threshold. As with setting any threshold dollar value, it may be challenging for duty holders to assess their site against this threshold based on current data, and it is likely to result in a significant number of low-risk contaminated sites across Victoria being subject to notification which may provide EPA and the Government and opportunity to focus on the higher risk contamination sites (upon the commencement of the new EP legislation). For example, where there is naturally occurring levels of arsenic in the goldfields region of Victoria.

Given the unknown number, location and condition of Victoria's contaminated sites, it is extremely difficult to estimate how many sites across Victoria will be captured by an alternate threshold based on NEPM investigation levels relative to the Base Case. However, industry stakeholders consulted for this RIS estimate that potentially up to 50% of all contaminated sites may be unnecessarily captured by the duty to notify under the Base Case, representing approximately 15,000 sites. Under **Option 1**, industry stakeholders noted that it is reasonable to expect the number of sites captured by the duty to notify would be reduced by *at least* half that of the Base Case. That is, **Option 1** is expected to reduce the number of sites captured by the duty to notify by approximately 7,500 sites across Victoria. By reducing the number of notifications, this will enhance EPA's ability to effectively monitor land contamination across the state, triage responses effectively and respond in a timely fashion (relative to the Base Case).

The adoption of risk-based thresholds are expected to result in higher-risk sites being captured by the duty to notify. It will avoid the potential for notifications that do not represent a material contamination risk and enable EPA to focus its regulatory effort on sites considered to be high-risk to human health and the environment

Overall, this will support the achievement of reduced risks to human health and environment. In doing so, **Option 1** is consistent with the intent of the duty to notify to inform EPA of significant and high-risk instances of contamination that warrant EPA's involvement in the management of the contamination. However, due to data limitations it is not possible to quantify this benefit with any level of rigour. Option 1 is given a score of +6 relative to the Base Case.

Option 2 (Option 1 plus prescribing exemptions and a requirement to submit a management response) is expected to be more effective than Option 1 through the inclusion of prescribed exemptions and a requirement for duty holders to include a planned management response. Exemptions will include where waste is lawfully permitted, where EPA has already been notified, and where the site has been (or is) subject to an environmental audit or notice. It is estimated that over 3,500 additional sites will be exempt from the duty to notify relative to Option 1.¹³⁰ These exemptions are expected to enable EPA to further enhance its focus on high-risk sites. **Option 2** also prescribes the requirement for duty holders to provide the current (or planned) management response to EPA as part of the notification. This is expected to support EPA to determine the nature and timing of a duty holder's proposed response/action, and intervene or otherwise support the management of the contaminated site. Option 2 is given a score of +8 relative to the Base Case.

8.7.2.2 Cost

Cost to duty holders

As discussed above, **Option 1 (prescribing an alternative risk-based notification threshold)** is expected to reduce the number of sites unnecessarily captured by the duty to notify by at least half that of the Base Case. This is expected to significantly reduce the burden on duty holders complying with the duty to notify. The requirement for duty holders to understand their obligations under the duty to manage, which may involve some form of risk assessment and sampling activities, will remain unchanged relative to the Base Case.

Option 2 (Option 1 plus prescribing exemptions and a requirement to submit a management response) is expected to further reduce the burden of duty holders through prescribing exemptions to notifiable contamination; as discussed above, it is estimated that over 3,500 sites across Victoria will be exempted from the duty to notify under **Option 2** relative to Option 1.

Under **Option 2**, the requirement to include a management response may increase duty holders' administration and management costs, although industry stakeholders interviewed indicated this cost is likely to be small. Furthermore, industry representatives overwhelmingly supported the requirement to include a management response, noting the requirement may assist with liaising with EPA and ensuring an agreed management approach is adopted prior to any substantive remediation works being undertaken. In doing so, the requirement may result in some avoided costs to duty holders over the longer-term, relative to the Base Case and Option 1.

Cost to government

As already noted, **Option 1** is expected to reduce the number of sites unnecessarily captured by the duty to notify by approximately 7,500 sites across Victoria. As such, **Option 1** is expected to significantly reduce the time and resources required by EPA to administer the duty to notify.

¹³⁰ Based on number of sites issues with an environmental audit since the commencement of the audit system in 1990, and the number of sites currently issued with clean-up or pollution abatement notices; EPA, *Priority Sites Register* (2019) <https://www.epa.vic.gov.au/your-environment/land-and-groundwater/~/_media/Files/Your%20environment/Land%20and%20groundwater/PSR/Priority-Sites-Register-Web-Report-January-2019.pdf>; EPA, *Environmental auditing - Environmental audit reports online* <<https://www.epa.vic.gov.au/our-work/environmental-auditing/environmental-audit-reports-online>>.

In addition to the above, Option 1 will adopt risk-based notification thresholds based on NEPM investigation levels and provisions in the NSW *Contaminated Land Management Act 1997*. As such, the cost to government of designing and implementing **Option 1** is expected to be minimal.

Option 2 (Option 1 plus prescribing exemptions and a requirement to submit a management response) is expected to significantly reduce the cost to government. As noted above, it is estimated that over 3,500 sites across Victoria will be exempted from the duty to notify under **Option 2** relative to Option 1.

Option 2 is also expected to assist the government to effectively and efficiently monitor and manage high-risk contaminated sites through prescribing the inclusion of a current or planned management response within notification submissions. Understanding how duty holders are seeking to respond and manage high-risk contaminated land will enable EPA to better prioritise which sites require more support, guidance and direction. In turn, this is likely to avoid administrative costs associated from liaising with duty holders, follow-up engagement and site inspections.

Overall, **Option 2** is expected to result in a greater reduction in administration and monitoring costs to government relative to Option 1.

Overall cost summary

In summary, **Option 1** is likely to materially reduce or avoid costs to government while also significantly reducing the burden of duty holders in complying with the duty to notify, relative to the Base Case. **Option 2** is likely to result in greater reduced or avoided costs to government and a greater reduced burden to duty holders in complying with the duty to notify, relative to Option 1 and the Base Case. A score of +4 is given for Option 1 and +7 for Option 2 compared to the Base Case.

8.7.3 MCA Summary

The preferred option to address the residual risk is **Option 2**. This option is expected to achieve the greatest avoided costs to government and duty holders, while best enabling EPA to target its regulatory effort on high-risk contaminated sites. This will best reduce risks to human health and environment.

Table 8-4 Summary of MCA assessment under the duty to notify

Criteria (and weight)	Option 1 Prescribed risk-based threshold	Option 2 Option 1 plus prescribed exemptions and management response
Effectiveness (50%)	6	8
Cost (50%)	4	7
Total weighted score	5	7.5

9 Waste

This chapter assesses regulations being proposed to enable the new waste management framework to function under the new EP legislation, and to address poor waste management practices and known risk of mismanagement by duty holders in the waste sector.

Key points:

- Poor management of waste presents potentially catastrophic risks to the environment and human health. This is clearly seen in a series of waste fires and stockpiling cases that have occurred in Victoria in recent months and years.
- Factors contributing to mismanagement include inadequate technical knowledge, complex regulation, costs of regulatory compliance and intentional non-compliance or illegal activity. Complex global market forces also drive some activities and incentives in the waste sector and add a layer of complexity to local environment protection regulations.
- Under the new EP legislation, waste risks will be principally managed by the GED which will require industry to demonstrate how it is managing risks and minimising harm from waste related activities. There are also specific waste provisions in the new EP legislation relating to industrial waste, priority waste, waste levies and landfill management.
- However, significant residual risks remain in the area of waste management:
 - Some waste duties under the new EP legislation cannot function without prescription under regulation. These include duties relating to priority and reportable priority wastes, transaction controls (including appropriate classification and tracking of waste), transport permissions for reportable priority waste and lawful place.
 - Some types of waste present lower levels of risk of environmental harm in smaller quantities, however cumulative impacts on the environment and human health (such as through stockpiles) can be significant. Therefore these risks are more difficult to control through the GED and duties in the new EP legislation.
 - There is a known risk of mismanagement by some duty holders in the waste sector, reflected in behaviour such as illegal dumping and illegal landfilling. Regulatory controls will create consistency and certainty between operators in their response to their duties. Guidance alone is unlikely to be effective with cohorts that have consistently demonstrated poor management practices.
- The preferred options to address the residual risks are:
 - Establish a tiered classification pathway for waste generators to classify their industrial waste
 - Utilise the permissioning framework to determine lawful authority to receive industrial wastes, together with an extra tool for identifying legitimate uses of waste in certain circumstances.
 - Prescribe very high hazard, high-hazard and moderate-hazardous wastes, along with those at risk of mismanagement, as priority wastes.
 - Require transport permissions for very high – moderate hazard wastes, and transaction tracking for all very high and high hazard wastes (e.g. asbestos, hazardous liquids)
 - Require waste tracking for reportable priority waste, to be undertaken by either the waste generator themselves or, as a second option, by an accredited waste consigner.
 - Prescribing that sensitive environmental areas must not be impacted by a landfill, and prevent EPA from granting permissions for landfill sites to accept selected wastes
 - Prescribe information that EPA requires to assess compliance with the waste levy scheme, the conditions under which waste can attract a rebate (for being recoverable), the timing of waste levy payments and the time limits within which materials must be recovered to claim a rebate.

9.1 Background

Waste is typically categorised by source or type. Three categories of waste sources are commonly defined in Victoria:

- Municipal solid waste (MSW) (24% of total waste) – all waste of domestic origin
- Commercial and industrial waste (C&I) (44%)
- Construction and demolition waste (C&D) (32%).¹³¹

The definition given in Victoria's Statewide Waste and Resource Recovery Infrastructure Plan categorises the types of waste that may cause harm. There are four categories under this definition:

- Putrescible – readily decomposes and includes food and organic material.
- Inert – including non-decomposable substances such as glass, sand and concrete.
- Recyclables – materials such as rigid plastics, paper, cardboard, glass and metal containers.
- Hazardous waste – waste that is either toxic, flammable, corrosive and/or explosive.

Of the above waste types, hazardous wastes pose some of the more serious risks of harm if it comes into contact with the environment or humans. Hazardous waste requires specialised transport, treatment, storage and ongoing use restrictions to minimise the risk of harm. There are several frameworks and standards that classify hazardous waste types including the Australian Dangerous Good Code (ADGC). This code identifies nine classes of hazardous wastes (explosives; gases; flammable liquids; flammable solids; oxidizing substances; toxic and infectious substances; radioactive material; corrosive substances; and miscellaneous).

The other three waste types (putrescible, inert and recyclables) can also present risks to the environment and human health if mismanaged such as through illegal dumping, stockpiling and illegal landfilling.

A number of factors contribute to waste mismanagement including; illegal activity, waste complexity, information asymmetry, complex regulations, regulatory cost of compliance and complex global market forces. These factors are discussed below.

Intentional non-compliance or illegal activity, such as illegal dumping, illegal landfilling, waste misclassification, miscategorisation, providing inaccurate weights, mixing in order to reduce hazard, and disposing of waste at an inappropriate site. Illegal dumping is common for C&D waste such as masonry, soils and timber. Illegal landfilling occurs where waste types that are banned from landfill are concealed in other waste types by mixing. This behaviour occurs to avoid the cost of legal disposal and where the waste type is easy to disguise (such as solidifying liquids to dispose in landfill), or blending highly contaminated soils with less contaminated soils and then disposing of them at a lower-threshold landfill (or selling them as fill material).¹³²

In 2002 the NSW Independent Commission Against Corruption (ICAC) identified the waste industry as prone to corruption, citing low barriers to market entry, high levels of cash transactions and opportunities to benefit from illegal dumping.¹³³ In 2014-15 it is estimated that 360,000 tonnes of C&D waste was illegally dumped in Victoria.¹³⁴ While remedial notices were issued for approximately 240,000 tonnes, 100,000 tonnes of dumped waste remains unaccounted for. ICAC noted that wastes subject to classification present the greatest challenge.

¹³¹ Metropolitan Waste and Resource Recovery Projection, 2015.

¹³² EPA NSW, Watch out for dirt bags (Media release, 06 February 2017) <https://www.epa.nsw.gov.au/news/media-releases/2017/epamedia17020601>.

¹³³ Independent Inquiry into the Environment Protection Authority, 2016, page 243.

¹³⁴ PriceWaterhouseCoopers, 2015 Illegal disposal of industrial waste in Victoria, Melbourne, Victoria

Similarly, the EPA Inquiry highlighted that wastes that are higher in risk are costlier to safely dispose of, incentivising fraudulent classification or other wilful non-compliance to avoid or minimise costs.¹³⁵

The *complexity* of waste can lead to waste mismanagement as a high level of technical knowledge is often required to adequately understand different waste types and manage associated risks. Without this technical knowledge, wastes can be misclassified at source with the associated information passed down the chain of custody subsequently leading to wastes being disposed of incorrectly or mishandled.

Information asymmetry occurs in the waste supply chain where information is not accurately passed down the chain of custody. For example, the hazardous nature of the waste may be miscommunicated, lost or intentionally withheld as the waste moves through the waste supply chain, again resulting in the incorrect handling of the waste.

Complex regulation can cause confusion or encourage non-compliance as complexity increases compliance costs. Businesses have to spend more time understanding and enacting the regulation and non-compliance can inadvertently or intentionally occur. This is particularly true where regulation differs state to state, or there is overlap between state and Commonwealth legislation.

The *costs of regulatory compliance* can create financial incentives for mismanagement. Wastes with low resource recovery value are often mishandled when the cost of compliance is high and the treatment and processing costs are difficult to recover. An example is asbestos, which has no reuse potential and carries a high cost to treat and process. If asbestos is discovered after work commences and there is no contingency in the project budget, there may be an incentive to illegally dump this material. While a high profile court case in 2018 saw two developers fined \$120,000 each, and their company a further \$300,000, for illegally dumping asbestos, such cases are rare.¹³⁶ In some cases, the fines are considerably smaller than the avoided waste management costs. Consequently, for those that do not expect to be caught, illegal dumping may be viewed as a viable option. Another example of mismanagement owing to market forces was in 2017, where an abandoned warehouse was stacked full of steel drums and plastic tubs filled with mercury, contaminated powders, leaking batteries, suspected X-ray machine parts and almost 800 containers of highly toxic material. The materials had little to no market value, yet had a high disposal cost.¹³⁷

Stockpiles are a further example of the potential consequences of a lack of market value. Stockpiling is a common practice in the waste and recycling industry and some level of stockpiling is necessary for the optimal management of wastes, to manage supplies depending on the price and demand for recycled materials. However, the protracted and uncontrolled stockpiling of waste materials is a problem. Recent cases demonstrate how stockpiles can result in significant fire risks that are detrimental to human health, the environment and property (for example 30,000 tonnes of waste material that caught fire at Coolaroo in July 2017).¹³⁸

¹³⁵ Taking the Whiff out of Waste – Guidelines for managing corruption risks in the waste sector, ICAC, November 2002, p26, cited in NSW Environment Protection Authority, Issues Paper: Review of the Protection of the Environment Operations Act 1997, page 4.

¹³⁶ EPA 2018, *Corkman pair ordered to pay over \$600,000*, 12 September, <[https://www.epa.vic.gov.au/about-us/news-centre/news-and-updates/news/2018/september/12/corkman-pair-ordered-to-pay-over-\\$600000](https://www.epa.vic.gov.au/about-us/news-centre/news-and-updates/news/2018/september/12/corkman-pair-ordered-to-pay-over-$600000)>

¹³⁷ The Age, *The tipping point: Illegal dumping swamps the waste industry*, Liam Mannix, Chris Vedelago, Cameron Houston, updated 6 August 2017 — 11:55pm, first published at 12:01am

¹³⁸ DELWP, *Management and storage of combustible recyclable and waste material Policy Impact Assessment*, 2018, page 4, page 14; EPA, *Using waste tyres on farms and other private property*

EPA's 2014 RIS on storage of waste tyres found there is also an economic incentive for waste tyres to be diverted towards operators that are less likely to manage the associated fire risk. Currently there is an economic advantage in stockpiling or exporting whole tyres, relative to the cost of processing waste tyres for recycling or landfill purposes. The RIS noted that:

As Hyder Consulting (2014) reports, this is due to the disparate pricing mechanism for collection/disposal/recycling of tyres. While practices vary, some tyre retailers are charging consumers between \$3.50 and \$10 per tyre for disposal or recycling costs. Recyclers may then only receive between \$1.50 and \$2.50 per tyre, to cover the capital and operating costs of the plant. The cost for a tyre shredding plant can exceed \$6 million, while the costs to set up a tyre baling machine for the export of whole tyres can be under \$50,000. This significant capital investment for a recycling facility produces an incentive to reduce the fire risk from storing tyres and maintain adequate insurance cover. However, the processing facilities are also competing with the lower cost base of those operators who stockpile, or illegally dump the tyres. With limited capital costs and little to no operating costs other than collection and transport, these forms of operation are making greater returns for each tyre collected, with limited incentive to maintain the tyre stores in a fire-safe manner.¹³⁹

Complex global market forces drive some activities and incentives in the waste sector and add a layer of complexity to local environment protection regulations that EPA must contend with. This is most challenging when regulatory and market forces diverge, as was the case in recycling markets in 2018. At the time, more than a quarter of Australia's total volume of exported waste, or 1 million tonnes, was sent to China. China's decision to enforce contamination thresholds (known as the 'National Sword' policy) disrupted more than 600,000 tonnes of Australian waste exports. It led to increased stockpiling of recyclable and waste material as the sector, councils and the government worked out how to respond.¹⁴⁰ With little to no market demand for recyclable wastes, many facilities in Australia commenced stockpiling in the hope that the market would recover. Although prolonged and uncontrolled stockpiling with no end-market is contrary to environmental protection regulations, the collapse in the market and subsequent erosion of value for recyclable products was a more powerful force than regulations for some (but not all) facilities.

Despite the high profile impact of China's policy change on the sector, market concentration and structure varies by waste type, meaning that market forces are not the same industry wide. In other words, the waste sector is complex, and this makes it challenging for both EPA to enforce regulations and operators to comply. The waste industry includes a large variety of stakeholders across the public and private sectors, covering a range of waste types and with varying management and disposal requirements.

Some sectors, such as the MSW and C&I sectors are characterised by high industry concentration with a few, large players. While these characteristics might reduce competition and be concerning on this front, these operators are easy for EPA to identify and their visibility to industry and the community tends to drive compliance. Others, like the C&D sector, have many small players that specialise in specific waste types. A 2010 VAGO report noted that EPA has insufficient data on many of these smaller operators, suggesting this may allow some operators to fall outside regulatory scrutiny.

¹³⁹ EPA, Storage of waste tyres – Regulatory impact statement, 2014, page 15.

¹⁴⁰ ABC News, Waste industry calls for \$150 million 'circular economy and action plan' to fix recycling uncertainty ABC Ballarat By Dominic Cansdale and Kirsten Diprose, Posted 4 Apr 2018, 4:57pm; DELWP, *Management and storage of combustible recyclable and waste material Policy Impact Assessment*, 2018, page 4, page 5.

9.2 Current legislative and regulatory framework

The EP Act 1970 includes an overarching principle of the waste hierarchy, that is, wastes should be managed in accordance with the following order of preference – avoidance; re-use; recycling; recovery of energy; treatment; containment; and disposal. This principle has been applied by EPA in making decisions regarding licensing and works approval in relation to EPA scheduled premises, as well as applying an overarching principle for all parties handling wastes to consider.

The current waste management system has a specific focus on wastes that are of a particularly hazardous nature and can have significant impacts on human health (including increased risk of cancer and respiratory diseases) and the environment. These wastes are currently regulated as Prescribed Industrial Waste (PIW) through the *Environment Protection (Industrial Waste Resource) Regulations 2009* for the purposes of applying specific obligations. PIW is essentially a subset of industrial wastes, although packaged asbestos also comes from domestic sources. Strict obligations apply under the EP Act 1970 for actions relating to the transport and disposal of PIW, established through a series of obligations. Substances classified as dangerous goods have specific duties for storage and handling under the *Dangerous Goods Act 1985* and its regulations. Some waste material/products containing controlled substances, poisons or drugs are also regulated by DHHS through the *Drugs, Poisons and Controlled Substances Act 1981*. The regulatory framework for waste also includes management policies, the statutory guidelines around waste management and the Best Practice Environment Management (BPEM) guidance.

9.3 New EP legislation

A key outcome of the EPA Inquiry was major reform to Victoria's waste management framework.

The GED is a key instrument for managing waste risks. It places the responsibility on waste managers to demonstrate how they are managing risks and minimising harm from waste related activities. Other major changes to the waste management system are the introduction of industrial waste duties, and the replacement of the current PIW system under the EP Act 1970 with a new system of priority wastes.

Specifically, alongside the GED, the new EP legislation establishes:

- Duties and offences in regard to industrial waste (Part 6.4) namely:
 - The prohibition of the deposit and receipt of industrial waste at a place that is not authorised to receive industrial waste.
 - A duty on transporters of industrial waste to take reasonable steps, before relinquishing management or control of waste, that it is taken to a place authorised to receive industrial waste.
 - Offence to provide misleading information on industrial waste.
 - Offences for the unlawful deposit of waste.
- Duties and controls relating to priority waste (Part 6.5) namely:
 - Containment and isolation controls.
 - Duty to investigate alternatives to waste disposal.
 - Duties on recording and providing transaction details for reportable priority waste.
 - Transport of reportable waste only in accordance with a permission.
- The requirement of liable persons to pay waste levies (Part 6.6) for each tonne of waste for municipal and industrial waste.

9.4 Nature and extent of problem

9.4.1 Residual risk

The residual risks in relation to waste are:

- Some waste duties under the new EP legislation cannot function without prescription under regulation. These include duties relating to priority and reportable priority wastes, transaction controls (including appropriate classification and tracking of waste), transport permissions for reportable priority waste and lawful place.
- Some types of waste present lower levels of risk of environmental harm in smaller quantities however cumulative impacts on the environment and human health (such as through stockpiles) can be significant. Therefore these risks are more difficult to control through the GED and duties in the new EP legislation.
- There is a known risk of mismanagement by some duty holders in the waste sector, reflected in behaviour such as illegal dumping and illegal landfilling. Regulatory controls will create consistency and certainty between operators in their response to their duties. Guidance alone is unlikely to be effective with cohorts that have consistently demonstrated poor management practices.

The GED will require industry to demonstrate how it is managing risks and minimising harm from waste related activities. There are also specific waste provisions in the new EP legislation relating to industrial waste, priority waste, waste levies and landfill management.

However the GED alone cannot address mismanagement of low risk wastes which increases the risk of harm to human health and the environment. For example, waste tyres are inert and inherently not hazardous, however the risk of harm increases as mismanagement, such as stockpiling, increases. The GED also cannot address problems along waste supply chains, where the risks of harm may increase at different points in the supply chain. Without further prescription, the waste duties will not function because waste types for which specific duties are assigned have not been identified (i.e. priority wastes, reportable priority wastes). Transaction controls (including appropriate classification and tracking of waste) and transport permissions for reportable priority waste are also not established. The new EP legislation also does not define what a *lawful place* is, which means without further prescription businesses would not be able to lawfully dispose of industrial waste.

There are six areas being considered for regulations:

- How industrial wastes are to be classified.
- How facilities will comply with the authority to receive industrial waste.
- Which waste types are considered 'priority' wastes.
- Which waste types are considered 'reportable priority' wastes and how transaction controls and transport permissions will operate for reportable priority wastes.
- The acceptable standards of landfill design and operation.
- How the waste levy will apply in practice.

The problem underlying each of these areas is described below.

Industrial waste classification

Part 6.4 - Section 135 of the new EP legislation places a duty on persons in management or control of waste to not relinquish control of industrial waste before they have taken reasonable steps to ensure waste will be transported to a lawful place and received at a lawful place. One of the reasonable steps includes that they have appropriately classified the waste. In addition, Part 6.5 - Section 139(1) states that a person that has management control of waste must classify the waste.

The Act does not specify what the classifications are, how to classify wastes or by what standard these wastes must be classified against. Without regulations or a similar subordinate instrument to specify such a system, consistent testing and sorting of industrial waste is not likely to be provided by the market (for reasons such as inadequate technical knowledge and wilful non-compliance). Without classification of industrial waste, waste may not be classified or classified incorrectly, and may be taken to an inappropriate location. This may result in poor waste management practices such as illegal dumping, stockpiling or poor storage.

Authority to receive industrial waste (or 'lawful place')

A specific duty is established in the new EP legislation where no industrial waste may be deposited, abandoned or received at a place or premises unless it is “authorised to receive” industrial waste (i.e. it is a ‘lawful place’). Ensuring that industrial wastes are deposited at a lawful place is a duty on waste generators, transporters and receivers alike. The Act defines “authorised to receive” via an EPA licence, permit, registration, exemption or via a mechanism prescribed by regulation. The permissions framework and its instruments of licences, permits and registrations could not be applied to define lawful place without prescription in regulations.

Without definition of lawful place, there will be significant uncertainty for duty holders in determining where they can deposit waste. This uncertainty could lead to delays in the waste process as duty holders try to understand how to comply. This is likely to result in increased costs for duty holders (such as seeking EPA or specialist advice). It is also likely to result in higher costs of administering the legislation for EPA as it will have to respond to this uncertainty, for example by providing informal guidance or determining compliance and enforcement action in relation to an uncertain framework. It is also possible that the uncertainty might lead to under-compliance, as some duty holders respond by deliberately not complying; this may result in risks to human health and the environment by allowing poor waste management practices to occur such as illegal dumping, stockpiling or poor storage.

Prescribing ‘priority’ and ‘reportable priority’ waste

Priority waste types are those that are highly hazardous, prone to mismanagement (e.g. illegal dumping or illegal landfilling) or are a priority for resource recovery.

Under the new EP legislation (Part 6.5, Section 138), there are duties and controls in relation to *priority* waste that are intended to reduce the risk of harms from mismanagement, including:

- Accurate classification
- Containment during transport
- Isolation with the view to future resource recovery
- Provision of information (regarding nature and risks) to those who will take control of the waste at some point in the waste supply chain.

In addition, duty holders managing priority waste must investigate alternatives to disposal which involves; considering issued guidance, available technologies, and consulting with expert persons or bodies. The Act defines priority waste as any waste that is prescribed. Therefore, without regulations, priority wastes would not be prescribed and the duties and controls in the new EP legislation cannot function.

Reportable priority waste transaction controls and transport permissions

Part 6.5 of the new EP legislation also establishes duties and controls in relation to *reportable priority* waste, including:

- Recording and providing transaction details to a prescribed person (Section 142).
- Transport permission duties (Section 143).

The new EP legislation defines reportable priority waste as any industrial waste that is prescribed in regulations as such.

With respect to the specific form and application of the duties for reportable priority wastes, Section 142 of the new EP legislation provides the opportunity to apply additional transaction requirements. These controls allow specific information to be required to be reported when wastes move from one party to another, and to set out the information to be provided, the form of this notification and to whom this information must be provided. Section 143 specifies that duty holders may only transport reportable priority wastes in accordance with a prescribed permission.

Like priority waste types, reportable priority waste types are those that are highly hazardous, are prone to mismanagement or are a priority for resource recovery. The new EP legislation establishes reportable priority waste controls, over and above other duties and controls for priority waste, because they are highly hazardous in nature and the human health and environmental risks posed from mismanagement (illegal dumping, stockpiling and landfilling) are much greater than other waste types. The waste transaction (tracking) and transport controls therefore aim to place adequate controls around reportable priority wastes to ensure they are contained during transport and that adequate information can flow through the chain of custody to inform decisions about appropriate treatment, reuse and/or disposal.

Again, without regulations, reportable priority wastes would not be prescribed and the reportable priority waste duties and controls cannot function. Without prescription of the nature, form and process around transaction information for reportable priority wastes and further to specify what constitutes a 'transport permission', waste generators, waste consigners, transporters and receivers will not know what they need to do to comply with reportable priority waste controls. This is particularly important as waste moves through the chain of custody.

This will result in risks of harm from waste mismanagement practices, including illegal dumping and illegal landfilling of hazardous wastes.

The acceptable standards of landfill design and operation.

Landfill sites are currently regulated through the EP Act 1970, along with a range of complementary policies, guidelines and regulatory tools, including licences and remedial notices that outline conditions that a landfill duty holder must comply with. Under the new EP legislation, current licensed landfill premises will continue to be able to lawfully accept and manage wastes as per their licence conditions, as existing licensed premises will automatically transition under the new regime.

Landfilling is an inherently risky practice and careful management is required to minimise the risk of harms to human health and the environment. While the GED establishes a level of responsibility on duty holders surrounding the development of new landfills and the operation of established landfills, EPA considers that the GED is not sufficient to minimise risk to an acceptable level. This is because the impacts of non-compliance are high and long lasting, necessitating the need for specific protections to be made in regulation and other subordinate instruments. This will allow a high standard and some degree of control at each stage of a landfill's very long life.

How the waste levy will apply in practice

The new EP legislation creates a waste levy scheme for all waste deposited at prescribed scheduled premises in Victoria and sets out the rates, rebates, exemptions and obligations relating to paying the levy. The new EP legislation, however, requires certain factors to be prescribed in order to enable the waste levy scheme to function. The factors which require prescription include:

- The timing in claiming any prescribed allowable rebates on waste that is removed from the landfill some time after having been deposited on land for the purposes of recovery.
- What allowable rebates will be prescribed for recoverable waste and how EPA will address the accountability of a claim for an allowable rebate.
- The timing and intervals at which the waste levy must be remitted.
- Information required when making a claim for allowable rebates.

Given the financial nature of the waste levy, any ambiguity on how the scheme will operate will incentivise undesirable behaviour from licenced waste receivers such as avoiding or delaying payment.

9.4.2 Size of the problem

In Victoria, economic and population growth are the key drivers of growth in waste generation. The EPA Inquiry forecast Victoria’s solid waste generation to “increase by 63 per cent [from the current 12.8 million tonnes per annum] to over 20 million tonnes [annually] by 2044”.¹⁴¹ A further 1.3 million tonnes of hazardous waste is produced each year in Victoria.¹⁴²

Victoria currently recycles approximately two thirds of its solid waste and landfills the remainder (Figure 9-1). This split is expected to continue. Importantly, however, this data reflects legitimate waste management and doesn’t account for illegal disposal.

Figure 9-1 Victorian landfill and resource recovery volumes

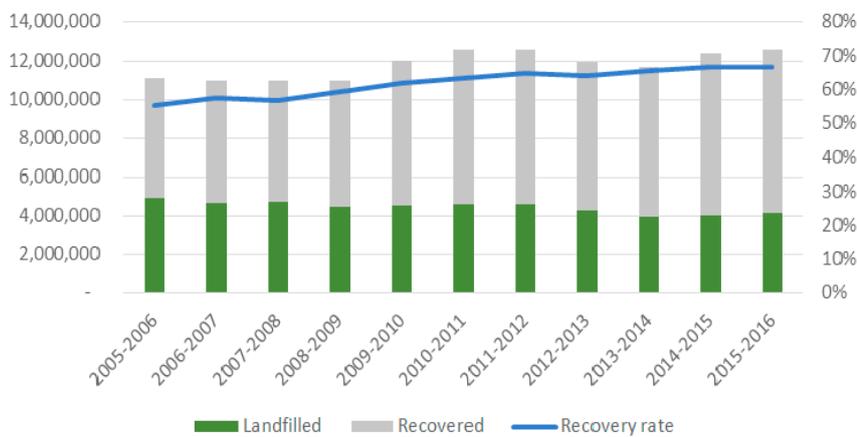


Figure 2. Total Waste generated, landfilled and recovered 2005/06 to 2015/16¹³⁴ (excludes hazardous waste)

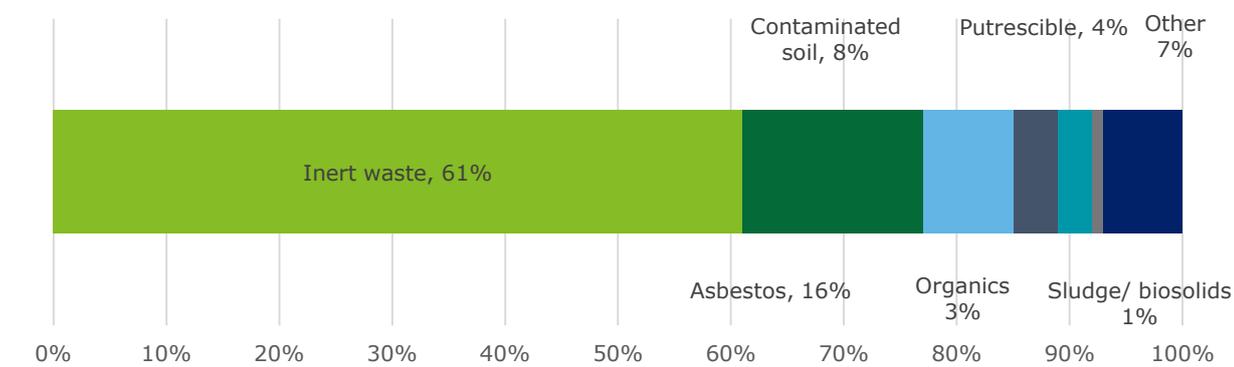
Source: Commissioner for Environmental Sustainability Victoria, Interim Victorian State of the Environment Report 2018, p.57.

With respect to illegal dumping of material, the C&D sector is a significant source of illegally dumped material, with asbestos the second largest category of illegally dumped waste. Figure 9-2 shows the breakdown of remedial notices issued by EPA for illegal dumping in 2015-16, by waste type.

¹⁴¹ As cited in the EPA Inquiry Report, page 27: Deloitte Access Economics 2016, *The current and future state of Victoria: a macro perspective, Advice to Infrastructure Victoria*, Melbourne, February, page 97.

¹⁴² Department of the Environment and Energy, *Hazardous Waste in Australia*, 2017.

Figure 9-2 Percentage of remedial notices issued by industrial waste type, 2015-16



Source: EPA data.

9.4.3 Harms

Waste can be harmful to human health and the environment either due to its inherent characteristics or from improper management. The level of harm varies, depending on the characteristics or composition of the waste and the management approach. Some wastes are only harmful in certain applications, concentrations or contexts of exposure.

The severity of the harms caused by mismanagement or incorrect storage, transport, treatment or disposal is dependent on the hazardous nature of the waste, the treatment method, and interaction with the environment or human activity. Harms may be direct or indirect – sometimes it is not necessarily the waste itself that is inherently harmful, but rather the way it is managed or mismanaged. For example, waste tyres are inert and not hazardous in their original form in small quantities, however large quantities create a significant fire hazard. Tyres can release toxic plumes of smoke and contaminate land and waters when burnt.

Harms can occur when wastes follow other management pathways, such as recycling or reprocessing. For instance, if waste organics are not well managed, they can produce odours which affect surrounding communities, and leachate, which can harm soil and groundwater by releasing high concentrations of nutrients or pathogens.

The following table outlines some of the harms to the environment and human health as a result of different waste problems:

Table 9-1 Harms from waste problems

Waste problem	Environmental and human harms
Risk of fire from stockpiling or abandonment	<ul style="list-style-type: none"> • Run-off from fire water and any chemicals stored on-site, damaging waterways • Contains fine particles, water vapour, gases such as methane, carbon monoxide and carbon dioxide and other may contain toxic substances including polychlorinated dibenzo-p-dioxins and polycyclic aromatic hydrocarbons • Community-wide exposure to fine particles and other potentially toxic compounds from incomplete combustion • Stress as a result of evacuations or long-running emergency events • Produce smoke, reduce air quality and can impact human health. People in close proximity with a heart or lung condition, including asthma, children (up to 14 years), pregnant women

Waste problem	Environmental and human harms
Poor waste storage practices, recycling practices or illegal dumping	<p data-bbox="427 371 1118 394">and people over 65 years of age are most at risk from landfill smoke.</p> <ul data-bbox="379 439 1370 909" style="list-style-type: none"> • Leaching of stored materials, leading to contamination of soils • Waste materials applied to land, leading to long-term degradation, such as micro plastics and other solid wastes • Persistent chemicals being applied to land, potentially preventing future beneficial reuses • Illegal dumping of materials, leading to loss of land productivity • Mobile contaminants associated with waste storage or management can leach and enter ground or surface water systems • Uncontrolled releases of liquid wastes can cause damage to surface waterways (including non-hazardous substances such as milk) • Landfill without appropriate engineering containment or acceptance criteria is likely to allow contaminants, such as heavy metals and persistent chemical compounds, to enter ground or surface waters
Air pollution and odour from activities such as landfill, open windrow composting, waste to energy plants, hazardous waste treatments	<ul data-bbox="379 949 1370 1196" style="list-style-type: none"> • Reprocessing, including crushing and grinding, can result in fine particles and chemical compounds being released into the atmosphere • Emissions from activities such as waste to energy plants and hazardous waste treatments can result in toxic Class 3 substances (See Section 12.8) being released without proper emission controls • Odour from activities such as landfilling and open windrow composting can cause substantial distress to residents
Hazards and odours from landfill gas, formed during the decomposition of waste	<ul data-bbox="379 1234 1370 1520" style="list-style-type: none"> • Landfill gas, if not managed appropriately, is likely to migrate into the surrounding ground and atmosphere, creating an environmental hazard and causing odours. In the most extreme, methane in landfill gas can, at certain concentrations, be explosive when it migrates into an adjacent structure (and an ignition source is present). At high concentration it is not explosive but is an asphyxiant. Landfill gas also contains significant amounts of carbon dioxide, which is also an asphyxiant. • Landfill gas contains other gases at low concentrations many of which are odorous at extremely low concentrations in air and give landfill gas its characteristic smell. Many of these gases are also toxic or otherwise hazardous to health

Source: EPA

9.4.4 Costs of waste mismanagement

The costs associated with waste mismanagement include (but are not limited to):

- Incident response costs, for example emergency services in responding to fires and EPA and council clean-up costs for illegally dumped materials.
- Exposure from air pollution or contaminated land from a waste incident (e.g. waste facility fire) leading to damage to human health and imposing financial costs on the health care system.
- Financial costs associated with assessment, management and remediation of sites to ensure land that was contaminated by past waste management activities is safe and suitable for a proposed new use – this includes the clean-up and safe disposal of contaminants. While these costs are waste related, they are covered in the contaminated land chapter of this RIS.

- Financial costs associated with remediating impacts of waste incidents leading to environmental hazards, such as run off of hazardous materials into waterways.
- Economic loss including increased business costs or loss of income, for example disruption to business activities, private activities, schools and transport systems due to closures following waste facility fires.
- Negative impacts on amenity and recreational value, for example due to reduced enjoyment of natural environment.
- Damage to ecosystems, including acute impacts (such as fish kills caused by toxic leaks to waterways) and chronic impacts (such as bioaccumulation of toxins in a food chain and reduced resilience of ecosystems).
- Damage to ecosystems and air pollution due to fires.

The following discussion aims to provide some indication as to the potential size of the waste mismanagement problem in Victoria by unpacking the data for three key areas of waste mismanagement where some cost data exists; namely stockpile fires, waste abandonment and illegal dumping. This information on waste mismanagement is then used as a point of comparison when considering the costs of waste regulations which are intended to reduce the size of the waste mismanagement problem in Victoria.

However, it is important to note that the cost of waste mismanagement in Victoria is difficult to estimate with accuracy. This is because; costs incurred are not always financial in nature; there may be long lead times between incidence and impact; cost data is not consistently documented or collated; costs are incurred by different organisations; and costs are not reported or are unknown. The following discussion therefore represents only a partial picture.

Stockpile fires

Stockpiling is a common practice in the waste and recycling industry. Some level of stockpiling is necessary for the optimal management of wastes, to manage supplies depending on the price and demand of recycled materials. However, the uncontrolled and unsafe stockpiling of waste materials is a problem where there is no end-market in sight. Therefore stockpiling does not produce costs on society per se – rather stockpiling impacts on society when it eventuates into one of two scenarios – the waste stockpile is abandoned or it results in a stockpile fire.

There have been 100 fires at recycling facilities alone in Victoria since 2008, the majority occurring since 2012.¹⁴³ Notable stockpile fires have been in Melbourne’s northern suburbs of Coolaroo (2017), Somerton (2015) and Broadmeadows (2016). The cost of stockpile fires on human health and the environment depends on the size, nature, location and conditions of the fires in question. The literature on costs suggests there is a large range of estimates.

The costs of response, clean up, and societal and business impacts able to be quantified are estimated to be around \$6 million for a high-risk fire, and \$34 million - \$100 million for an extreme-risk fire. These are minimum estimates of costs as many social and environmental impacts are excluded.¹⁴⁴ For example, estimates typically don’t cover longer term health impacts; economic costs to businesses, which could include property damage or forced closure due to evacuations; disruptions to normal community activities such as school closures; and mounting community anxiety and concern over these incidents. For example, the fire at SKM’s facility in Coolaroo 2007 was arguably the state’s most widely documented stockpile fire.

¹⁴³ ABC, *As Melbourne’s recycling stockpiles keep growing, so does the fire risk posed by the waste* (21 October 2018) <<https://www.abc.net.au/news/2018-10-21/melbourne-recycling-facilities-pose-fire-risk/10368302>>

¹⁴⁴ Management and storage of combustible recyclable and waste material Policy Impact Assessment, Department of Environment, Land, Water and Planning, 2018, page 6.

The fire at SKM's facility in Coolaroo was an extreme-risk fire and cost estimates ranged from \$30 million to \$100 million in firefighting and clean-up costs. The fire was caused by poor storage practices at SKM's facility where there was no separation of waste to prevent the fire from escalating, or specialist firefighting equipment existing at the site. At the height of the fire, the Metropolitan Fire Brigade (MFB) and Country Fire Authority (CFA) deployed approximately 54 appliances and had 160 firefighters working with emergency service partners. Firefighters battled the blaze 24 hours a day over 20 days.¹⁴⁵ The human health impacts from fine particle levels (PM_{2.5}) were particularly severe, with readings over 2,100 ug/m³. This is well over the 1-hr hazardous threshold levels of 370 ug/m³.¹⁴⁶ The fire caused 22 people to evacuate across 13 premises.¹⁴⁷ Also, over 140 million litres of contaminated water were diverted into the sewer from Merlynston Creek, with a local fishing and recreation reserve closed to the public owing to water contamination and high E.coli levels.¹⁴⁸ The fire at one stage reached a length of 150m by 50m wide.

Total annual costs for Victoria from stockpile fires

Arriving at an accurate annual cost of stockpile fires for Victoria is difficult given the absence of consistently collected data. However, applying some reasonable assumptions to the basic cost information available and the historical occurrences of these incidences can provide an indication of the size of the problem. For example, assuming there are 10 stockpile fires on average per year (based on 100 historical incidences since 2008), nine of these being high-risk fires (costing on average \$4 million) and one extreme-risk stockpile fire (costing on average \$65 million), the total cost to Victoria would be around \$105 million per year.

The assumption of 10 stockpile fires per year would seem reasonable given it is estimated that there are over 800 recycling facilities around Victoria and more than 200 of these sites require "urgent attention". 345 of these sites have evidence of stockpiling, with 200 classed as a "high-risk" fire danger, and 5 as "extreme".¹⁴⁹ Given recycling stockpiling of waste is a growing trend, 10 stockpile fires per year in Victoria may be an underestimate.

Again, these figures also do not take into account the unknown or difficult to quantify costs to society and the environment and therefore represent a partial estimate.

Waste abandonment costs

The abandonment of waste occurs when waste businesses rent land, illegally dump waste, and subsequently abandon the site, close their business and leave costs of clean-up for EPA and/or landlord. There are a number of case studies around Victoria (and New South Wales) which can provide an indication of the size of the waste abandonment problem for Victoria. For example:

- A Campbellfield site for illegal mercury storage had a clean-up cost more than \$1 million in 2013.¹⁵⁰
- A Thomastown property accumulated waste over 3 months in 2016 which was subsequently abandoned and left a clean-up cost of \$500,000.¹⁵¹

¹⁴⁵ Management and storage of combustible recyclable and waste material Policy Impact Assessment, Department of Environment, Land, Water and Planning, 2018, page 9.

¹⁴⁶ Ibid.

¹⁴⁷ Inspector General for Emergency Management. (2017). Review of SKM Coolaroo Recycling Plant Fire. Retrieved from <https://www.igem.vic.gov.au/reports-and-publications/igem-reports/review-of-skm-coolaroo-recycling-plant-fire>

¹⁴⁸ Ibid.

¹⁴⁹ ABC, *As Melbourne's recycling stockpiles keep growing, so does the fire risk posed by the waste* (21 October 2018) <<https://www.abc.net.au/news/2018-10-21/melbourne-recycling-facilities-pose-fire-risk/10368302>>.

¹⁵⁰ The Age, *The tipping point: Illegal dumping swamps the waste industry* (6 August 2017)

<<https://www.theage.com.au/national/victoria/the-tipping-point-illegal-dumping-swamps-the-waste-industry-20170806-gxa8m0.html>>.

- Removal of 8000 cubic metres of rubbish and asbestos from a property in Ardeer, illegally dumped in 2014, cost an estimated \$2 million.¹⁵²
- Eight warehouses in Epping and Campbellfield containing up to 19 million litres of illegally dumped toxic waste, with an estimated future clean-up cost of \$50 million, were discovered in December 2018 and reported to be the largest illicit dumping operation in the city's history.¹⁵³
- A site in Stawell - considered abandoned by EPA – containing a stockpile of tyres, with clean-up costs of \$5 million in 2017.¹⁵⁴

With respect to the Stawell tyre site, if the stockpile had caught fire it would have had many environmental, economic and social risks for Stawell and its surrounds. The environmental impacts would have included poor air quality, firewater runoff into local waterways and land contamination.¹⁵⁵ EPA estimated about 7,000 people from the surrounding area would have to be evacuated if the stockpile caught fire. The stockpile was less than 300 metres from an abattoir, the town's biggest employer, and 2.5 kilometres from the Stawell CBD.¹⁵⁶ EPA removed about 9500 tonnes of tyres and shred from the site after repeated failure by the owners to comply with orders to reduce the risk of fire at the site. In October 2018 the Supreme Court ordered the owners to foot the \$4.5 million bill for EPA's clean-up.¹⁵⁷

In a further example of the waste abandonment problem, a former recycling centre in Lara was allocated \$30 million by the Victorian Government to return the site to compliance and clean up the abandoned waste.¹⁵⁸ The Lara site was allegedly operating for years as an illegal waste dump and had accumulated a large volume of combustible recyclable and waste material. The site is 1.2 kilometres from sensitive land uses including a residential housing estate in Lara and about three kilometres from Corio. The site operator C&D Recycling and its director repeatedly breached planning permit conditions and orders from the Victorian Civil and Administrative Tribunal (VCAT), and criminal charges have been laid.¹⁵⁹

Figure 9-3 Former recycling centre and then illegal rubbish dump at Lara near Geelong

¹⁵¹ Ibid.

¹⁵² Ibid.

¹⁵³ The Age, *Up to 19 million litres of toxic waste dumped in eight suburban warehouses* (18 March 2019)

<<https://www.theage.com.au/national/victoria/up-to-19-million-litres-of-toxic-waste-dumped-in-eight-suburban-warehouses-20190315-p514lm.html>>

¹⁵⁴ ABC News, *Supreme Court orders Stawell tyre dump owner to pay \$4.5 million to EPA* (30 October 2018)

<<https://www.abc.net.au/news/2018-10-30/supreme-court-fines-stawell-tyre-stockpile-owner-millions/10447610>>.

¹⁵⁵ EPA, *Stawell tyre stockpile cleanup*, available at <https://www.epa.vic.gov.au/our-work/current-issues/odour-and-air-quality/stawell-tyre-stockpile-cleanup>.

¹⁵⁶ ABC News, *Supreme Court orders Stawell tyre dump owner to pay \$4.5 million to EPA*, 30 October 2018, available at <https://www.abc.net.au/news/2018-10-30/supreme-court-fines-stawell-tyre-stockpile-owner-millions/10447610>.

¹⁵⁷ ABC News, *Supreme Court orders Stawell tyre dump owner to pay \$4.5 million to EPA*, 30 October 2018, available at <https://www.abc.net.au/news/2018-10-30/supreme-court-fines-stawell-tyre-stockpile-owner-millions/10447610>.

¹⁵⁸ EPA website, <https://www.epa.vic.gov.au/our-work/current-issues/broderick-road-recycling-epa-response>

¹⁵⁹ City of Greater Geelong, *Recycling site on Broderick Road*, available at <https://www.geelongaustralia.com.au/news/item/8d543b29091229a.aspx>.



Total annual costs for Victoria from waste abandonment

Arriving at an accurate annual cost of waste abandonment for Victoria to determine the size of the problem is also difficult. While the clean-up costs are relatively well documented for a handful of case studies, these costs are only for the clean-up costs themselves. Costs do not include the harms to human health and the environment during the time of the site operation (e.g. odour, litter, harmful gas emissions, leachate to surface and groundwater etc.) nor does it cover the legacy issues after the clean-up of the site.

However, some reasonable assumptions can be applied to give a sense for the magnitude of the clean-up problem. Purely for illustration - assuming an average of five abandoned sites are required to be cleaned-up per year, four of these with clean-up costs averaging \$2 million and one large site (costing on average \$50 million), the total annual cost to Victoria would be in the order of \$58 million per year.

These estimates are, however, for clean-up costs alone.

Other illegal dumping costs

In addition to waste abandonment, significant volumes of waste are illegally dumped in Victoria into the environment by smaller operators (e.g. skip bin operators or by private citizens dumping their own waste in an attempt to avoid paying landfill fees). This dumping often occurs in sensitive areas such as creeks and waterways. The prevalence of illegal dumping in Victoria has been growing over time as evidenced by the growth in the number of infringement notices (4,700 notices in 1998-99 to around 12,165 in 2017-18).¹⁶⁰ Key factors contributing to this growth include the increase in population, lack of markets for recycled products, and the rising cost of waste disposal (such as landfill fees).

In terms of the costs of illegal dumping and the size of the problem, EPA estimates that a combination of clean-up costs and lost landfill levy revenue totals around \$30 million a year in Victoria.¹⁶¹

The costs of clean-up are often borne by councils as they respond to complaints and incidents of illegal dumping in their municipality. The councils with the biggest problems are those on the urban fringe where illegal dumping can occur with a lower risk of detection. There is some publicly available information on the

¹⁶⁰ Environmental Protection Authority Victoria, *Annual Report 2017-18* < <https://www.epa.vic.gov.au/about-us/who-we-are/annual-reports-and-plans>>.

¹⁶¹ PriceWaterhouseCoopers, 2015, *Illegal disposal of industrial waste in Victoria*, Melbourne, Victoria

clean-up costs incurred by councils to remedy illegal dumping. For example, Brimbank Shire estimates that there are 50 illegal dumps operating in its area, it received 3,500 reports of littering and illegal dumping last year, and it incurred annual clean-up costs of \$700,000. An adjacent council (Hume City Council) identified 110 sites used by suspected small-to-medium rogue skip bin operators during a blitz with Victoria Police.¹⁶²

In New South Wales, over 10% of local councils spend \$500,000 or more on illegal dumping education, enforcement, clean-up and other activities each year.¹⁶³ Of these councils, 64% face up to 100 illegal dumping incidents each year. Most councils spent up to \$50,000 per year on education (56% of councils) and up to \$75,000 per year on enforcement and legal costs (55% of councils). The highest costs were associated with clean-up, with nearly two thirds of councils spending up to \$250,000 a year on cleaning up illegal dumping and landfilling. A further \$250,000 per year was spent by 61% of councils on contractors in relation to illegal dumping and landfilling. Although Victorian councils were not considered in the study, it is likely that similar costs are also incurred by Victorian councils.

Total annual costs for Victoria from illegal dumping

The illegal dumping issue in Victoria is widespread, with councils on the urban fringe and regional councils perhaps facing the biggest clean-up costs. EPA's estimate of \$30 million per year¹⁶⁴ for clean-up costs and lost landfills levy revenue appears to be the best available estimate of the total size of the problem.

Again, clean-up costs and avoided levies are partial costs of the overall problem, therefore the above figure represents a minimum estimate of the costs of illegal dumping. The impacts of illegal dumping on the environment, amenity and human health are not included.

Summary of waste mismanagement costs

The above discussion summarises available data on three areas of waste mismanagement in Victoria, and provides some indication as to the size of the problem from a societal cost perspective. The following estimates were derived as partial estimates of the size of the problem:

- \$105 million per year from stockpile fires.
- \$58 million per year in annual clean-up costs of abandoned waste sites.
- \$30 million per year on clean-up costs and lost landfills levy revenue due to illegal dumping.

These estimates are, however, principally the financial costs of response and clean-up of these incidences. They do not capture the costs to human health and environmental damage costs.

These also represent only three areas of waste mismanagement. As described earlier, there are numerous other costs on society from waste management including air pollution and odour from activities such as landfill, open windrow composting, waste to energy plants, hazardous waste treatments, and waste materials not being contained during transport. These costs, which may include loss of amenity and negative impacts to human health, are difficult costs to quantify.

9.5 Assessment

9.5.1 Approach to analysis of waste areas

The six areas of regulation are analysed separately in this chapter. However, each area also contributes to the broader environmental and public health benefit of improved waste management in Victoria (or the avoided

¹⁶² Environmental Protection Authority Victoria, Above n 21.

¹⁶³ State of New South Wales and the Environmental Protection Authority, *NSW Illegal Dumping Strategy 2017-21* (2017)

<<https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/illegaldumping/17p0158-epa-illegal-dumping-strategy.pdf>>.

¹⁶⁴ PriceWaterhouseCoopers, 2015 Illegal disposal of industrial waste in Victoria, Melbourne, Victoria

costs of waste mismanagement outlined above). It is not feasible to attribute a numeric proportion of these wider avoided costs to each area. Therefore an MCA has been used to assess the options. However, where possible, there is brief discussion on the level of avoided waste mismanagement costs (using the estimates in previous section) that would be needed for the preferred option in each area, as well as the overall package of preferred options, to break even.

Appendix 10 summarises how the proposed regulations (across the six key areas of regulation) would apply in relation to soil and fill material, which has a high potential for mismanagement.

9.6 Industrial waste classification

9.6.1 Options

Waste classification can be used to differentiate waste types and accordingly the risk of harms posed by the waste. However, it is challenging to achieve a truly risk based framework for classifying waste that is both underpinned by scientifically justified evidence and not overly complex and burdensome to implement.

In developing options for waste classification, DELWP and EPA compared Victoria with how other Australian and overseas jurisdictions define and categorize hazardous wastes. The assessment found that the current Victorian waste classification framework leans toward a heavy reliance on testing for hazardous properties of the waste, rather than on a list of wastes based on presumed or perceived hazards. This means that although the current framework may rank higher in terms of scientific justification for regulation, it ranks lower for complexity and compliance costs for the regime for industry.

To achieve an appropriate balance between scientific justification and ease of compliance and user experience, four objectives were identified for a waste classification framework, which were subsequently used to develop the options. The objectives were:

1. A risk-based framework which can be consistently applied and aids in protecting the environment and human health.
2. An approach that balances scientific justification with ease of interpretation and enables higher order outcomes (avoidance, reuse, recycling).
3. Cost of the system is appropriate to risk from the hazard and use of the waste.
4. A framework that is future proofed for emerging wastes and new technologies.

To provide a consistent and appropriate process to classify industrial waste, two options are considered in addition to the Base Case.

- **Base Case:** In the absence of regulations, waste classification reverts to the new EP legislation where only Municipal Waste and Industrial Waste are defined. This means that there would be no process by which to assign a waste as priority or reportable priority waste.
- **Option 1: A science-based testing regime.** This would require industrial waste generators to sample, analyse and classify waste for all hazardous properties upon entering new industrial waste contracts/commercial arrangements and upon any material change to their waste composition. This option is similar to the classification process under the current regime and represents a translation of the existing framework. There would be a primary reliance on chemical analysis of wastes for classification, which increases the complexity but is based on a scientifically robust set of contaminants and thresholds that are linked to the inherent hazard properties of the waste. This option would have a limited set of pre-classified wastes that would not require sampling. These pre-classified wastes would sit at either end of the hazard spectrum where a set of low hazard wastes are defined as industrial wastes only and a set of high hazard defined as Category A and/or priority wastes.

- **Option 2: A tiered classification pathway**, which is modelled on the European Union’s (EU) approach to waste classification¹⁶⁵ but adapted to the Victorian context. The intention is to provide detailed supporting guidance which guides the user through the classification process to understand their waste and identify its source, type and classification as priority, reportable priority or industrial waste.
 - Tier 1 would be the most commonly generated wastes which will be specified in regulation (i.e. ‘pre-classified’) as industrial, priority and reportable priority wastes, and therefore not require a process of sampling or further analysis by industrial waste generators unless disposal at landfill is required. The wastes in this tier have been determined based on EPA’s assessment of the hazard of the waste and potential for mismanagement. Similar to the EU system, a small selection of wastes will be identified as ‘mirror’ codes due to their potential to vary in the level of hazard (see below). There are four pairs of mirror codes proposed under this option. Mirror codes are wastes which have potentially varying levels of hazard and can be hazardous or non-hazardous.
 - Tier 2 would be those that are not pre-classified (because they are either identified as a ‘mirror’ code or are not identified on the pre-classified list). For these waste types, a hazard classification process applies and the level of hazard in the waste needs to be assessed via a set of EPA-defined criteria or a Hazardous Properties Assessment (to be published in an incorporated document under the Regulations) to determine the waste classification. Depending on the outcome of the assessment the waste will be classified using either the ‘mirror hazardous’ or ‘mirror non-hazardous’ code. Where appropriate a new code may be issued via the designation process (see below).
 - Tier 3 concerns hazardous wastes destined for landfill (or on-site containment in the case of contaminated soils), where accurate categorisation is required to determine appropriate landfill for disposal. For wastes classified as priority and reportable priority waste, either when sent to landfill or for on-site containment, the wastes must be further categorised as Category A, B, C, D or soil containing asbestos through a sampling and analysis regime.

Option 2 would also allow for a designation process (either EPA initiated or applicant initiated). Designation allows for flexibility in certain circumstances on the application of waste duties or controls and re-classification of waste or re-categorisation of waste where appropriate. Designations are intended to resolve instances of undue regulatory burden. For example, a waste designation might capture situations where the risk from the hazard can be reduced through certain management practices or due to the pathway/destination.

9.6.2 Detailed assessment

9.6.2.1 Assumptions

The approaches for costing waste classification options share some common assumptions. Assumptions are based on average business costs, and it is recognised that individual business costs will range considerably depending on business size and waste complexity. The common assumptions include:

Business costs – shared assumptions

- No. of industrial waste generators – **430,088** (Source: ABS C&I, C&D and manufacturing business counts >\$50,000 turnover).
- No. of ‘waste classification events’ which is informed by:

¹⁶⁵ European Commission 2018, *Commission notice on technical guidance on the classification of waste* <[https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018XC0409\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018XC0409(01)&from=EN)>

- No. of industrial waste management contracts or other commercial arrangements – **166,323** (Source: EPA analysis based on business counts to contract ratios)
- Average waste management contract or commercial arrangement renewal – **3 years** (Source: EPA estimate)
- Average sampling costs per industrial waste classification event (includes; staff time in sampling waste and record-keeping; sampling equipment costs; and laboratory analysis costs) - **\$3,500** (Source: Deloitte survey).
- Pre-classification costs per waste classification event (includes time for staff to identify wastes on a pre-classified list and keep adequate records of this classification) - **\$50** (Source: Deloitte survey).
- Hazard assessment costs per waste classification event (Option 2, Tier 2) relating principally to mirror codes or codes not on pre-classified list - **\$1,500** (Deloitte survey).
- Average staff training and implementation costs per industrial waste generator to understand the waste classification framework only - **\$400** (Source: estimate based on discussion with DELWP and EPA, 1 day (8 hours) @ \$50 per hour – average Victorian hourly wage including overheads and on-costs). The average Victorian hourly wage rate is \$34 per hour.¹⁶⁶

Costs to business – Option 1 assumptions

The business cohort affected by **Option 1** includes industrial waste generators with the main costs being sampling, testing and analysis of industrial waste consignments. Key assumptions for the analysis include:

- % of industrial waste classification events that would be pre-classified – **60%** (Source: Deloitte estimate based on discussions with DELWP and EPA and assuming the majority of waste types is readily identifiable without need for sampling).
- % of industrial waste classification events that would be sampled – **40%** (Source: Deloitte estimate based on discussions with DELWP and EPA).

Costs to business – Option 2 assumptions

The business cohort affected by **Option 2** includes all industrial waste generators with the main costs related to following the tiered classification pathway including; Tier 1 identifying waste on a pre-classified list; Tier 2 undertaking a Hazardous Properties Assessment for mirror codes or codes not on pre-classified list; Tier 3 sampling, testing and analysis of industrial waste consignments destined for landfill. Key assumptions for the analysis include:

- % of industrial waste classification events that would be pre-classified – **94%** (Source: Deloitte analysis from EPA waste code mapping).
- % of industrial waste classification events (hazardous mirror codes) subject to the hazard identification process – **6%** (Source: Deloitte analysis from EPA waste code mapping, 13% of codes represent mirror codes, 50% of these assumed to be hazardous).
- % of industrial waste classification events where waste is destined for landfill i.e. hazardous waste that would be subject to a sampling regime for landfill categorisation to determine appropriate landfill – **20%** (Source: EPA analysis of 2017-18 Landfill Levy Annual Statement - waste volumes declared).

Government costs – shared assumptions

¹⁶⁶ Source: Payscale (2019), accessed from: <https://www.payscale.com/research/AU/Country=Australia/Salary>

Some costs would fall on EPA for both options with respect to making designations for certain businesses for certain waste types. The key assumptions are:

- % of waste classification events expected for designation per year – **5% in year 1, and 1% every year thereafter** (Source: EPA estimate).
- EPA cost per designation - **\$1,500** (Source: EPA estimate).

Benefits to community

The benefits of an effective industrial waste classification system are significant. The accurate classification and landfill categorisation is critical for all other waste controls to operate, and for any waste management benefits to be realised in Victoria. Without a waste classification system it would be expected that waste mismanagement in Victoria would worsen, including increasing stockpile fires, illegal dumping and illegal landfilling. While quantification of benefits is extremely difficult, as noted previously, some comparison is possible assuming the base costs of mismanagement for the following areas:

- \$105 million per year from stockpile fires.
- \$58 million per year in annual clean-up costs of abandoned waste sites.
- \$30 million per year on clean-up costs and lost landfills levy revenue due to illegal dumping.

It should be noted that these estimates are status quo estimates (costs incurred under the current regulatory system), rather than Base Case estimates. Under the Base Case of no regulations, these costs are likely to be higher.

9.6.2.2 Effectiveness

Both options are considered to be effective in ensuring waste is adequately classified.

Option 1 provides for a strong scientific basis, however it scores lower, given it is complex and onerous. This high cost burden might drive non-compliant behaviour or create perverse incentives in the market such as avoidance behaviours. Option 1 is given a score of +2 relative to the Base Case.

In terms of practicality to implement, **Option 2** balances the goals of scientific justification and ease of compliance and common interpretation. The Hazardous Properties Assessment is also aligned to current approaches such as the National Industrial Chemicals Notification & Assessment Scheme, the proposed National Standard for Environmental Risk Management of Industrial Chemicals and the Globally Harmonised System of Classification & Labelling of Chemicals. Option 2 is given a score of +5 relative to the Base Case.

9.6.2.3 Cost

Option 1 imposes large costs on businesses for adequately classifying industrial waste. These costs are driven by the large number of industrial waste consignments that need to be appropriately classified and the costs of sampling and testing. Option 2 is far less costly than Option 1 due to the streamlined nature of classification.

Table 9-2 Present value of costs

	Option 1 Complex/ scientific testing regime	Option 2 Tiered classification pathway
PV costs to business relative to Base Case	\$765,646,474	\$448,427,227
PV costs to government relative to Base Case	\$6,900,528	\$3,450,264
PV costs to community relative to Base Case	\$0	\$0
Present value total costs relative to Base Case	\$772,547,002	\$451,877,491

Although both options are costly for waste businesses (see Table 9-2), Option 1 is much more costly due to the streamlined nature of classification (i.e. only 60% of waste codes would be pre-classified or be considered non-hazardous mirror codes compared to 94% for Option 2). Option 1 is given a score of -8 relative to the Base Case.

Option 2 adopts a structured and balanced approach with classification streams to address waste complexity where required, and a designation process which provides flexibility for tailored controls based on particular circumstances. Option 2 is given a score of -4 relative to the Base Case.

9.6.3 MCA summary – preferred option

The results of the MCA are shown in Table 9-3 below. Option 2 has a much higher score than Option 1, driven by more favourable scores for both criteria.

Table 9-3 Multi-criteria analysis

Criteria (and weight)	Option 1 Complex/ scientific testing regime	Option 2 Tiered classification pathway
Effectiveness (50%)	2	5
Cost (50%)	-8	-4
Total weighted score	-3	0.5

9.7 Lawful place

9.7.1 Options

In developing the options to prescribe what a lawful place is, DELWP and EPA considered the range of instruments (including within the permissioning framework) through which lawful place could be authorised, as well as frameworks applied in other jurisdictions.

The primary criteria to scale permission levels for the lawful receipt of industrial wastes is the risk of waste management activities, with consideration of potential regulatory impact and ease of compliance on different industry sectors. Options for addressing lawful place are complemented by a strengthened compliance and enforcement program targeting poor management practices in the waste sector.

To prescribe what a lawful place is, three options were considered in addition to the Base Case:

- **Base Case:** The Base Case involves transitioning the current licenced cohort of industrial waste premises to a licence under the new permissions framework which would make these premises automatically 'lawful'. Industrial waste premises that are currently unlicensed will be required to obtain a permission (either licence, permit or registration). Within the permissioning framework, licences will be used for managing wastes with higher levels of hazard and complex treatments. Permits will apply where wastes are managed in large volumes or are prone to large fires, mismanagement, abandonment or off-site impacts. Registrations will apply where volumes of waste are smaller, but the activity is prone to mismanagement or lack of transparency for waste generators is likely to occur. The use and re-use of waste would be covered by guidance and the GED. This would limit the ability of EPA to set specific limits on a site in order to prevent stockpiling, if reasonably practicable steps to prevent harm were met by the duty holder. The costing for this is included in the Permissions chapter.
- **Option 1: Flexible tools, multiple approaches.** In addition to the Base Case, there would be new self-assessed instruments introduced to allow for activities not considered in the permissioning framework

to lawfully accept waste or to enable an exemption for lawful acceptance. DELWP and EPA considered self-assessment (rather than EPA assessment) to be appropriate for these instruments, reflecting the lower-risk nature of the wastes to which they would apply. These instruments include:

- A Statement of Acceptance (SoA) for low risk, small scale activities on an individual site to demonstrate the ability to lawfully receive waste beyond the permissioning framework threshold. A key example is the acceptance of organic waste material or soils on agricultural land. A SoA is prepared by the waste receiver with the intent of communicating to the waste generator how the waste is intended to be used. A SoA statement only requires renewal upon a change in waste source or end use.
- Statement of Compliance (SoC) which would apply for a subset of the above SoA cohort for activities carrying a moderate risk or where a waste is being further processed on site. This would apply to particular waste types of a higher hazard level or may be subject to changing waste composition. Similar to a SoA, the SoC would be prepared by the receiver of waste and demonstrate and communicate ongoing compliance to the generator of waste. A SoC would be required to be produced annually.
- A Declaration of Use (DoU) which is a means of declaring that lawful place is achieved through accurately completing a declaration. It is a self-assessed tool and would be a requirement on the person in management or control of the industrial waste to provide a declaration to the receiver, who agrees to accept the waste at the premises for the declared use. A DoU would apply in circumstances where waste is processed and deemed fit for a particular use. For example, plastic waste is processed into (granulated) plastics which is then supplied to a plastics manufacturer– the plastic waste processor undertakes assessment of the processed waste granulated plastics and declares it to be fit for use. For example, that it is free from contamination and meets a specification set out in the declaration. The plastics manufacturer (receiver) gains information on the appropriate uses of the materials and any limitations of its use. The receiver accepts the material for an appropriate end use, satisfying the requirements of lawful place. DoUs would be applicable where the receiver intends to use the waste immediately, with minimal storage. It is important to note that the wider definition of waste in the new EP legislation is irrespective of any potential use or value, requiring that lawful place be established for wastes consigned for use.

All of the above instruments require the duty holder to record information about the waste source, its type and composition, and the intended end use. The duty holder would need to keep adequate records of the relevant instrument.

- **Option 2: Streamlined use of tools.** Option 2 involves prescribing one extra tool (a DoU) for satisfying lawful place requirements outside of permissioning, by declaring what the waste materials are and their intended uses and fitness for those uses.
 - A DoU is associated with uses of waste that EPA does not require direct notification of and can be considered low risk of harm to the environment and human health. In addition to the DoU description for Option 1 (above), a DoU under Option 2 would also cover direct application to land of low risk organic waste, on-site treatment or use of fill material, off-site deposit of fill material, and off-site storage of fill material for a period of no more than 60 days.
- **Option 3: Permissions framework only.** There would be no additional instruments established outside the permissions framework, which means that all sites receiving industrial waste will be required to at least be registered. Registration for all uses of waste and fill material would then be required to establish lawful place. Under this approach, a significant number of registrations would be required for single uses of waste or deposit of fill on construction sites or landscaping works. For this reason, the approach is not considered to be feasible by DELWP and EPA, it is therefore not considered further in the analysis below.

9.7.2 Detailed assessment

9.7.2.1 Assumptions

Costs to business – Option 1

The business cohort affected by Option 1 includes premises receiving an industrial waste product that would be required to generate a SoA or premises generating an industrial waste product for reuse that would be required to generate a DoU. The main costs on these businesses would be the generation of SoA, SoC and DoU certificates. Key assumptions for the analysis include:

- No. of premises that would be required to generate a SoA (soils and fill material) – **50,000** (Source: Deloitte estimate based on discussion with EPA and assuming)
- No. of premises that would be required to generate a DoU – **10,000** (Source: Deloitte estimate based on discussion with EPA)
- Rate of SoA renewal – **3 years** (Source: Deloitte estimate based on discussion with EPA)
- % of SoA premises (other) that have changing waste feedstocks and would be required to generate a SoC every year – **18%** (Source: Deloitte survey)
- Cost of generating a SoA certificate - **\$100** (Source: Deloitte estimate based on survey and discussion with DELWP and EPA, 2 hour per certificate at \$50 per hour average Victorian hourly wage)
- Cost of generating a SoC certificate - **\$200** (Source: Deloitte estimate based on survey and discussion with DELWP and EPA, 4 hours per certificate at \$50 per hour average Victorian hourly wage)
- Cost of generating a DoU certificate - **\$100** (Source: Deloitte estimate based on survey and discussion with DELWP and EPA, 2 hours per certificate at \$50 per hour average Victorian hourly wage)

Costs to government

Some costs would fall on EPA with respect to monitoring costs of SoA, SoC and DoUs. The key assumptions are:

- % of SoA, SoC and DoUs audited – **10%** in the first year, **5%** in the second year, and **2%** per year ongoing (Source: Deloitte estimate based on discussion with DELWP and EPA)
- EPA unit cost for auditing SoA, SoC and DoUs - **\$500** (Source: Deloitte estimate based on discussion with EPA)

Costs to business – Option 2

The business cohort affected by Option 2 includes premises generating an industrial waste product for reuse that would be required to generate a DoU. The main costs on these businesses would be the generation of DoU certificates. Key assumptions for the analysis include:

- No. of premises that would be required to generate a DoU – **70,000** (Source: Deloitte estimate based on discussion with EPA)
- Unit cost of generating a DoU certificate - **\$100** (Source: Deloitte estimate based on discussion with EPA, 2 hour per certificate at \$50 per hour average Victorian hourly wage plus on-costs)

Costs to government – Option 2

Some costs would fall on EPA with respect to monitoring DoUs. The key assumptions are:

- % of DoUs audited – **10%** in the first year, **5%** in the second year, and **2%** per year ongoing (Source: Deloitte estimate based on discussion with EPA)
- EPA unit cost for auditing DoUs - **\$500** (Source: Deloitte estimate based on discussion with EPA)

Benefits of lawful place options

The lawful place permissions provide important controls to ensure waste is not disposed of unlawfully, and that premises receiving waste will manage wastes appropriately. The lawful place controls will

contribute to improving waste management in Victoria. Again, quantification of benefits is difficult, as is attribution of these benefits to lawful place provisions. However, the following base costs of waste mismanagement in Victoria provide some level of comparison in the analysis.

- \$105 million per year from stockpile fires.
- \$58 million per year in annual clean-up costs of abandoned waste sites.
- \$30 million per year on clean-up costs and lost landfills levy revenue due to illegal dumping.

9.7.2.2 Effectiveness

Option 1 and Option 2 are considered to be similarly effective in providing assurance of lawful authority to receive wastes. Option 1 does this by providing a full suite of tools, to encapsulate all possible scenarios for lawful authority. Option 2 adopts one additional tool – DoU – to cover the same range of scenarios. Both Option 1 and Option 2 are given a score of +5 relative to the Base Case.

9.7.2.3 Cost

Options 1 and 2 place an administrative burden on businesses to prepare and keep records of compliance with the requirements of lawful place. Option 2 is marginally less costly for businesses than Option 1, reflecting the more streamlined use of tools and the associated saving from business dealings with one instrument rather than three.

Table 9-4 Present value of costs (2018/19 \$)

	Option 1 Flexible tools, multiple approaches.	Option 2 Streamlined use of tools.
PV costs to business relative to Base Case	\$40,932,138	\$22,512,118
PV costs to government relative to Base Case	\$10,822,413	\$6,469,035
PV costs to community relative to Base Case	\$0	\$0
Present value total costs relative to Base Case	\$51,754,551	\$28,981,154

9.7.3 MCA summary and preferred option

The MCA results (Table 9-5) show that Option 2 has the highest overall score, largely reflecting lower costs to business and government than Option 1. Option 2 is therefore the preferred option.

Table 9-5 Multi-criteria analysis

Criteria (and weight)	Option 1 Flexible tools, multiple approaches	Option 2 Streamlined use of tools
Effectiveness (50%)	5	5
Cost (50%)	-4	-2
Total weighted score	0.5	1.5

9.8 Priority waste

9.8.1 Options

In developing these options to give effect to the priority waste duties in the new EP Legislation, DELWP and EPA considered which wastes would warrant additional controls beyond those already in the GED, industrial waste and lawful place duties. Three interrelated criteria were considered for each waste type to assess whether

inclusion into the priority waste category was suitable: hazard (where the intrinsic or latent hazard of the waste indicates that sufficient risk of harm to human health and the environment is likely unless managed correctly), mismanagement (where waste requires additional controls to address mismanagement such as illegal dumping, abandonment or indefinite stockpiling etc.) and resource recovery (to improve the rate of recovery or efficiency of a waste stream or the input resources).

The new EP legislation provides that priority waste type must be prescribed in regulations, so non-regulatory approaches were not considered.

The options for what is considered priority waste are:

- **Base Case:** The Base Case would have no priority wastes prescribed. It is recognised that the priority waste duties are currently practiced to a certain degree and that practice would continue in the absence of regulation – i.e. the current level of isolation of waste types, the current level of business effort to investigate options for resource recovery and the current level of containment during transport – would continue under the Base Case. It is likely that the ‘state of knowledge’ and compliance levels would deteriorate over time, however this has not been factored in to the analysis.
- **Option 1a:** Waste types meeting hazard criteria of very high, high and moderate and those at risk of mismanagement. This option includes tyres and e-waste on mismanagement grounds. There would be no waste types included purely from a resource recovery perspective.
- **Option 1b:** Same as Option 1a but excluding e-waste. E-waste was excluded because it has a lower risk of mismanagement than tyres. Many parts from e-waste (such as metals) hold market value, meaning that the market still supports some effective recycling.
- **Option 2:** Waste types meeting the hazard criteria of very high and high, but no waste types would be included from a mismanagement or resource recovery perspective.
- **Option 3:** Wastes meeting the hazard criteria of very high, high and moderate. In addition, masonry, aggregates and fill material would be included from a mismanagement perspective, and tyres, e-waste and plastics would be included from a resource recovery perspective.

Table 9-6 Summary of reportable priority waste cohort options

Hazard type	Option 1a	Option 1b	Option 2	Option 3
Very High Hazard	Yes	Yes	Yes	Yes
High Hazard	Yes	Yes	Yes	Yes
Moderate	Yes	Yes		Yes
Other	Tyres E-waste	Tyres		Tyres E-waste Plastic Masonry/aggregates Fill material

9.8.2 Detailed assessment

9.8.2.1 Assumptions

Costs to business

Additional costs to businesses for priority waste options include isolation of wastes that were not previously isolated, costs of containment of wastes (such as any vehicle modifications), and time to

investigate alternatives to disposal. The priority waste options share some common assumptions including:

- Total businesses dealing with very high-high hazard wastes – **1,710** (Source: Deloitte analysis, sum of industrial waste transporters 748; waste management facilities 185; and priority waste businesses 777)
- Total very high - high hazard waste volumes – **165,000** cubic metres (Source: EPA Waste Transport Certificates –TML, Total Volume)
- Total very high - high hazard waste consignments – **33,000** (Source: Deloitte estimate based on estimate 5 cubic metres per consignment)
- Total waste tyre consignments – **18,806** (Source: Deloitte analysis - 94,032 tonnes in 2017 and 5 tonnes per consignment)
- Total e-waste consignments – **21,200** (Source: Deloitte analysis – 106,000 tonnes in 2017 and 5 tonnes per consignment)
- Total plastic consignments – **44,996** (Source: Deloitte analysis – 224,979 tonnes in 2017 and 5 tonnes per consignment)
- Total masonry consignments – **508,915** (Source: Deloitte analysis – 2,544,574 tonnes in 2017 and 5 tonnes per consignment. Note a factor of 50% of C&D masonry/aggregates tonnes was used to estimate masonry versus fill material)
- Total fill material consignments – **508,915** (Source: Deloitte analysis – 2,544,574 tonnes in 2017 and 5 tonnes per consignment. Note 50% of category split to estimate masonry versus fill material)
- Costs of physical isolation per consignment - **\$1,200** (Source: Deloitte survey)
- % of priority wastes not currently isolated and are feasible to isolate – **15%** (Source: Deloitte analysis based on survey)
- No. of industrial waste vehicles – **3,000** (Source: EPA permissioning cohort poster)
- % of industrial waste vehicles that would require modification to meet containment duty – **10%** (Source: Deloitte estimate based on discussion with DELWP and EPA)
- Cost per vehicle of modification for containment - **\$5,000** (Source: Deloitte estimate based on discussion with DELWP and EPA).
- Annual cost per priority waste business of investigating alternatives to disposal - **\$275** (Source: Deloitte analysis based on estimate of 5 hours at \$55 per hour average environmental advisor wage. Informed by Deloitte survey).

Benefits

The priority waste duties will encourage resource recovery, isolation of recoverable wastes and adequate containment. These controls will contribute to improving waste management in Victoria, particularly the benefits of increased recycling (including waste not entering the environment or landfill and reducing stockpiles) and preventing hazardous wastes from polluting the environment. Quantification of benefits is difficult as well as attribution of these benefits to priority waste options. The following base costs of waste mismanagement in Victoria do provide some level of comparison in the analysis.

- \$105 million per year from stockpile fires.
- \$58 million per year in annual clean-up costs of abandoned waste sites.
- \$30 million per year on clean-up costs and lost landfills levy revenue due to illegal dumping.

9.8.2.2 Effectiveness

Option 1a and 1b score highly for effectiveness as both options include wastes that are prone to mismanagement and with high resource recovery potential. Option 1a scores higher due to the inclusion of e-waste in scope. Options 1a and 1b are given scores of +6 and +4, respectively.

Option 2 is given a score of +1 relative to the Base Case, as it does not deal with mismanagement or loss of resource recovery

Option 3 has the highest effectiveness score due to its wider scope of wastes and potential contribution to reducing other issues including stockpiling – in particular from masonry/fill material and plastics. A score of +7 is given relative to the Base Case.

9.8.2.3 Cost

Table 9-7 shows that Option 3 would have the highest regulatory cost burden on businesses and Option 2 the least. Costs are driven by the type of materials included in scope.

Option 1a and 1b are again differentiated by scope of materials covered.

Option 2 represents the smallest scope of materials, and therefore represents the lowest cost to business of all the options. It would also be the simplest to implement given this is the scope under current regulations, and current practices would largely continue.

Option 3 would be highly costly for business, and may put undue pressure on the waste industry for dealing with plastics, which is a commodity waste that is heavily influenced by external markets, and covers numerable businesses, making compliance and enforcement complex.

Table 9-7 Present value of costs (2018/19 \$)

	Option 1a Very high, high, moderate hazard, tyres, e-waste	Option 1b Very high, high, moderate hazard, tyres	Option 2 Very high and high hazard	Option 3 Very high, high, moderate hazard, tyres, e-waste, masonry/fill, plastics
PV costs to business relative to Base Case	\$202,627,773	\$147,548,155	\$98,535,249	\$2,907,282,921
PV costs to government relative to Base Case	\$0	\$0	\$0	\$0
PV costs to community relative to Base Case	\$0	\$0	\$0	\$0
Present value total costs relative to Base Case	\$202,627,773	\$147,548,155	\$98,535,249	\$2,907,282,921

9.8.3 MCA summary and preferred option

The MCA results (Table 9-8) show that Option 1a has the highest overall score and is therefore the preferred option.

Table 9-8 Multi-criteria analysis

Criteria (and weight)	Option 1a Very high, high, moderate hazard, tyres, e-waste	Option 1b Very high, high, moderate hazard, tyres	Option 2 Very high and high hazard	Option 3 Very high, high, moderate hazard, tyres, e-waste, masonry/fill, plastics
Effectiveness (50%)	6	4	1	7
Cost (50%)	-3	-2	-1	-10

Criteria (and weight)	Option 1a	Option 1b	Option 2	Option 3
Total weighted score	1.5	1	0	-1.5

9.9 Reportable priority waste

9.9.1 Options

The regulatory options for reportable priority waste take two forms:

1. **Cohort options** –deciding which waste types will be considered as reportable priority waste.
2. **Transport options** –giving specific form and application to reportable priority waste duties (namely transaction and transport duties).

In developing options, DELWP and EPA considered which wastes would warrant the additional controls beyond those already in the GED, industrial waste, lawful place and priority waste duties.

Since the cohort options and transport options interact, cost estimates have been developed for combinations of four cohort options and three transport options, to produce 12 cost estimates. Costs scale proportionally and in the same direction for transport options across cohort options, and for cohort options across transport options, so separate MCAs were used for cohort and transport options for simplicity.

9.9.1.1 Cohort options

Similar to priority waste, two key criteria are being considered to determine what should be reportable priority waste – namely hazard and mismanagement potential. The options for what is considered reportable priority waste are:

- **Base case.** The Base Case would have no reportable priority wastes prescribed. It is recognised that waste tracking for hazardous wastes is currently practiced, however due to costs to businesses, this tracking would be unlikely to continue under the new EP legislation (in the absence of any further regulations).
- **Option 1: Balancing risk.** Transport permissions would apply to very high – moderate hazard wastes. Transaction tracking would apply to all very high and high hazard wastes (e.g. asbestos, hazardous liquids, contaminated soils), tyres and moderate hazard wastes that are being dumped or disappearing or there is an opportunity for concealment.
- **Option 2a: High hazard only (partial).** Transport permissions would apply to very high – high hazard wastes. Transaction tracking would apply to those very high and high hazard wastes that are being dumped or disappearing (e.g. asbestos, contaminated soils).
- **Option 2b: High hazard only (all).** Transport permissions would apply to all very high – high hazard wastes. Transaction tracking would apply to all very high – high hazard wastes (not just those that are being dumped or disappearing as per Option 2a).
- **Option 3: Balancing risk and encouraging recovery.** Transport permissions would apply to very high – moderate hazards. Transaction tracking would apply to all very high and high hazard wastes as well as moderate hazard wastes that are dumped, disappearing or where there is an opportunity for concealment (e.g. asbestos, hazardous liquids, contaminated soils) and plastics and e-waste.

Table 9-9 Summary of reportable priority waste cohort options

Option 1 – balancing risk	Option 2a – high hazard only (partial)	Option 2B - high hazard only (all)	Option 3 – balancing risk and encouraging recovery
Transport permission very high – moderate hazards	Transport permission very high – high hazards	Transport permission very high – high hazards	Transport permission very high – moderate hazards
Transaction tracking All very high – high hazard wastes. + Moderate hazard wastes that are dumped, disappearing or there is an opportunity for concealment + Tyres	Transaction tracking All very high – high hazard wastes that are being dumped or disappearing	Transaction tracking very high – high hazards	Transaction tracking All very high and high hazard wastes. + Moderate hazard wastes that are dumped, disappearing or there is an opportunity for concealment + Plastics and e-waste

Source: EPA

9.9.1.2 Transport options

Five options are being considered for prescribing transaction control and transport permissions. With respect to transaction controls, the intent of the options is to minimise waste mismanagement by ensuring effective controls are implemented at the source and that information flows through the waste chain of custody. This effectively places more responsibility on the waste producer. Specifically, the transaction activities would include (but not be limited to) the following:

- Classifying wastes (options covered in waste classification) and/or collection/confirming information on the waste consignment hazard properties.
- Locating and confirming a lawful place for disposal/treatment.
- Ensuring transporters have appropriate permissions.
- Aligning consignment with regulatory requirements.
- Providing information on the waste consignment to those along the chain of custody, through the EPA waste tracking system.

The options outlined below propose that a new ‘accredited consigner’ role be created to address some of the problems with waste transport. Accredited consigners will be approved professionals with knowledge of how to lawfully manage specific types of waste. An accredited consigner would be a person authorised by the EPA to accept management or control of waste on behalf of the waste producer; by undertaking waste consignment duties on the waste producers’ behalf. A waste generator would be able to transfer consignment duties to an accredited consigner while maintaining responsibility and ownership of the waste until it reaches a lawful place. Certain duties under the new EP legislation in relation to the person with management or control of waste could then fall to the accredited consigner. As the duty holder, if an accredited consigner is found to have contravened any sections of the Act or regulations while in management or control of waste on behalf of a producer, they could also be liable for any applicable penalties. By engaging an accredited consigner, the producer would be considered to have taken some reasonable steps toward satisfying their duties under the new EP legislation, but would not have fully acquitted their industrial waste duties.

The Act gives EPA the power to appoint a prescribed role to a person or class of persons. Requirements to be appointed by EPA as an accredited consigner will include being a fit and proper person, with proven knowledge of how to lawfully manage specific types of waste; i.e. through the completion of approved training. Given the

complex and varied nature of waste, accredited consigners would only be appointed to deal with wastes in areas where they have proven competency to EPA.

The accredited waste consigner role would need to be defined in the proposed Regulations. The options discussed below consider whether it should be mandatory or voluntary for all consignments of reportable priority waste to be completed by someone who is appointed as an accredited consigner. Accredited consigners replace the current role of accredited agents, who are currently limited to acting as a transporter picking up multiple loads in a “milk-run” operation. Accredited consigners have an expanded role in assisting generators to correctly classify the waste and navigate a legitimate lawful place for the waste. The expanded role is intended to leverage on-ground industry knowledge of how to manage specific types of waste, which currently occurs in a less formal way.

Under the new EP legislation, transaction tracking is required for any reportable priority waste (s142 of the Act). Duty holders are required to record prescribed transaction details in the prescribed manner and form, and to provide these details to a prescribed person. To assist duty holders to meet this obligation, EPA will introduce a new waste tracking system. This system would enable duty holders to understand and characterise their waste, identify authorised transporters and receivers, and track transactions and the characteristics of the waste across the chain of custody. The new waste tracking system is being designed to:

- Enable up-to-date intelligence of hazardous waste movements in the state
- Improve support and encourage compliance
- Facilitate evidence collection to expose illegal operators
- Be easy to use and navigate.

For all of the options described below, the new waste tracking system would allow duty holders to provide details in the prescribed manner and form of recording transaction details. However, there would also be an option to send data directly to EPA (businesses may use their own tracking systems rather than the EPA waste tracking system if the data can be provided in the approved manner). It can also be used voluntarily by duty holders who want to demonstrate that all reasonable steps have been taken to transport their non-reportable priority and industrial wastes to a lawful place. The options below vary only with respect to which parties are able to initiate tracking. The EPA tracking system will replace the current system which has more manual processes.

The transport options being considered are:

- **Option 1a. Mandatory accredited consigners.** Accredited consigners to manage reportable priority waste transactions would be mandatory. This would mean that all reportable priority waste consignments must be managed by an accredited consigner including managing waste tracking in a manner prescribed by EPA. Only accredited consigners would be able to initiate tracking. Reportable priority waste generators would therefore be required to engage a third party accredited consigner or be accredited themselves. This option would have no specified vehicle permissions for transporting this waste.
- **Option 1b. Mandatory accredited consigners with EPA permissioning.** Requiring mandatory third party accredited consigners to manage reportable priority waste transactions, including managing waste tracking information in a manner prescribed by EPA. Vehicles would be required to be registered to transport reportable priority waste and permits would be required for any vehicles intending to transport higher risk waste types (managed under the permissions framework).

Note that options 1a and 1b have not been costed as they are considered by EPA to be impractical for implementation on day one. This is due to the lead time required to appoint a sufficient number of consigners. It could be considered an option in conjunction with Option 2, whereby accredited consigners are optional initially and made mandatory after a number of years. For the purposes of this RIS, however, only a qualitative MCA assessment has been undertaken on options 1a and 1b.

- **Option 2. Balanced – Optional accredited consigners.** The waste generator has the option to either undertake transaction duties and waste tracking responsibilities themselves or engage an accredited third party consigner to manage this on their behalf. Both the producer of waste and the accredited consigner can initiate waste tracking, however the use of accredited consigners would be optional. Vehicles would be required to be registered (under the permissions framework) to transport reportable priority waste and permits would be required for any vehicles intending to transport higher risk waste types (managed under the permissions framework).
- **Option 3. Optional accredited consigners with introduction of a driver permission.** The waste generator has the option to either undertake transaction duties and waste tracking responsibilities themselves or engage an accredited third party consigner to manage this on their behalf. Both the producer of waste and the accredited consigner can initiate waste tracking, however the use of accredited consigners would be optional. For transport permissions, drivers would be required to obtain a permission (instead of the vehicle) to both transport waste and undertake modifications. Additional permits will be required for vehicles intending to transport higher risk waste types (managed under the permissions framework).
- **Option 4. EPA control.** For this option, there is no formal consigner role for transactions. Tracking would still be required in a manner and form required by EPA. Permits would be required for any vehicles transporting reportable priority wastes prescribed as requiring a permission and any modifications for vehicles intending to transport higher risk waste types (managed under the permissions framework).

Table 9-10 Summary of reportable priority waste transport options

	Accredited Consigner	Vehicle	permission	Modified vehicle permission for higher risk waste types	Tracking
Option 1a	Mandatory for reportable priority wastes	None		None	In a manner and form prescribed by EPA and the consignment tracked by the accredited consigner.
Option 1b	Mandatory for reportable priority wastes	Registration		Permit	In a manner and form prescribed by EPA and the consignment tracked by the accredited consigner.
Option 2	Optional	Registration		Permit	In a manner and form prescribed by EPA and the consignment tracked by either accredited consigner or producer.
Option 3	Optional	Driver Permission (no registration for vehicle)		Driver permit and vehicle permit	In a manner and form prescribed by EPA and the consignment tracked by either accredited consigner or producer.
Option 4	Not applicable	Permit		Permit	Comply and enter data in EPA system in manner prescribed and the

Source: EPA

9.9.2 Detailed assessment

9.9.2.1 Assumptions

Cohort options

The cohort options share some common assumptions including:

- Total reportable priority waste businesses – **760** (Source: EPA Waste Transport Certificates – RPW mapping from RPU-provided spreadsheet.)
- Total reportable priority waste transporters – **740** (Source: EPA Waste Transport Certificates Unique List of Waste Transporters who have logged transport of RPW).
- No. of industrial waste vehicles – **3,000** (Source: EPA permitting cohort poster)
- Total very high - high hazard waste volumes – **165,000** cubic metres (Source: EPA Waste Transport Certificates –TML, Total Volume)
- Total very high - high hazard waste consignments (no. of transactions) – **33,000** (Source: Deloitte estimate based on estimate 5 cubic metres per consignment)
- Total waste tyre consignments – **18,806** (Source: Deloitte analysis - 94,032 tonnes in 2017 and 5 tonnes per consignment)
- Total e-waste consignments – **21,200** (Source: Deloitte analysis – 106,000 tonnes in 2017 and 5 tonnes per consignment)
- Total plastic consignments – **44,996** (Source: Deloitte analysis – 224,979 tonnes in 2017 and 5 tonnes per consignment)

Transport options

- **General cost assumptions**
 - Total reportable priority waste generators – **760** (Source: EPA Waste Transport Certificates – RPW mapping from RPU-provided spreadsheet).
 - Total reportable priority waste transporter businesses – **740** (Source: EPA Waste Transport Certificates Unique List of Waste Transporters who have logged transport of RPW).
 - Total very high - high hazard waste volumes – **165,000 cubic metres** (Source: EPA Waste Transport Certificates –TML, Total Volume).
 - Total very high - high hazard waste consignments (no. of transactions) – **33,000** (Source: Deloitte estimate based on estimate 5 cubic metres per consignment).
- **Consigner (transaction) cost assumptions**
 - % waste businesses that choose become accredited consigners (i.e. self-consigners) – **38%** (Source: Deloitte survey).
 - % of waste businesses that would use accredited consigners – 62% (Source: Deloitte survey).
 - Cost of transaction and tracking controls (third party consigner) per consignment - **\$300** (Source: Deloitte survey). Wastes handled by an accredited consigner are assumed to be relatively more complex, leading to higher average costs (per consignment).
 - Cost of transaction and tracking controls (self-consigner) per consignment - **\$100** (Source: Deloitte estimate based on discussion with DELWP and EPA). Self-consigned wastes are assumed to be relatively simpler to consign, leading to lower average costs (per consignment).
 - Costs of becoming an accredited consigner per business (self-consigner) - **\$20,000** (Source: Deloitte survey).
- **Transport cost assumptions**

- No. of industrial waste vehicles – **3,000** (Source: EPA permissioning cohort poster).
- No. of industrial waste drivers – **4,500** (Source: Deloitte estimate based on discussion with EPA).
- % of vehicles requiring modification permits – **12.5%** (Source: EPA based on current PIW waste codes that would likely require a permit (b100, e100, g100, r100)).
- Costs of a modification vehicle permit (including time costs to obtain permit) - **\$200** (Source: Deloitte estimate based on discussion with EPA).
- Costs of obtaining a vehicle registration - **\$50** (Source: Deloitte estimate, 1 hour per registration at \$50 per hour average Victorian hourly wage plus on-costs).
- Costs of obtaining a driver permission (Option 3 only) - **\$800** (Source: Deloitte estimate based on discussion with EPA).
- **Costs to government**
 - EPA cost in accrediting consigners per accreditation - **\$1,000** (Source: Deloitte estimate based on discussion with EPA)

Benefits

The reportable priority waste duties will encourage adequate information on waste properties and management requirements to be collected and passed down the chain of custody. These controls contribute to improving waste management in Victoria, particularly addressing the issues of misinformation which leads to waste mismanagement. This proposed accredited consigner role will reduce administrative burden on waste producers as accredited consigners can take on much of this burden on behalf of those unfamiliar with the regulatory process. The provision of this role will also encourage compliance where mismanagement of waste is due to a lack of knowledge of the wastes and/or proper waste management process by the producer. The proposed prescribed role legitimises what is already happening in practice within the waste industry but gives EPA oversight on who is providing this service.

Quantification of benefits is difficult as well as attribution of these benefits to reportable priority waste cohort and transport options. The following base costs of waste mismanagement in Victoria do provide some level of comparison in the analysis.

- \$105 million per year from stockpile fires.
- \$58 million per year in annual clean-up costs of abandoned waste sites.
- \$30 million per year on clean-up costs and lost landfills levy revenue due to illegal dumping.

9.9.2.2 Effectiveness

Cohort options

Option 3 has the highest effectiveness score due to its wider scope of wastes and potential contribution to reducing other issues including stockpiling and illegal dumping – in particular from contaminated soils material and plastics. Option 3 is given a score of +6 relative to the Base Case.

Option 2a and 2b score the lowest on this criteria due to smaller coverage of waste types prone to mismanagement, and relies more heavily on the GED for waste types outside of those that are most hazardous. Options 2a and 2b are given scores of +1 and +2, respectively.

In terms of coverage of wastes, Option 1 has a moderate coverage of wastes (relative to the other options). Option 1 is given a score of +4 relative to the Base Case.

Transport options

The use of accredited consigners is considered to be the most effective instrument in meeting the objectives of priority waste controls.

Option 1 provides the most incentive to use accredited consigners given it is mandatory and therefore scores well on effectiveness. A score of +3 is given relative to the Base Case.

Option 2 and 3, however, also give waste generators the option to use an accredited consigner or undertake transaction duties themselves. Option 3 is considered more effective than Option 2 as it establishes permissions on the driver rather than the vehicle, recognising that a large part of the responsibility for appropriate waste transport belongs to the driver of the vehicle. The driver permission would likely result in increased driver awareness of duties and skill in waste management. Option 2, however, is a much more practical option than Option 3, as it establishes the control on the vehicle rather than the driver. Driver permissions are considered more difficult to implement or enforce and therefore this moderates its effectiveness score. On balance, Option 2 and Option 3 are considered to be similarly effective and are given an equal score of +6 for effectiveness. From a cost perspective, Option 2 and Option 3 are also similar and therefore given an equal score of -4. It is noted, however, that Option 2 is a slightly less costly option.

Option 4 is the least effective option as it does not propose a dedicated consigner role. It is most akin to the current controls, therefore current mismanagement is likely to continue. A score of +2 is given relative to the Base Case.

9.9.2.3 Cost

The present values of costs of the combined cohort and transport options are provided in the table below.

Of the cohort options, Option 3 would have the highest regulatory cost burden on businesses and Option 2 the least. This is driven by the type of materials included in scope. The addition of plastic waste and e-waste in Option 3 considerably extends the volumes of waste captured. Again, Option 1 represents a balance between these options.

Of the transport options, Option 1 is likely to have the highest cost burden on businesses and government given the mandatory requirement for accredited consigners (although it is not costed). Option 2 and 3 would also carry a regulatory cost burden on businesses and cost on government, although the optional use of accredited consigners would mean the burden would be less than Option 1 as businesses decide what is most cost-effective. Option 3 is considered slightly more burdensome than Option 2 with the introduction of driver permissions which is more costly than vehicle permissions. Option 4 would have the least cost burden.

Table 9-11 Present value costs (\$2018/19) of reportable priority waste combined cohort and transport options

	Transport Option 1 & 1a	Transport Option 2	Transport Option 3	Transport Option 4
	Mandatory accredited consigners + vehicle permissions	Balanced - Optional accredited consigners & vehicle permission	Optional accredited consigners with introduction of a driver permission	EPA control
Cohort option 1 - Balancing risk - vehicle permits (very high - mod), transaction tracking (very high & high)				
PV costs to business relative to Base Case	See qualitative assessment	\$120,699,128	\$124,649,583	\$53,258,346
PV costs to government relative to Base Case		\$499,846	\$499,846	\$0
Present value total costs relative to		\$121,198,975	\$125,149,429	\$53,258,346

	Transport Option 1 & 1a	Transport Option 2	Transport Option 3	Transport Option 4
Base Case				
Cohort option 2a: High hazard only - vehicle permits (very high - high), transaction tracking (very high & high dumped/disappearing)				
PV costs to business relative to Base Case	See qualitative assessment	\$46,424,435	\$49,018,717	\$20,304,944
PV costs to government relative to Base Case		\$348,577	\$348,577	\$0
Present value total costs relative to Base Case		\$46,773,012	\$49,367,294	\$20,304,944
Cohort option 2b: High hazard only - vehicle permits and transaction controls (very high - high)				
PV costs to business relative to Base Case	See qualitative assessment	\$80,365,923	\$82,960,205	\$33,657,235
PV costs to government relative to Base Case		\$348,577	\$348,577	\$0
Present value total costs relative to Base Case		\$80,714,500	\$83,308,782	\$33,657,235
Cohort option 3: Balancing risk and encouraging recovery - vehicle permits (very high - mod), transaction tracking (very high & high, some mod, plastics & e-waste)				
PV costs to business relative to Base Case		\$246,478,011	\$250,428,466	\$107,174,056
PV costs to government relative to Base Case		\$1,859,077	\$1,859,077	\$0
Present value total costs relative to Base Case		\$248,337,088	\$252,287,543	\$107,174,056

9.9.3 MCA summary and preferred option

Cohort options

The MCA results below demonstrate that Option 1 has the highest overall score and is therefore the preferred option.

Table 9-12 Multi-criteria analysis for reportable priority waste cohort options

Criteria (and weight)	Cohort option 1	Cohort option 2a	Cohort option 2b	Cohort option 3
	Balancing risk - vehicle permits (very high - mod), transaction tracking (very high & high)	High hazard only - vehicle permits (very high - high), transaction tracking (very high & high that are dumped/ disappearing)	High hazard only - vehicle permits and transaction controls (very high - high)	Balancing risk and encouraging recovery - vehicle permits (very high - mod), transaction tracking (very high & high, some mod, plastics & e-waste)
Effectiveness (50%)	4	1	2	6
Cost (50%)	-3	-1	-2	-6
Total weighted score	0.5	0	0	0

Transport options

The MCA results show that transport Options 2 and 3 have equal highest overall score. The preferred option is Option 2 based on practicality of implementation.

Table 9-13 Multi-criteria analysis for reportable priority waste transport options

Criteria (and weight)	Option 1 & 1a	Option 2	Option 3	Option 4
	Mandatory accredited consigners (option 1) + vehicle permissions (Option 1a)	Balanced - Optional accredited consigners & vehicle permission	Optional accredited consigners with introduction of a driver permission	EPA control
Effectiveness (50%)	3	6	6	2
Cost (50%)	-5	-4	-4	-2
Total weighted score	-1	1	1	0

9.10 Break-even analysis for preferred options

The costs of the preferred options for each of the above four areas of waste regulation (industrial waste classification, lawful place, priority waste and reportable priority waste) are compared in this section to the costs of waste mismanagement. This analysis is combined because these areas of proposed waste regulation work together and interact as a holistic piece of regulation to achieve the benefits of improved waste management (i.e. to avoid waste mismanagement costs).

The costs of the preferred options total \$805 million over 10 years in present value terms. To generate a positive NPV, the four waste options would collectively need to achieve a 47.3% avoidance in waste mismanagement costs (i.e. stockpile fires, waste abandonment and illegal dumping calculated in Section 9.4.4). Individually this means:

- Industrial waste classification (Option 2) would need to contribute a 27% avoidance in waste mismanagement costs to generate a positive NPV
- Lawful place (Option 2) would need to contribute to 1.3% avoidance
- Priority waste (Option 1a) would need to contribute to 12% avoidance

- Reportable priority waste (cohort Option 1 and transport Option 2) would need to contribute to 7% avoidance.

Note that this estimate is based on recent mismanagement costs observed in Victoria, which may differ from waste mismanagement costs in the Base Case. These waste mismanagement costs also represent a partial picture of the true cost of waste mismanagement in Victoria, with many other mismanagement costs not able to be quantified. Therefore, EPA considers it is likely that the benefits from improved waste management will outweigh the costs of regulation.

9.11 Landfill

Landfills will continue to be part of Victoria's approach to waste management, but the potentially significant risk of harm to human health and the environment posed from landfills needs to be minimised. According to EPA's landfill register, there are currently 82 operating landfills in Victoria and over 515 that are closed, many of which require ongoing management.

Landfill planning includes selecting the most appropriate site that minimises the risks to human health and the environment. The design of a landfill must be able to ensure the protection of the environment, for example preventing contamination of groundwater by leachate as well as protect amenity by containing waste on-site and minimising odour. The operation of a landfill includes a landfill's construction and operation, including collection and management of leachate and landfill gas and ensuring adequate cover material.

This RIS considers regulatory options for landfill siting, and for clarifying technical landfill requirements related to design, construction and operation of landfills.

In identifying the areas that may require regulations, and options to address these requirements, DELWP and EPA evaluated existing landfill legislation and guidance on a clause-by-clause basis to establish their need and value under the new EP legislation. This was also informed by information collected through regular audits. The areas being considered for regulations cover the key matters a landfill operator must consider to avoid damage to the environment. These areas are:

- Landfill siting prohibitions, high hazard waste and other existing bans.
- Landfill operational controls.
- Landfill infrastructure scheduling.
- Defining categories of priority wastes for disposal and waste levy calculations.

The common criteria applied in developing options are a preference for administrative certainty, technical accuracy and enforceability.

9.11.1 Landfill siting

9.11.1.1 Options

The following options are considered in this RIS:

- **Base case:** No specific landfill requirements are prescribed.
- **Option 1:** Guidance issued under section 427 of the new EP legislation.¹⁶⁷

¹⁶⁷ Section 427 allows the Minister to make guidelines in relation to requirements and integration of the Regional Waste and Resource Recovery Implementation Plan.

- **Option 2:** Regulation prescribes that sensitive environmental areas must not be impacted by a landfill.

Due to lack of quantifiable data, a largely qualitative analysis is undertaken.

9.11.1.2 Analysis

Under the Base Case, there are no prescribed requirements for where a landfill might be sited. As noted elsewhere, harms from poor landfill management can include the following:

- Leaching of stored materials, leading to contamination of soils, surface water and groundwater.
- Landfill without appropriate engineering containment or acceptance criteria is likely to allow contaminants, such as heavy metals and persistent chemical compounds, to enter ground or surface waters.
- Odour from activities such as landfilling and open windrow composting can cause substantial distress to residents, resulting in a significant number of complaints to the EPA.
- Landfill gas that migrates into the surrounding ground and atmosphere, creating an environmental hazard and causing odours.
- Landfill gas contains other gases at low concentrations, many of which are odorous at extremely low concentrations in air and give landfill gas its characteristic smell. Many of these gases are also toxic or otherwise hazardous to health.

By prescribing restricted areas, relative to the Base Case and Option 1, Option 2 lowers the risk that a landfill will be approved in an environmentally sensitive area, which is important because of the significant harms that can be caused by poorly managed landfill sites.

Government costs associated with landfill planning will be those borne by Victoria's seven Waste and Resource Recovery Groups along with other Victorian government agencies and local governments that are involved in infrastructure planning. By specifying the restricted areas, and thus reducing the need for these entities to examine whether areas are environmentally sensitive, Option 2 is likely to reduce the costs of making and contributing to landfill planning decisions.

Industry is also likely to benefit in terms of clarifying the areas that landfills can be built, therefore reducing costs of developing applications for new landfills e.g. developing applications for areas that might be assessed as unsuitable for landfill development, or reducing the need for engaging expert advice on environment assessment.

9.11.1.3 Summary – preferred option

Option 1 has some of the same benefits as Option 2 of avoiding siting landfills in potentially environmentally sensitive areas, but with less certainty as it is non-mandatory. On the other hand, this means Option 1 provides more flexibility in the siting of landfills, potentially reducing the costs of opening a landfill or transporting to landfill. On balance, it is expected the environmental risks of siting a landfill in an environmentally sensitive area clearly outweigh the greater flexibility provided by Option 1. Therefore Option 2 is preferred to both Option 1 and the Base case.

9.11.2 Clarifying technical landfill requirements – design, construction and operation

This section address the following issues:

1. **Acceptance of the wastes to landfill.** Selected wastes, (outlined below) represent a greater-risk when taken to landfills:
 - a) **Liquid waste:** Disposal of liquid waste into landfill can exacerbate leaching of substances in landfill as it percolates through the waste. Liquid waste is also more difficult to contain than solid waste and ultimately will collect as leachate in the bottom of landfills and need to be collected and managed.

- b) **Pneumatic automotive tyres** (unless the tyres have been shredded into pieces not exceeding 250 millimetres in size measured in any dimension): Tyre stockpiles are a hazard to the Victorian community and environment, predominantly due to the risk of fire. Waste tyres are sometimes collected and stored indefinitely in large quantities as a means of avoiding the costs of proper management. The low cost of stockpiling also undercuts legitimate tyre-processing and recycling businesses, and reduces resource recovery. A number of tyre fires – in Australia and around the world – have demonstrated the risk posed by tyre stockpiles. Tyre fires are very difficult to control and generate hazardous smoke, which can cause a health risk through the inhalation of particles and chemicals.
- c) **E-waste**: As discussed in DELWP’s PIA for managing e-waste in Victoria, electronic and electrical waste, or ‘e-waste’, covers a range of items that are used and discarded at work and at home. It includes, but is not limited to, televisions, computers, mobile phones, kitchen appliances and white goods. These items can contain both hazardous and/or valuable materials, many of which can be recovered when they reach the end of their working life. It is estimated that e-waste from televisions and computers alone will grow by over 60 per cent or 85,000 tonnes over the decade to 2024. While e-waste is not one of the main waste streams generated in Australia, comprising approximately 1 per cent of the waste currently going to landfill, it is one of the fastest growing. These items contain both hazardous and valuable materials that can be recovered when they reach the end of their working life.¹⁶⁸
- d) **Used oil filters**: Given the significant amount of waste oil remaining in a drained filter (around 30 per cent by weight), used oil filters are not permitted to be disposed to any landfill. Waste oil filters have been prohibited from landfill under a general classification since 2007.¹⁶⁹ In Victoria, oil filters can be recycled by separating the oil from the metal casing and sending both the metal and oil to recyclers to be made into new products.
- e) **Large containers (>200 Litres) contaminated with hazardous residues**: The residues in these containers have a potential risk of contamination through leachate and groundwater. Large containers have been prohibited from landfill under a general classification since 2007. There is a well-established industry in Victoria that currently offers reconditioning of containers for reuse, and recycling of plastics and steel materials from clean containers that are not suitable for reconditioning.¹⁷⁰
2. **Acceptance of radioactive wastes to landfill**: Radioactive waste is waste that generates radioactivity and does so for significant periods of time. This can result in cancer, inheritable genetic disease, ageing, loss of hair, lesions and nausea. Radioactive wastes need to be kept separate from other wastes to avoid any chance of radiation exposure to people, or any pollution of the environment. Radioactive waste needs to be stored safely and securely until it can be disposed of permanently.
3. **Setting action levels for the management of landfill gas**: Landfill gas is produced in landfills as waste decomposes, and predominantly consists of methane and carbon dioxide, as well as containing a range of trace gases. If not managed correctly, landfill gas can migrate from the landfill, causing odours, contributing to climate change, and potentially posing explosion and/or asphyxiation risks if concentrations of methane or carbon dioxide build up in enclosed spaces.¹⁷¹ In 2008, the discovery of dangerous levels of landfill gas (mostly methane and carbon dioxide) in Brookland Greens estate in the south-east of Melbourne led to the

¹⁶⁸ DELWP, *Managing e-waste in Victoria*, Policy Impact Assessment, 2017, page i.

¹⁶⁹ <https://www.epa.vic.gov.au/~media/Publications/TWRG423.pdf>

¹⁷⁰ <https://www.epa.vic.gov.au/~media/Publications/TWRG422.pdf>

¹⁷¹ EPA website, available at <https://www.epa.vic.gov.au/your-environment/waste/landfills>.

- evacuation of some households in the area. Initial evidence on the effect on property values of the gas leak suggests that the value of homes within the estate would drop by 50 to 60 per cent.¹⁷²
4. **The use of landfill gas flares:** Full combustion landfill gas flaring “dispose[s] of flammable constituents safely and control[s] odour nuisance, health risks and adverse environmental impacts.”¹⁷³ Notably, combustion of landfill gas converts methane into carbon dioxide and water. Given landfill gas comprises approximately 50 percent methane, a greenhouse gas that is 25 times more potent than carbon dioxide, combustion is the preferred method to manage landfill emissions.¹⁷⁴
 5. **Setting the maximum level for the management of leachate:** Leachate is a liquid that forms when waste decomposes. If leachate is not adequately contained and removed from the landfill, it can leak into the groundwater, causing contamination. There can also be odour issues from leachate if not managed properly.¹⁷⁵ The cost of leachate to the community from well managed landfills has been estimated at less than \$1 per tonne of waste deposited.¹⁷⁶ Levels of leachate greater than 300mm risk damaging the landfill liner, which may fail to prevent leachate from entering the environment when broken. Once in the environment, leachate can cause significant and irreparable damage due to its toxicity and it is very costly to remediate contaminated soil and groundwater.
 6. **The requirement to use a weighbridge:** The benefits of requiring a weighbridge arises from the detailed waste data that is produced and reported. Weighbridges provide EPA with accurate information on waste to help it monitor and enforce waste tracking, levy and licence compliance. This information also supports other portfolio activities such as waste infrastructure planning.

9.11.2.1 Options

The following options are considered in this RIS:

- **Base case:** No specific landfill requirements are prescribed.
- **Option 1:** Regulation prescribes landfill permissions conditions as follows:
 - Radioactive substances must not be accepted for deposit at the landfill site unless—
 - the permission otherwise allows radioactive substances to be deposited at the landfill site; or
 - the substance been declared to not be radioactive material under section 4 of the *Radiation Act 2005* for the purposes of that Act;
 - All reasonable steps must be taken to avoid exceeding the landfill gas emissions levels set out in column 3 of Schedule 6 when assessed at the location corresponding to that emission level in column 2 of Schedule 6
 - The use of any landfill gas flare or thermal oxidising unit operating at the landfill site must result in the complete combustion of the landfill gas by holding the landfill gas at a temperature of at least 1000°C for a minimum of 0.3 seconds each time a flare is used
 - All reasonable steps must be taken to ensure that the depth of the leachate in a cell does not exceed 300mm above the surface of the liner unless the permission otherwise allows a higher level of leachate for the landfill cell

¹⁷² EPA, RIS for Draft Environment Protection (Industrial Waste Resource) Regulations, page 25.

¹⁷³ Scottish Environment Protection Authority ‘Guidance on Landfill Gas Flaring’ (2002) <https://www.sepa.org.uk/media/28988/guidance-on-landfill-gas-flaring.pdf> 8.

¹⁷⁴ *Typical landfill gas composition at a landfill site is 56% CH₄, 31% CO₂, 10% N, 1% O₂, 1% moisture and 1% trace species.* Scottish Environment Protection Authority ‘Guidance on Landfill Gas Flaring’ (2002) <https://www.sepa.org.uk/media/28988/guidance-on-landfill-gas-flaring.pdf> 8.

¹⁷⁵ EPA website, available at <https://www.epa.vic.gov.au/your-environment/waste/landfills>.

¹⁷⁶ Deloitte Access Economics, *Economic effects of the South Australian solid waste levy* (Report commissioned by Australian Council of Recycling, July 2015) http://www.acor.org.au/uploads/2/1/5/4/21549240/deloitte_sa_waste_levy_final_2015.pdf

- Use a weighbridge to measure the quantity of waste accepted for deposit at the licenced landfill site.
- **Option 2:** Option 1 plus additional regulation prevents EPA from issuing or granting a permission in relation to a landfill site for deposit of the following wastes:
 - Liquid waste
 - Pneumatic automotive tyres unless the tyres have been shredded into pieces not exceeding 250 millimetres in size measured in any dimension
 - E-waste, other than e-waste that is dispersed in negligible quantities in wastes not otherwise prohibited from deposit to landfill
 - Used oil filters: and Large containers (>200 Litres) contaminated with hazardous residues
 - Wastes prohibited for disposal to landfill by a national environment protection measure.

Guidance was considered as a potentially feasible option, however DELWP and EPA consider that the characteristics of this problem (e.g. high consequences, non-compliant industry) mean a non-mandatory option is not likely to be effective in addressing the risk.

EPA and DELWP considered alternative thresholds for leachate depth, however current thresholds (300mm above the surface of the liner) were considered appropriate for any landfill that is engineered to the current standard for the Landfill BPEM. Alternative conditions for leachate management would be considered in permissions for landfill cells with engineering and construction that is inconsistent with the Landfill BPEM.

9.11.2.2 Analysis

Benefits

Under the Base Case, there is no regulation of landfill. As such, businesses disposing of waste and landfill operators accepting waste will not need to comply with specific controls. They will however need to comply with the GED, which means some businesses might take action to manage the risks of activities that are the subject of proposed Regulations. Some businesses already in the industry, particularly landfill operators who have deep knowledge and experience complying with the current legislative framework, might also have existing "state of knowledge" which means that they may continue to operate with existing business practices and processes in place. However, not all duty holders would act in the same manner in response to this understanding, and new entrants to the industry may not be aware of this existing knowledge at all. The impact of this existing state of knowledge would therefore decline over time.

Given that the impacts of poor landfill management are high and long lasting, and that there is a history of non-compliance in the waste sector and poor landfill practices, it is therefore unlikely that the GED will be sufficient to minimise risk to an acceptable level.

Option 1 specifically addresses the following problems:

- **Radioactive substances:** Option 1 prohibits (or limits in some circumstances) the acceptance of radioactive substances at landfills, meaning this waste will be directed to a suitable waste management facility for treatment and storage.
- **Landfill gas emissions:** Option 1 expressly states limits on landfill gas emissions. In conjunction with landfill gas flares (below), Option 1 minimises greenhouse gases entering the atmosphere.
- **Landfill gas flares:** Option 1 is expected to reduce the risk of harm to the environment from incomplete combustion of landfill gas. This will prevent potentially explosive situations associated with subsurface gas migration. However, the dispersed nature of these benefits under Option 1 makes it incredibly difficult to quantify the benefits to the Victorian community.

- **Leachate:** Option 1 specifies limits on leachate depth, requiring landfill operators to actively manage (pump out) and reduce leachate build up and therefore lessens the risk of its escape to the environment.
- **Weighbridge:** Benefits of having a weighbridge include better management of waste, more waste diverted from landfill, and more efficient infrastructure investment.

Option 2 includes all the benefits of Option 1, but also prohibits certain prescribed wastes going to landfill.

Landfills are designed and constructed to meet technical standards proportional to the waste's hazard and potential to leach into the surrounding environment. Wastes that are accepted need to be monitored and controlled to ensure the design of the landfill is able to minimise the risk to the environment.

The prescribed activities under Option 2 are high-risk and require greater control than low-risk activities. Specifically, banning these wastes going to landfill will reduce the risk of harms (as already described) caused by these wastes:

- Liquid waste
- Pneumatic automotive tyres
- E-waste
- Used oil filters
- Large containers (>200 litres) contaminated with hazardous residues
- Wastes prohibited for disposal to landfill by a national environment protection measure simply aligns state regulation to any national measures for specific waste types.

Costs

Under the Base Case, as noted above, some businesses might have landfill management processes in place to meet the GED, regardless of whether additional regulations are established (e.g. due to existing state of knowledge). However as this is expected to decline over time, processes and practices put in place by businesses are also expected to decline; therefore costs on landfill operators, with just the GED in place, will also decline over time.

Under Option 1, a range of controls are proposed. Some will impose costs on businesses, while some provide prescription in the regulation that may reduce business costs by reducing uncertainty about how to comply with the GED. However, this can also mean that landfills face higher costs because operators cannot choose an alternate method to comply with the GED. All are expected to assist EPA monitor compliance against the GED, thus reducing EPA's costs. Specifically:

- **Radioactive substances:** Businesses will face higher costs because they cannot dispose to landfill.
- **Landfill gas emissions:** For businesses, specifying that reasonable steps must be undertaken to meet emission levels may increase their costs as they need to make sure that their landfill management is adequate. However, to some degree they already have to do this to comply with the GED. Prescription of emission levels might also reduce their costs by reducing uncertainty of what action they need to take to meet the GED.
- **Landfill gas flares:** While the cost to businesses of buying and installing a gas flare are substantial (between \$240,000 to \$280,000, and a further \$30,000 for installation), these are not costs of the regulations as the regulation does not require the operation of a landfill gas flare to manage landfill gas. It only specifies the temperature that the use of any landfill gas flares operating at a landfill site must result in. For businesses, specifying temperature requirements for gas flares may increase their costs as they need to make sure that their gas flares are meeting the standard. This may be offset by a cost reduction associated with not having to investigate and determine the specification at which to operate a gas flare. It is difficult to determine the relative size of these impacts due to lack of data.

- **Leachate:** Option 1 is expected to reduce costs for businesses associated with investigating and evaluating the most appropriate leachate level i.e. in order to comply with the GED or good business practice for operating a landfill.
- **Weighbridge:** The total cost to landfill operators to use a weighbridge is expected to be minor, as all licensed landfills in Victoria, except one, currently operate a weighbridge. This cost might increase over time as the condition of weighbridges deteriorates and landfill operators have to invest or undertake maintenance, or where there is a new landfill site. A report on waste regulation by the Centre for International Economics prepared for the NSW Environment Protection Authority (April 2014) estimated the cost of a weighbridge between \$81,000 and \$150,000. The report noted that the costs to industry will differ by the type of operation, type of waste and scale of operation.¹⁷⁷

Option 2 will increase costs for businesses disposing of the prohibited waste (relative to Option 1) because they cannot dispose to landfill and will need to find alternative waste disposal or storage options. Landfill operators may benefit from Option 2 as it reduces the risk of highly dangerous waste being disposed of at their landfill, for example mixed in with other waste so it is difficult to identify. Overall though, the costs to businesses are expected to be high. Option 2 is expected to assist EPA monitor compliance against the GED, thus reducing its costs.

9.11.2.3 Summary – preferred option

Option 1 is expected to provide a net benefit compared to the Base Case, because it will significantly reduce risks of harm to human health and the environment, without imposing significant costs on businesses. Option 1 is expected to reduce EPA's costs of compliance and enforcement.

Option 2 is preferred, however, because it includes Option 1 and by reducing the risk of high consequence wastes going to landfill it will provide for additional benefits. The costs of this option are expected to be significant but not greater than the benefits. However, the lack of quantifiable data on these problems and options means it is difficult to demonstrate the size of the net benefit.

9.12 Waste levy

The new EP legislation creates a waste levy scheme for all waste deposited at prescribed scheduled premises in Victoria and sets out the rates, rebates, exemptions and obligations relating to paying the levy. An allowable rebate may be claimed on waste, or a component of waste:

- That the liable person was permitted or authorised to receive.
- That is capable of resource recovery.
- Where the liable person can demonstrate that the waste has gone to, or will go to, a person permitted or authorised to receive that waste for the purpose of recovery to the satisfaction of EPA.
- That is not a waste prescribed as being ineligible for the purposes of claiming an allowable rebate.

Contaminated soil cannot be the subject of a claim for an allowable rebate.

The new EP legislation requires certain factors to be prescribed in order to operate the waste levy scheme. Without further prescription, the waste levy cannot operate effectively:

- What recoverable waste will be prescribed as attracting an allowable rebate.

¹⁷⁷ Final Draft Report, NSW waste regulation, Prepared for NSW Environment Protection Authority, April 2014, page 29.

- The timing and intervals at which the waste levy must be remitted, and the timing in claiming any prescribed allowable rebates.
- Information required when making a claim for allowable rebates.

Given the financial nature of the waste levy, any ambiguity on how the scheme could incentivise undesirable behaviour from licenced waste receivers such as avoiding or delaying payment.

In developing options to enable the waste levy scheme to operate effectively, EPA and DELWP considered which elements of the waste levy scheme would require further prescription in regulation, and with a high level of certainty for duty holders. Non-regulatory options were not considered, since these elements of the waste levy scheme can only be triggered through regulations.

The four matters being considered for regulation are assessed in the following sections.

9.12.1 Definition of allowable rebate

9.12.1.1 Options

Three options plus the Base Case are being considered to determine the criteria for prescribing conditions for waste to attract a rebate. These options are:

- **Base Case:** No regulations, which means the prescribed allowable rebate under the legislation would not come into effect.
- **Option 1:** Relying solely on the definition of “resource recovery” under the new EP legislation to determine what will attract a rebate. Resource recovery (excluding preparation for reuse) in relation to waste means:
 - Recycling the waste.
 - Reprocessing the waste.
 - Recovering energy or other resources from the waste.
 - Anything prescribed to be resource recovery in relation to waste - but does not include anything prescribed not to be resource recovery in relation to waste.
- **Option 2:** Prescribe the levy activities i.e. those activities that can claim a rebate (which are prescribed by referencing certain categories of permission activities that are prescribed in the proposed Regulations) and prohibiting certain waste type(s) from claiming a rebate.
- **Option 3:** Option 2, plus prescribe the criteria for which waste will attract a rebate as follows:
 - Person liable to pay waste levy has, within the relevant period¹⁷⁸, transferred the waste to a place or premises authorised to receive industrial waste for the purposes of resource recovery.

9.12.1.2 Analysis

Benefits

The community is expected to benefit substantially as a result of the waste levy system operating. Landfill levies create an incentive for waste generators to investigate ways to reduce the amount of waste they generate and dispose of to landfill. Under the Base Case, where there is no prescribed allowable rebate, this incentive does not exist, so more waste is expected to go to landfill rather than be diverted to reuse, recycling or upcycling.

Costs associated with landfill include:

- Greenhouse gas emissions and other air pollutants.
- Leaching of waste leading to contamination of soils, groundwater resources and surface water.
- Noise and odour impacts on local amenity (and reduction in house prices in the vicinity of landfill sites).

¹⁷⁸ Relevant period, in relation to the waste levy and allowable rebate, means a period of 3 months ending on 31 March, 30 June, 30 September or 31 December in any year or other period if required by a liable person's operating licence.

- Opportunity cost of higher value future uses of land, after capping and rehabilitation.

Some of the costs of landfills may be offset where renewable electricity from methane capture is generated and used to replace energy sources with higher per unit GHG emissions.¹⁷⁹ However, the estimated revenue from renewable energy generation is unlikely to offset most of the costs of landfill.

Deloitte Access Economics has previously analysed the waste levy system in South Australia and Victoria, including costing the externalities associated with waste sent to landfill.¹⁸⁰ The cost of direct externalities in Adelaide landfills was estimated to range from a relatively low dollar per tonne value to \$43 per tonne (and in some cases higher) (\$2015).

Options 1, 2 and 3 are all expected to lead to a reduction in landfill compared to the Base Case, because the rebate incentivises resource recovery. There would also be benefits as a result of increased recycling, reuse or upcycling, arising from:

- The avoided environmental impacts associated with extraction of virgin materials.
- The avoided environmental impacts from the process of manufacturing virgin materials.
- The use of recovered materials instead of virgin materials expands the production possibility frontier of society.
- The avoided environmental impacts of landfilling.

Compared to Options 1 and 2, time limits on resource recovery imposed by Option 3 are likely to maintain the integrity of the levy system (e.g. reducing the potential for behaviour such as claiming a rebate but taking a very long time to fully recover the waste) but also reduce the potential for waste stockpiles that can lead to significant harms such as fires. Without such time limits operators might be incentivised to take longer to fully recover waste because the waste recovery value is low or the operator is waiting for a higher value in future (particularly a problem with the current stockpiling problem).

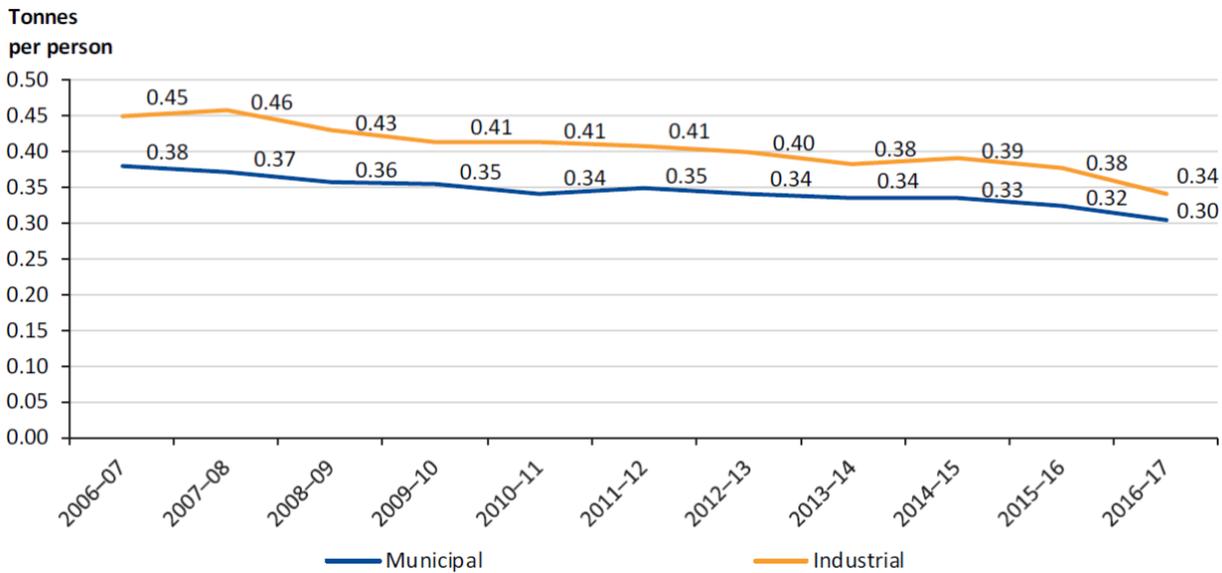
The avoided landfill externalities from greater resource recovery are in the order of \$60 per tonne (depending on individual landfill practices) (\$2015).¹⁸¹ This cost is unlikely to have changed significantly since 2015. It is difficult to estimate the impact of the levy on landfill volumes and diversion from landfill rates. Figure 9-4 shows a decrease in volume of waste to landfill over time. The landfill levy amount has significantly increased over time, from around \$2 a tonne in 1992 and under \$20 a tonne in 2009-10, to \$63.28 a tonne in 2017-18. This is likely to have had some impact on the volume of waste diverted from landfill, although there may be other contributing factors, such as community education. This means it is difficult to isolate the impact of the levy and quantify the benefit of diversion from landfill.

¹⁷⁹ Schollum 2010, *Evaluation of the social optimum for the landfill levy in WA*

¹⁸⁰ Deloitte Access Economics, *Economic effects of the South Australian solid waste levy* (Report commissioned by Australian Council of Recycling, July 2015) http://www.acor.org.au/uploads/2/1/5/4/21549240/deloitte_sa_waste_levy_final_2015.pdf

¹⁸¹ Deloitte Access Economics, *Economic effects of the South Australian solid waste levy* (Report commissioned by Australian Council of Recycling, July 2015) http://www.acor.org.au/uploads/2/1/5/4/21549240/deloitte_sa_waste_levy_final_2015.pdf

Figure 9-4 Volume of municipal and industrial waste to landfill (tonnes per person)



Source: Victorian Auditor-General's Office, Managing the Municipal and Industrial Landfill Levy, July 2018.

Costs

While landfill operators currently track waste types received at their site, Option 1 is less prescriptive, more open to interpretation and therefore likely to require more work by businesses to understand the definitions and which waste types fall into the category of recoverable. During consultation for this RIS, businesses suggested that in order to claim the rebate they would likely have to undertake more work under Option 1 to demonstrate that wastes have been recovered, compared to Options 2 and 3. This may involve additional research, testing or other work to ensure businesses have met their GED obligations. It may also involve engaging consultants to assist e.g. to categorise wastes. Option 3 is likely to impose high costs on businesses than Option 2, since it imposes more requirements on what they need to do to claim the rebate.

While difficult to quantify, EPA's costs are likely to be higher under Option 1 because it may need to spend time responding to requests for clarification and advice from businesses on what is or isn't a recoverable waste. It is also expected that there will be more time spent by EPA assessing a liable person's calculations of their waste levy liability (the amount of the waste levy payable less any prescribed allowable rebate).

9.12.1.3 Summary of preferred option

Option 3 is the preferred option.

Options 2 and 3 are preferred to Option 1 because they provide more clarity for landfill operators and will reduce the costs of determining what constitutes a recoverable waste. While Option 3 is expected to impose more costs on business than Option 2, the benefits as a result of incentivising timely action to fully recovery wastes is likely to reduce the risk of stockpiling, and also maintain the integrity of the rebate system.

9.12.2 Timing of payment of waste levy

Levy funds collected by landfills must be paid to EPA within the prescribed time or at prescribed intervals (after deducting any rebates).

This section assesses options for prescribing timing and intervals at which the waste levy must be paid.

9.12.2.1 Options

Three options are being considered:

- **Base Case:** There are no time limits, meaning the waste levy can be paid at any time, with no time limits.
- **Option 1:** Waste levy is paid at standard quarterly intervals.
- **Option 2:** A different interval regime based on objective criteria. Objective criteria could include reliability of payments (versus unreliable payments) or the legal status of the liable person (e.g. councils established under Act of parliament versus propriety limited companies that can be dissolved).
- **Option 3:** Standard quarterly remittals by default (Option 1) but discretion on EPA to determine, via operating licence conditions:
 - Longer intervals (e.g. annually); or
 - Shorter intervals (e.g. monthly such as in NSW); or
 - On a case-by-case basis according to objective criteria.

Other options have also been considered, such as variations of options set out above, but are not considered significantly different to warrant further discussion.

9.12.2.2 Analysis

The costs and benefits of different remittal periods have been examined using data gathered during consultations and from the survey. Overall, the costs to both businesses and EPA are largely administrative, though some options do reduce the risk of default, so confer a risk rated benefit.

During consultations for this RIS, one stakeholder estimated that each remittal would cost businesses two full time equivalent labour days to complete the required administrative tasks.¹⁸² At the average Victorian hourly wage rate of \$50, and assuming 7.5 hours per day, each remittal period would cost landfill businesses approximately \$750. Survey respondents provided similar estimates. One survey respondent estimated the cost of quarterly remittals to be \$1000 per remittal period, while the other estimated the cost to be \$480. These three estimates equate to an annual cost of between \$1,920 and \$4000 to operate under a system of quarterly remittals, as proposed under Option 1.

Comparatively, findings from stakeholder consultation provide an estimate of the cost of annual remittals (which could apply under Option 3) to be between \$480 and \$3000. The cost of annual remittals is expected to be lower due to efficiencies gained in the administrative processes a landfill must undertake every time the levy is remitted. A single remittal period means the landfill must only balance levies collected with those owed once a year.

However, businesses consulted with were unsure how the objective criteria regime proposed under Option 2 would impact their costs, either relative to the Base Case or relative to options 1 and 3.

For government, Option 2 may be more costly to administer, although this is not clear. As Option 2 allows more flexibility, it is also inherently more uncertain. It may lead to an increased need for Government to provide advice and clarification. Shorter remittals (which could occur across any of the options) would insure the government against the risk that businesses with ill managed cash flows are unable to pay previously collected levies when remittal is due. However, both of these costs are difficult to quantify.

¹⁸² Landfill operator, consulted 7 March 2019

9.12.2.3 Summary – preferred option

A standard quarterly remittance is likely to be the simplest to implement, the least costly for EPA due to a uniform system, and the most effective as it requires businesses to remit levies in a timely manner and therefore minimises the risk that business default on their levy obligations due to cash flow issues over a longer time frame.

However, more frequent remittal periods as required under Option 1 is expected to be more costly for landfill operators. Options 2 and 3 may reduce administrative costs for landfill operators in this regard. However, they could introduce confusion around remittal date, thus increasing business and EPA costs.

On balance, Option 3 is the preferred option, as it provides EPA with the benefits of quarterly remittals but an option to reduce administrative burden where it is effective to do so or decrease remittal intervals to protect the levy revenue.

9.12.3 Information required when making a claim for allowable rebates

The new EP legislation enables regulations to specify the information that EPA requires to assess compliance with scheme obligations including claims for allowable rebates.

9.12.3.1 Options

One option is being assessed against the Base Case. The purpose of Option 1 is to ensure only legitimate rebate claims are submitted.

- **Base Case:** There are no requirements in the new EP legislation to information required for a claim.
- **Option 1:** Translate and improve the current Calculation Guidelines into regulations. This will require the liable person to substantiate that waste has been recovered or properly consigned for recovery by having available the types of supporting evidence prescribed by the regulations. It is noted that historic difficulty in enforcing the guidelines means these Guidelines are more appropriately suited to being prescribed into regulations.

The EPA also has a Notice of Assessment power under Part 6.6 of the EP Amendment Act 2017. Under these powers EPA can, at any time, assess a liable person's calculations of the amount of waste levy payable or assess any other matter that is relevant to determining a liable person's liability to pay the waste levy. This includes prescribing information required after completing an assessment.

9.12.3.2 Analysis

During consultation, businesses observed that Option 1 is expected to be more costly than the Base Case, as the burden of proof is higher. In particular, businesses will need to take the time to ensure they understand the requirements of Option 1 and collect the correct files of evidence specified by EPA. Conversely, under the Base Case, businesses simply need to prove they are satisfied the evidence collected is sufficient to suggest the waste has been consigned for genuine recovery. At the same time, the incremental costs to businesses will not be significant as Option 1 reflects existing arrangements

Option 1 is expected to reduce costs for EPA, relative to the Base Case. This is because the regulations may reduce the number of notices of assessment EPA needs to issue. Option 1 is likely to have lower costs due to the more consistent and comprehensive information it provides.

Option 1 has benefits relative to the Base Case in terms of reducing false and fraudulent claims, thus protecting the integrity of the regime. Option 1 is likely to be more effective.

9.12.3.3 Summary - preferred option

On balance, Option 1 is recommended as it is likely to be more effective than the Base Case in protecting the integrity of the regime, and incremental costs over the current arrangements are unlikely to be significant.

9.12.4 Timing of claiming prescribed allowable rebate

Under the new EP legislation, a liable person must calculate the amount of the waste levy payable, after deducting any prescribed allowable rebates, and then pay the remaining positive amount to EPA within the

prescribed time or at prescribed intervals. However the new EP legislation is silent on whether rebates can be submitted after remitting the levy.

9.12.4.1 Options

The following options have been considered:

- **Base Case:** There are no time limits, meaning claims for the levy rebate can be submitted indefinitely.
- **Option 1.** The claim must be made within the same quarterly period for which the waste was transferred to a place or premises that was authorised to receive the industrial waste for the purposes of resource recovery, and the waste must be transferred to the premises no more than 3 months after it was deposited.
- **Option 2.** The claim must be made within 12 months of being transferred to a place or premises that was authorised to receive the industrial waste for the purposes of resource recovery

9.12.4.2 Analysis

Benefits

Relative to the Base Case, each of the proposed options will encourage resource recovery by landfill operators, which will benefit the community, whilst discouraging stockpiling for unreasonable periods of time and putting the waste at risk of fires.

The longer the period the greater the incentive to stockpile, thus increasing the risk of harms to the community.

Costs

No time or other limits (Base Case) would be the cheapest option for businesses to operate under as they could claim the rebate at any point. Compared to the Base Case, minimal administrative costs are expected, and would relate to preparation of a claim for the rebate. One landfill operator estimated that each rebate claim period would cost two full time equivalent days in administrative time. This equates to \$750, at the average Victorian hourly wage (including on-costs and overheads) of \$50 and 7.5 hours per day.¹⁸³ The actual annual cost incurred by businesses would depend on how frequently the rebate is claimed.

Based on the above time estimates, Option 1 is anticipated to cost landfill businesses \$3,000 annually to claim the rebate where the industrial waste is transferred to a place for the purposes of resource recovery each quarter. These costs are based on the estimates from one landfill operator.

Option 2 is anticipated to cost landfill businesses \$750 annually compared to the Base Case.

Costs to government relate to administering the rebate. These costs are unlikely to differ significantly across the two options.

9.12.4.3 Summary – preferred option

On balance, Option 1 is the preferred option because it is expected to minimise the risk of stockpiling, which would impose a risk on the community.

¹⁸³ Landfill operator, consulted on 5 March 2019

10 Litter

This chapter assesses proposed Regulations to incorporate offences for depositing material that may become litter, and damaging litter receptacles.

Key points:

- Litter is a significant problem that is currently addressed through a range of provisions in the EP Act 1970.
- Litter is a nuisance for households, businesses, and the community, and can result in environmental harm, particularly if litter ends up in waterways.
- The GED and new EP legislation are, collectively, likely to address a significant portion of the overall problem of litter in Victoria. However, some residual risk remains in relation to the risks of harm to human health and the environment caused by litter, as the new EP legislation does not provide controls relating to:
 - Preventing the creation of litter, through controls on materials likely to become litter, such as unsolicited material intended for delivery to private premises, leaflets placed on vehicles and bill posting.
 - Damage to litter receptacles.
- While these are not common offences, anecdotal evidence collected from local councils via consultation for this RIS suggests that existing laws under the EP Act 1970 have proven, on occasions, to be effective in (1) deterring individuals from depositing materials that may become litter, (2) recovering clean-up costs that would otherwise be incurred by taxpayers/ratepayers, and (3) compelling those responsible to clean up items that have (or may become) litter to avoid a penalty.
- The preferred option to address this residual risk is to incorporate offences for depositing material that may become litter, and for damaging litter receptacles.
- Introducing these offences in regulations will not pose a significant extra cost or burden on enforcement authorities, but will maintain the existing suite of offences that litter authorities can use.

10.1 Background

Unlawful depositing of litter (which is defined by the EP Amendment Act 2018 as a quantity of waste that does not exceed 50 litres) is a highly visible problem that impacts the environment and the community.

10.2 Current legislative and regulatory framework

The EP Act 1970 includes a range of provisions relating to litter and material that may become litter. These include:

- Section 45E - Deposit of litter generally
- Section 45F - Aggravated littering
- Section 45G - Owners, drivers etc. of vehicles from which litter deposited liable for littering
- Section 45L - Unsolicited documents must be put in mailboxes etc.
- Section 45M - Advertising material not to be deposited in certain mailboxes
- Section 45N - Leaflets etc. not to be placed on vehicles
- Section 45O - Bill posting not to occur without consent
- Section 45P - Advertiser must disclose name of distributor
- Section 45Q - Distributor must disclose name of depositor
- Section 45R - Person who commissions document must ensure that it does not become litter

- Section 45T - Offence to deface or set fire to public litter receptacles
- Section 45U - Offences concerning the loading of vehicles.

The EP Act 1970 also defines *litter authorities* and *litter enforcement officers*. *Litter authorities* include:

- EPA.
- Any government department.
- Any municipal council.
- Any protection agency.
- Any body declared by Order of the Governor in Council under section 45C to be a litter authority.

Litter enforcement officers include:

- Authorised EPA officers.
- In relation to any land or waters in a council's municipal district, an officer of the council appointed by the council as a litter enforcement officer.
- An officer of the litter authority appointed by it as a litter enforcement officer.
- A member of the police force.
- In relation to any bus, tram, watercraft, rail vehicle or aircraft that is being used for a public purpose, a person appointed as a litter enforcement officer by the litter authority that owns or manages that vehicle.

Currently, there are no regulations relating to litter.

10.3 New EP legislation

In addition to the GED, the new legislative framework establishes litter-related offences and creates enforcement powers, including the following:

- A person must not deposit litter (including from vehicles).¹⁸⁴
- Litter enforcement officers and a court have the power to request people to remove waste.
- EPA or a litter enforcement officer may issue waste abatement notices that require a person to take actions to mitigate the impact of waste or alter their activities.
- People witnessing an offence can report it.
- It is an offence to supply false or misleading information.

10.4 Nature and extent of problem

10.4.1 Residual risk

As noted above, the GED and new EP legislation are, collectively, likely to address a significant portion of the overall problem of litter in Victoria. However, some residual risk remains in relation to the risks of harm to human health and the environment caused by litter, as the new EP legislation does not provide controls relating to:

- Preventing material from becoming litter.
- Damage to litter receptacles.

Materials that may become litter include:

- Unsolicited material intended for delivery to private premises (e.g. junk mail).

¹⁸⁴ See Chapter 136 for an assessment of proposed Regulations regarding discharges of waste from vessels.

- Advertising material put in letterboxes contrary to private notices advising unsolicited material should not be delivered (no junk mail signs).
- Leaflets placed on vehicles.
- Bill posting.
- Material that is not properly secured in a vehicle (including trailers).

While the GED has the capacity to address material that may become litter, it is not enforceable by local councils which currently have a significant role in litter enforcement. All councils are *litter authorities* and many councils employ *litter enforcement officers*. Of six local councils surveyed for this RIS, all reported that they had enforced at least one of these litter-related offences (either as warnings or infringement notices), although the offences were typically not enforced frequently. Since the impact of litter is quite localised, local councils are best placed to continue this role. Further, the GED is not enforceable against all persons - only those conducting a business or undertaking an activity - and litter may be created by individual members of the community. Therefore the problem of material that may become litter is unlikely to be addressed by the GED.

Furthermore, the new EP legislation does not deal with the risks and harms resulting from damage to litter receptacles, (e.g. setting public litter bins on fire). If litter receptacles are damaged and cannot be used by the public there is a greater risk that material will become litter. Damaging litter receptacles is currently an offence under the EP Act 1970. The frequency of occurrence is largely unknown, however it is likely that it contributes to the litter problem by limiting the options for people to dispose of their litter correctly.

To some degree, other Victorian legislation could be relied on to address the harms resulting from bill posting and damage to litter receptacles. The *Summary Offences Act 1996* contains bill posting offences (s.10) and provisions that deal with damage to litter receptacles, namely wilful damage or destruction of property (s.9), defacing property (s.10) and lighting of fires that result in destruction or damage of property (s.11). The *Summary Offences Act 1996* can be enforced by local councils, but cannot be enforced by all litter authorities (e.g. Parks Victoria, VicRoads, rail authorities and water authorities).

10.4.2 Size of problem

The findings of the National Litter Index report of 2017-18 indicates that littering in Victoria has decreased by approximately half since 2009-10.¹⁸⁵ This suggests that various programs and initiatives (such as the *Victorian Litter Strategy 2012-14*), in combination with enforcement of the litter provisions of the EP Act 1970 (including provisions relating to material that may become litter), may have been effective in reducing the prevalence and impact of littering.

Three case studies below demonstrate instances where individuals have deposited materials that may become litter, and outline the manner in which local councils have addressed these problems under the EP Act 1970.¹⁸⁶

Case Study – Event flyers on vehicles in Shepparton

In March 2014, promoters for an event in Shepparton placed flyers advertising the event on vehicles within the municipality without permits or permission. Greater Shepparton City Council was alerted to this by a ratepayer who received a flyer on their car. A Litter Enforcement Officer visited the area where flyers had been distributed, collected some, and contacted the promotion company responsible. The company was instructed to remove

¹⁸⁵ Keep Australia Beautiful National Association, *National Litter Index 2017-2018, Victoria Results*, available at: <https://www.sustainability.vic.gov.au/Government/Litter-and-illegal-dumping/National-Litter-Index>

¹⁸⁶ EPA Victoria, *2014 Victoria litter enforcement toolkit*; Publication number 1142.2, December 2014. Available at: https://www.epa.vic.gov.au/~/_media/Publications/1142%202.pdf

them as soon as possible, as their placement contravened section 45N of the EP Act 1970. The promotion company arranged to have the people who placed leaflets on vehicles to remove as many as possible as soon as possible. The majority of leaflets were collected and, in doing so, compliance was achieved. In this case a penalty notice was not issued, however council benefited by making use of its powers under the EP Act 1970 to make the persons responsible for the litter clean it up rather than have council staff perform the clean-up at ratepayers' expense.

Case Study – Advertising signs in Wyndham City

Over a three-year period from 2010 to 2012, hundreds of advertising signs were placed on traffic and power poles across Wyndham City. Signs were pulled down by a Wyndham City Council Litter Prevention Officer, and the phone number was traced back to the offender who was issued with a notice under section 45ZI of the EP Act 1970. There was no response to the notice. The offender was summonsed to appear in the Magistrates' Court to answer to the offence under section 45O of the EP Act 1970 – Bill posting not to occur without consent. The defendant appeared in court, pleaded guilty, and each legal person (company and Director) was fined \$1000 and ordered to pay Council's legal costs.

Case Study – Unsecured load in Melton

In 2012, a City of Melton Litter Education and Prevention Officer encountered a pile of household rubbish during a routine patrol of a litter hotspot. The officer manually inspected the material and found various sources of identification. After gathering the evidence, the officer sent a notice under section 45ZI of the EP Act 1970 to the address found on identification. A response was received explaining that the rubbish had fallen from a vehicle when moving house. A notice under *section 45U* of the EP Act 1970 Act was then sent for the unsecured load and this infringement was paid by the offender. Council's waste services contractors removed the dumped material during their routine collection.

10.4.3 Harms and costs

Aside from case studies similar to those above, there is very limited information on the scale of harm caused by items that may become litter (and subsequently once they become litter), or the cost to the community. As a small part of the broader litter problem, there is no data available on the amount of material that may become litter in Victoria, and then the proportion of this that actually becomes litter.

As already noted, each of the six local councils surveyed for this RIS reported that they had enforced at least one of these litter-related offences, either as warnings or infringement notices. This suggests that, across the state, the incidents such as those in the case studies above represent a relatively small sample.

Beyond the nuisance factor, the depositing of items that may become litter doesn't typically generate a significant risk of harm to human health. However, depositing these items can result in environmental harm, particularly if litter ends up in waterways, and result in clean-up costs that would typically be borne by councils.

Like the broader litter problem, the residual problem is very dispersed and difficult to track.

10.5 Options

In developing options, DELWP and EPA considered how the GED would address any residual litter risks that would not be addressed by the litter offences outlined in the new EP legislation, and how the role of other entities which enforce litter offences (including councils and Victoria Police) would be impacted from the status quo under a non-regulatory approach.

The following options for addressing the problem are being assessed in this RIS:

- **Base Case - do nothing:** no regulations in addition to the litter-related offences and enforcement powers created under the new EP legislation.

- **Option 1 – Transitioning provisions from the EP Act 1970 (that were not included in the EP Amendment Act 2018) into regulations:** The “remaining” litter offences from the EP Act 1970 (i.e. those that were not incorporated into the new EP legislation) would be “transitioned” into regulations, in a more streamlined and modernised manner. Those offences (as they are defined in the EP Act 1970) are outlined below:
 - Section 45L - Unsolicited documents must be put in mailboxes etc.
 - Section 45M - Advertising material not to be deposited in certain mailboxes
 - Section 45N - Leaflets etc. not to be placed on vehicles
 - Section 45O - Bill posting not to occur without consent
 - Section 45P - Advertiser must disclose name of distributor
 - Section 45Q - Distributor must disclose name of depositor
 - Section 45R - Person who commissions document must ensure that it does not become litter
 - Section 45T - Offence to deface or set fire to public litter receptacles
 - Section 45U - Offences concerning the loading of vehicles.

Option 1 would also:

- Extend bill-posting liability (as listed above, Section 45O) to the person who authorised or commissioned the posting.
- Classify litter that is wholly or partly comprised of priority waste as dangerous litter. There is a dangerous litter offence under the new EP legislation, which has a greater penalty (60 penalty units for an individual) than the offence for depositing material that is not classified as dangerous (20 penalty units for an individual).

Under this option, it is proposed that the regulations would list litter authorities and litter enforcement officers as prescribed persons pursuant to s.347(5) of the EP Amendment Act 2018. This would allow all litter enforcement officers currently prescribed in the EP Amendment Act 2018 to enforce these regulations.

- **Option 2 - Non-regulatory options.** Option 2 considers only non-regulatory options to address the problem, including:
 - Public education campaigns and guidance – to address the harms resulting from lack of knowledge.
 - Provide better infrastructure such as clean, well-maintained bins with consideration of who uses a site and how they use it.

It is important to note that Option 1 and Option 2 are not mutually exclusive. However, in order to demonstrate the relative merits of these two approaches for the purpose of this RIS, they are assessed as separate options.

10.6 Assessment

10.6.1 Assessment method

MCA is used to assess options for this problem area because insufficient information is available to enable a fully quantitative CBA.

10.6.2 Detailed assessment

10.6.2.1 Option 1 – Transitioning provisions from the EP Act 1970 into regulations

Effectiveness

The regulations may be effective in deterring individuals from depositing materials that may become litter, recovering clean-up costs that would otherwise be incurred by taxpayers/ratepayers, and in some instances, compelling those responsible to clean up items that have (or may become) litter to avoid a penalty. Taking into account the limited data to support the analysis, a score of +6 is given compared to the Base Case.

Cost

The prescribed requirement is a very low cost burden on Litter Enforcement Authorities. Introducing these offences will add to the existing suite of offences that litter authorities can use. Based on cost information provided by local councils, there will not be a significant increase in costs. A score of -1 is given.

10.6.2.2 Option 2 - Non-regulatory options

Effectiveness

An education campaign may reduce incidence of this behaviour, although given the behaviour has commercial incentives (pamphlets, bill posting etc.), the lack of financial deterrence to undertaking the behaviour means it is less likely to be effective than Option 1.

By themselves, non-regulatory options - such as the provision of additional rubbish bins - would be unlikely to influence the behaviour of those people who deposit unsolicited materials, since the lack of availability of facilities is usually not what drives the behaviour of depositing material that may become litter.

Keeping sites clean can reduce litter by sending the message to the site users that littering is not desirable behaviour.

A score of +2 is given compared to the Base Case.

Cost

The cost of non-regulatory options will vary depending on, for example, the breadth and reach of a public education campaign. However, they are expected to be more costly to Government than Option 1 as they typically involve advertising campaigns or improvements to infrastructure. A score of -3 is given.

10.6.3 MCA summary

The results of the analysis are summarised in the table below. Option 1 is the preferred approach, reflecting that the regulations may deter people from depositing material that may become litter, and from damaging litter receptacles. Regulations also represent a relatively low-cost option, over and above the Base Case, since litter enforcement authorities already enforce these other litter offences. However, it is noted that both the benefits and costs of these regulations are relatively small compared to other regulations discussed in this RIS, and that Option 2 can complement Option 1.

Table 10-1 Summary of results – Litter MCA

Criteria (and weight)	Option 1 Transitioning provisions from the EP Act 1970 into regulations	Option 2 Non-regulatory options
Effectiveness (50%)	6	2
Cost (50%)	-1	-3
Total weighted score	2.5	-0.5

11 Plastic bags

This chapter assesses regulations being proposed to ban lightweight plastic shopping bags, including degradable, biodegradable and compostable bags.

Key points:

- Lightweight plastic shopping bags can cause harm to wildlife and ecosystems, visual amenity issues and contamination of recyclables.
- The plastic bag problem has already been significantly reduced in Victoria by the voluntary decisions of major retailers, and some smaller retailers, to cease offering lightweight plastic bags to customers. However, it is estimated that hundreds of millions of lightweight plastic bags are still given out by other retailers in Victoria each year.
- On 27 June 2018, the Victorian Government committed to ban single use, singlet style plastic shopping bags ("lightweight plastic shopping bags"). On 19 June 2019, the Victorian Government introduced to Victorian Parliament a Bill for an Act to amend the EPA Act 1970 to prohibit the provision of certain plastic bags and to prevent the provision of misleading information relating to plastic bags and to make technical and consequential amendments to the EP Amendment Act 2018 and for other purposes (the Environment Protection Amendment Bill 2019). If this Bill is enacted it will come into effect on 1 November 2019.
- The power to prescribe a ban is included in the new EP legislation, which will come into effect on 1 July 2020, however the plastic ban provisions under the new EP legislation cannot function without prescription under regulation. This means that the ban on lightweight plastic shopping bags introduced in 2019 would not continue beyond July 2020 unless regulations are made.
- The residual risk in relation to lightweight plastic bags is that, in the absence of regulations, they would continue to cause environmental harm.
- The preferred option is to ban all lightweight plastic bags with handles from sale or supply in Victoria, including degradable, biodegradable and compostable plastic bags.

11.1 Background

Plastics have positive uses in myriad applications, from lightweight packaging, computers and vehicles to insulating buildings and fridges. However, they are also problematic when they become litter across Victoria's land and waterways. Plastics use in both durable products and packaging has grown rapidly and without substantive limitation for decades, and both are now under scrutiny in Australia and globally as countries seek to improve the efficient use of resources, to increase the repair, reuse and recycling culture, and reduce the environmental impacts from production, consumption and disposal, particularly when disposal may result in litter.

Growing awareness of these problems has resulted in actions to minimise use of lightweight plastic shopping bags across the globe. Apart from NSW and Victoria, every Australian state and territory has implemented a ban on these bags.

Research shows that the use of lightweight plastic shopping bags has increased significantly in Victoria since they were first provided at retail and takeaway food outlets in the 1960s. One estimate suggests that Victorians used 1.5 billion lightweight plastic shopping bags in 2015.¹⁸⁷ However there is evidence to suggest that the overall level of plastic bag use in Victoria has declined in recent years, following recent voluntary phase-outs by some major retailers, local markets and even some towns (including Anglesea¹⁸⁸).

11.2 Current legislative and regulatory framework

The EP Act 1970 was amended in 2006 to insert regulation-making heads of power to regulate the provision of plastic shopping bags (sections 71(1)(ka) to (kg)). These heads of power enable regulations to be made to require a minimum charge to be imposed for the provision of a plastic bag (i.e. prohibiting 'free' plastic shopping bags) but they do not enable the imposition of an outright ban on plastic shopping bags.¹⁸⁹

On 27 June 2018, the Victorian Government committed to ban single use, singlet style plastic shopping bags ("lightweight plastic shopping bags").¹⁹⁰ On 19 June 2019, the Victorian Government introduced to Victorian Parliament a bill for an Act to amend the EPA Act 1970 to prohibit the provision of certain plastic bags and to prevent the provision of misleading information relating to plastic bags and to make technical and consequential amendments to the EP Amendment Act 2018 and for other purposes (the Environment Protection Amendment Bill 2019). The proposed ban is intended to come into effect on 1 November 2019.

The ban will apply to lightweight plastic shopping bags made, in whole or part, of plastic with a thickness of 35 microns or less, and include degradable, biodegradable and compostable plastic bags. The ban will be supported by a consumer and retailer education and awareness campaign.

11.3 New EP legislation

The power to prescribe a ban is included in the new EP legislation, which will come into effect on 1 July 2020. Clauses 6.10 and 6.11 of Schedule 1 of the new EP legislation allow for regulations to be made for or with respect to:

- 6.10: Regulating or prohibiting the supply or sale or plastic products, plastic packaging or plastic shopping bags.
- 6.11: Requiring supply of alternatives to plastic products, plastic packaging or plastic shopping bags.

11.4 Nature and extent of problem

11.4.1 Residual risk

The residual risk is that lightweight plastic bags would continue to cause harm to wildlife and ecosystems, visual amenity, and cause contamination of recyclables (see section 11.4.3 below), without prescription under regulation. Without such prescription, the plastic bag ban provisions under the new EP legislation cannot

¹⁸⁷ Marsden Jacob Associates (2016), *Plastic Bags Ban Options – Cost Benefit Analysis*. Report prepared for the Victorian Department of Environment, Land, Water and Planning.

¹⁸⁸ Surf Coast Shire, *Plastic Bag Free*, <<https://www.surfcoast.vic.gov.au/files/assets/public/01-about-us/council/council-meetings-and-minutes/council-agendas-amp-minutes/2016/26-april/item-3.2-appendix-2-trader-brochure-plastic-wise.pdf>>.

¹⁸⁹ The second reading speech for the bill stated that: 'This bill introduces into the *Environment Protection Act 1970* a head of power to create regulations to establish controls over the 'free' distribution of plastic bags by Victorian retailers. Under the regulations, retailers would be required to charge a minimum prescribed fee (such as a minimum of 10 cents) per plastic bag.

¹⁹⁰ Media Release: *Banning The Bag To Reduce Plastic Pollution*, Minister for Energy, Environment and Climate Change, 19 June 2019 <https://www.premier.vic.gov.au/banning-the-bag-to-reduce-plastic-pollution/>

function, meaning that the plastic bag ban which is set to take effect in Victoria in November 2019 would not continue beyond July 2020.

The plastic bag problem has already been significantly reduced in Victoria by the voluntary decisions of major retailers, and some smaller retailers, to cease offering lightweight plastic bags. Several major retailers including Bunnings, Coles and Woolworths no longer provide free lightweight plastic bags at check-out. These decisions reflect, to an extent, that in the absence of Government action, shifting community attitudes have (and may continue to) significantly influence business behaviour. This has set an important precedent for growing uptake of reusable bags and laid the foundations for a state-wide ban on lightweight plastic shopping bags.

Many retailers, including those mentioned above, now provide a range of alternative bags. Supermarkets offer bags ranging in price from \$0.15 for a reusable heavyweight plastic bag to around \$2.50 for a chiller bag. Woolworths offers the *Bag for good*TM which retails for \$0.99 and can be replaced for free if the bag ever gets damaged. Similarly, Coles offers a range of Community Bags. Woolworths and Coles state that the profits (or a portion of the profits) from the sales of these bags will be donated to community organisations.

Both Coles and Woolworths also offer bins in store for free public drop-off of soft, flexible plastics, such as plastic bags, shrink wrap and packaging film for the REDcycle program. This program was started in Victoria by RED Group (a consulting and recycling organisation) in partnership with Replas (a plastics reprocessor and manufacturer) and involves the collection of flexible plastics that are then remanufactured into garden and street furniture, road asphalt and other products. However, as only a very small percentage of used lightweight plastic bags are recovered through this program it does not significantly mitigate the problem.

Other initiatives, such as the Keep Victoria Beautiful campaign, are currently in place and aimed at litter reduction. These have helped mitigate the impacts of plastic bag litter, and are expected to continue once the new legislative framework takes effect.

11.4.2 Size of problem

While estimates of plastic bag use in Victoria can vary, Marsden Jacob Associates estimated that Victorian used 1.5 billion lightweight plastic bags and 129 million heavy weight plastic bags in 2015. Of these, approximately 9.6 million lightweight plastic bags and 1 million heavy plastic bags are estimated to have been littered.¹⁹¹ While plastic shopping bags represent only a small proportion of Victoria's litter stream (less than 1 per cent of all Victoria's litter items¹⁹²) they are pervasive in the landscape because they rip and spread easily.

Before commencing their respective voluntary initiatives to phase out lightweight plastic shopping bags in the last week of June 2018, Coles and Woolworths were estimated to account for a significant share of lightweight plastic bags used in Victoria.¹⁹³ Anecdotal evidence suggests there has been a very large reduction in the number of plastic bag being given out by the major retailers that have taken voluntary action. Furthermore, one major retailer consulted for this RIS noted that a large (and increasing) majority of customers are no longer purchasing a heavy plastic bag in store, but are opting to use reusable bags instead.

Some survey findings provided to Deloitte as part of consultation for this RIS give an indication of the size of residual problem relating to lightweight plastic bags. In a recent survey, 61% of retail store operators indicated they use a lightweight plastic bag as their primary bag given to customers. Of those that were able to provide

¹⁹¹ Marsden Jacob Associates 2016, *Plastic Bags Ban Options – Cost Benefit Analysis*. Report prepared for the Victorian Department of Environment, Land, Water and Planning.

¹⁹² 2017 National Litter Index Fact sheet, Sustainability Victoria, accessed at <https://www.sustainability.vic.gov.au/About-Us/Publications/2017-National-Litter-Index-Fact-sheet>.

¹⁹³ *Coles and Woolworths' plastic bag ban and the choices that remain* (2018) accessed at <https://www.theguardian.com/environment/2018/jun/06/coles-and-woolworths-plastic-bag-ban-and-the-choices-that-remain>.

an estimate, store operators estimated that they provided 46 bags per day on average, equating to approximately 16,790 per year per store.¹⁹⁴

11.4.3 Harms

Problems associated with lightweight plastic shopping bags include the following:

- *Harm to wildlife and ecosystems.* Plastic litter (including plastic bag litter) poses a danger to animals of different sizes and in different habitats. The propensity of plastic items to break into smaller and smaller particles means that it remains in the environment for decades, if not longer.¹⁹⁵ Turtles, seabirds and marine mammals are particularly vulnerable to ingesting or becoming tangled in lightweight plastic shopping bags as they are commonly mistaken for food, especially when the bags carry food residues, are brightly coloured or are animated by the movement of water. Microplastics, including from the degradation of plastic shopping bags, also present a threat to creatures on land and may have damaging effects similar or more problematic to those in the marine environment.
- *Visual amenity issues associated with litter.* Lightweight plastic shopping bags commonly enter the litter stream after escaping from waste and recycling facilities via the wind, or they are littered deliberately or inadvertently by individuals. Litter makes an area look dirty and uncared for, unpleasant to be in and less likely to be used and enjoyed by the community.
- *Contamination of plastic shopping bags in municipally-sourced recyclables.* Recycling flexible plastics has historically been problematic because the lightweight nature of this packaging makes it difficult to sort and separate from other materials to create a homogenous stream. Waste audits conducted by four councils in metropolitan Victoria found that flexible packaging, including plastic shopping bags, made up nine per cent of volume in recycling bins, even though it is not a recyclable material.¹⁹⁶

11.4.4 Costs

Litter from plastic bags can impose clean-up costs, costs of correctly sorting recyclable material in waste recycling facilities, and costs to the environment e.g. loss of animal life. However, no data is readily available to quantify these costs.

11.5 Options

The options developed by the EPA and DELWP considered both the Victorian Government's commitment to ban lightweight plastic bags, as well as regulations and laws introduced in other Australian jurisdictions (and the findings of subsequent reviews of those reforms).

The three options considered in this RIS to address the residual risks associated with plastic bags are:

- **Option 1 – Introducing new education and behaviour change campaigns.** Education can be core to any new regulatory intervention, but there are also examples where it can be used in isolation. One such example is the Love Food, Hate Waste campaign aimed at reducing the amount of food waste generated in households. This has gained a significant following through social media in Victoria and other Australian jurisdictions.

¹⁹⁴ Survey information provided to Deloitte by Department of Environment, Land, Water and Planning, as part of consultation for this RIS.

¹⁹⁵ Woehler, E, *Committee Hansard*, 26 February 2016, page 35, cited in Senate Environment and Communications References Committee, *Toxic Tide: the threat of marine plastic pollution in Australia*, April 2016, page 5.

¹⁹⁶ Boroondara City Council, *Introduction of Flexible Plastic Packaging in Kerbside Recycling Services*, Funded through the Metropolitan Local Government Waste and Resource Recovery Fund, 16 June 2017.

- **Option 2 – ban lightweight plastic (including degradable, biodegradable and compostable) shopping bags.** Under this option, retailers would be banned from selling or providing a customer with plastic bags with handles and a thickness of 35 microns or less to carry their purchases in. Lightweight degradable, biodegradable and compostable shopping bags made wholly or partly of plastic would also be subject to the ban. However, barrier bags (without handles) would be excluded, as would reusable polypropylene (heavier-weight) bags. A similar ban on the provision of lightweight plastic bags by retailers to customers at the point of sale has been applied in many parts of the world, including Queensland, the Australian Capital Territory and more recently, Western Australia. Bags that are an integral part of the packaging in which goods are sealed for sale (such as a bag for whole roast chicken) would be excluded from the ban.
- **Option 3 – ban all plastic shopping bags.** Under this option, all plastic shopping bags (of any thickness) designed to carry goods from retailers where they were bought would be banned, including biodegradable bags.

An option to put a tax or levy on plastic shopping bags was also considered for inclusion in this RIS. This option involves implementing a direct point-of-sale charge on some or all plastic shopping bags (either lightweight or heavy). This option has been successfully introduced in other jurisdictions. For example, in the United Kingdom, all retailers with 250 or more employees are required to charge customers five pence for lightweight plastic shopping bags. Recent academic work in the *Journal of Environmental Economics and Management* also suggests that taxes may be the most appropriate approach.¹⁹⁷ However, taxes on the provision of a plastic bags could be considered an excise, which cannot be applied by States and Territories under the Australian Constitution. Therefore, this option is not considered further.

Another option was also considered, comprising a ban on lightweight plastic along with voluntary code of practice for major retailers to reducing the use of all other plastic shopping bags. However, this option is not considered in this RIS, since it could not be implemented by government without commitment from major retailers and was not considered feasible in the near future.

11.6 Assessment

11.6.1 Assessment method

Multi-criteria analysis (MCA) is used to assess options for this problem area because insufficient information is available to allow a fully quantitative cost-benefit analysis (CBA).

The MCA below references analysis and findings of CBA work commissioned by DELWP and undertaken by Marsden Jacob Associates in 2016.¹⁹⁸ This work assessed Options 2 and 3 outlined above, plus an option to put a tax or levy on plastic shopping bags, and an additional sub-option to ban lightweight plastic and biodegradable shopping bags with major retailers agreeing to a code of practice to reduce use of heavyweight 'boutique' shopping bags. The tax option is not considered for the reasons outlined above, while the code of practice for heavier-weight 'boutique' shopping bags option is not considered feasible at this point in time - see further discussion below.

It is important to note that the MCA in this RIS draws heavily on the findings of the Marsden Jacobs Associates CBA but has not included verification of this CBA work and its findings. It should be noted that the Marsden

¹⁹⁷ See, for example:

https://www.sciencedirect.com/science/article/pii/S0095069618305291?utm_source=npr_newsletter&utm_medium=email&utm_content=20190408&utm_campaign=money&utm_term=nprnews

¹⁹⁸ Marsden Jacob Associates, *Plastic Bags Ban Options – Cost Benefit Analysis*. Report Prepared for DELWP. November 2016. Available at: <https://engage.vic.gov.au/waste/plastic-pollution>

Jacobs Associates CBA work was undertaken prior to the voluntary phase out of lightweight plastic bags by some major retailers in 2018, which means that both the costs and the benefits of the various options to ban plastic bags are likely to be overstated. The Marsden Jacobs Associates CBA also did not attempt, due to lack of data, to directly measure the cost of the impact of plastic bags on marine life and instead estimated a shadow price based on clean-up activities. This is likely to underestimate the benefits from any reduction in plastic bag use. It also did not include a benefit to the environment as a result of avoided use of resources in the production of single use plastic bags (although noting this benefit would be offset to some degree by the need to manufacture heavyweight plastic shopping bags, reusable bags and bin liners). On the other hand, the Marsden Jacobs Associate CBA did not quantify the inconvenience to consumers of not being able to use plastic bags (as distinct from the financial cost of substitutes).

The following section provides an overview of this Marsden Jacob Associates CBA work.

11.6.2 Previous CBA work undertaken

Of the two options to ban plastic bags in Victoria (Options 2 and 3 outlined in section 11.5 above), the analysis undertaken in 2016 demonstrated that Option 2 delivered the weaker net benefit. The benefits of the reduced proliferation of lightweight shopping bags were found to be largely offset by the increase in costs associated with heavyweight plastic shopping bags and bin liners. Meanwhile, banning all plastic shopping bags (Option 3) was estimated to deliver the highest net economic benefit.

Table 11-1 Major costs and benefits under a 10-year timeframe – Marsden Jacobs 2016 CBA (NPV, \$m, 2016)

Criterion	Option 2	Option 3
Benefits		
Reduced cost of lightweight and biodegradable plastic shopping bags	146.7	146.7
Avoided litter costs – land and marine	7.4	9.9
Avoided landfill cost	2.7	3.0
Reduced cost of heavyweight plastic shopping bags		138.3
Costs		
Cost of heavyweight plastic shopping bags	55.0	
Cost of reusable bags	68.5	200.3
Cost of bin liners	29.4	29.4
Government costs	0.9	1.7
Retail costs	0.5	0.6
Importer costs	0.4	1.5
Net present value	2.0	64.4
Benefit-cost ratio (ratio)	1.01	1.28

Source: Marsden Jacob Associates (2016) Note: Importantly, the report notes that the analysis may significantly understate the benefits from improved environmental outcomes.

Distributional impacts

The distributional impacts of the plastic bag ban are outlined in Table 11-2. It shows that, for Options 2 and 3, the community and environment are major beneficiaries, reflecting avoided litter, avoided landfill operating costs and an improved environment. Under Option 2, consumers incur the largest cost (since the cost of

heavyweight plastic bags will be passed on to them, either directly or indirectly). Under Option 3, consumers are major beneficiaries. Although consumers would bear the cost of purchasing reusable bags, the reduced cost of lightweight and heavyweight bags (assumed to be passed through from retailers to consumers) would outweigh this additional cost.

Table 11-2 Distribution impacts under a 10-year timeframe (NPV, \$m, 2016)

Stakeholder group	Option 2	Option 3
Victorian Government	-0.9	-1.7
Retail industry	-0.5	-0.6
Consumers	-6.2	55.3
Importers	-0.4	-1.5
Community/environment	10.0	13.0

Source: Marsden Jacob Associates (2016)

Impact of the voluntary phase-out

One of the major limitations of the 2016 study is that it pre-dates the commencement of the mid-2018 voluntary phase-out of lightweight shopping bags by Coles and Woolworths. For that reason, the assumed level of lightweight plastic bags used in the Base Case is likely to be overstated.

The 2016 study has been updated here using the following assumptions:

- Coles and Woolworths are assumed to account for 32 percent of total lightweight plastic shopping bags (prior to the phase out).¹⁹⁹
- As such, for options 2 and 3 there will be a 32 percent lower benefit.
- There will also be reduced costs for both options, since the increased usage of bin liners and heavyweight plastic bags and reusable bags will also have already been realised through the voluntary phase out.

Table 11-3 Adjusted cost-benefit analysis under a 10-year timeframe (NPV, \$m, 2016)

Criterion	Option 2	Option 3
Benefits		
Reduced cost of lightweight and biodegradable plastic shopping bags	99.8	99.8
Avoided litter costs – land and marine	5.1	7.6
Avoided landfill cost	0.9	2.1
Reduced cost of heavyweight plastic shopping bags	-	155.9
Costs		
Cost of heavyweight plastic shopping bags	37.4	

¹⁹⁹ This estimate is based on the estimated market share of those two retailers within the supermarkets and groceries sector (Source: IBISWorld 2018, *IBISWorld reveals state of the supermarkets and grocery industry*) and the 'supermarkets and groceries' sector's share of total retail turnover (Source: ABS 2007 *Retail Trade*, Cat. no. 8501.0)

Cost of reusable bags	46.6	178.4
Cost of bin liners	20	20
Adjusted net present value	1.0	67.0
Benefit-cost ratio	1.02	1.34

Source: Marsden Jacob Associates (2016), DELWP internal modelling

During consultation to inform this RIS, one retailer also suggested that recent evidence suggests the extent to which consumers would opt to purchase a heavyweight plastic bag (rather than reusable bag) is overstated in the 2016 analysis, reflecting the extent to which the voluntary supermarket phase-out has influenced consumer behaviour. According to the 2016 study, heavyweight plastic bags have a higher cost-per-use than reusable plastic bags. Due to a lack of reliable data, the modelling results have not been adjusted to reflect this, however it would be expected to increase the NPV and benefit-cost ratio (BCR) of option 2, relative to option 3.

11.6.3 Detailed assessment

Options 2 and 3 represent a significant change from the current situation in Victoria, where plastic bag use is unregulated. Under these two options, certain types of plastic bags could no longer be supplied to consumers. Given this significant shift, a third criterion, *practicality to implement*, has been introduced into the MCA below, with scores in a range from -10 to +10 measured relative to the Base Case. This criterion is weighted evenly with cost (25% each).

11.6.3.1 Effectiveness

For **Option 1**, introducing a new education and behaviour change campaigns might achieve a further reduction in plastic bag use. Education can be core to any new regulatory intervention, but there are also examples where it can be used in isolation, such as the *Love Food, Hate Waste* campaign.

However, it is unlikely that a new educational campaign would be very effective in further reducing lightweight or heavyweight plastic bag usage. With major Australian retailers recently phasing out lightweight plastic bags, a growing number of consumers are now aware of the environmental footprint of lightweight plastic shopping bags. Many consumers who are inclined to respond to an education campaign have already acted. The marginal benefit of an educational campaign is therefore likely to be relatively low. Option 1 is given a score of +2.

For **Option 2**, a lightweight plastic bag ban would be effective in reducing the volume of lightweight plastic bags that end up in landfill or as litter. Compared with Option 3 it would be less effective in reducing the volume of heavyweight plastic bags, however in terms of environmental impact, the total number of plastic bags disposed of incorrectly would greatly reduce under Option 2. This option is given a score of +7.

For **Option 3**, a ban on all plastic bags would be very effective in reducing the volume of plastic bags that end up in landfill or as litter. Compared with Option 2, it would be more effective in reducing the volume, and cost, of heavyweight plastic bags. Option 3 is given a score of +10.

11.6.3.2 Cost

For **Option 1**, an educational campaign is likely to be a low-cost option. It is likely that such a cost would be largely borne by Government. Option 1 is given a score of -3.

In the previous CBA, as outlined above, the cost of **Option 2** is estimated to be the lower of the two plastic bag ban options. Option 2 is given a score of -4.

As outlined in the cost-benefit analysis, the cost of **Option 3** is estimated to be higher than Option 2. Option 3 is given a score of -7.

11.6.3.3 Practicality to implement

Under **Option 1**, an education campaign would be relatively straightforward to implement. This is evidenced by the *Love Food, Hate Waste* campaign. A score of 0 is given, relative to the Base Case.

Option 2 would make Victoria's approach relatively consistent with other states and territories (other than NSW). It also requires the least change in behaviour from retailers and consumers of the two plastic bag ban options, and therefore will be more practical to implement. The voluntary phase out of plastic bags from some major retailers also means that many consumers and some retailers will already be prepared for the lightweight bag ban. A score of -2 is given.

Option 3 is the least practical of the options since it has no Australian or international precedent, and as such, would likely be met with significant pushback from the retail industry and consumers. It is also possible that a ban on all plastic bags might not be able to be successfully implemented by 2020, when the regulations are set to take effect. A score of -8 is given.

11.6.3.4 MCA summary – preferred option

The table below presents the MCA scores for each option.

Option 2, to ban lightweight plastic (including degradable, biodegradable and compostable) shopping bags, is the preferred option overall because it will be relatively effective in further reducing the number of lightweight plastic bags given out by retailers (and therefore ending up as litter and in landfill), is less costly than a full plastic bag ban and is not overly difficult to implement. This option also has a positive NPV, as outlined in Table 11-3 above.

Table 11-4 Multi criteria analysis for Options 1-3.

Criteria (and weight)	Option 1 Education campaign	Option 2 Ban lightweight plastic shopping bags	Option 3 Ban all plastic shopping bags
Effectiveness (50%)	+2	+7	+10
Cost (25%)	-3	-4	-7
Practicality to implement (25%)	0	-2	-8
Total weighted score	0.25	0.5	1.25

12 Air

This chapter outlines the problem of air pollution in Victoria and assesses regulations being proposed to address a number of residual problems in relation to certain sources of and types of air pollution, and businesses' obligation to report emissions.

Key points:

- Air pollution is the introduction of a substance, such as chemical, physical or biological agent, into the atmosphere through discharge or emission of wastes. Air pollutants can be harmful to human health and the environment, and can impact on visual amenity.
- Under the new EP legislation, the GED and other obligations (such as the duty to report pollution incidents) will apply to duty holders with regards to their air pollution. The new permissioning framework established by the new EP legislation could also allow EPA to monitor and establish conditions for producers of air pollution that fall under the framework.
- The GED, other duties and the permissioning framework are collectively likely to address a significant portion of the overall problem of air pollution in Victoria. However, some residual risk remains in relation to the significant consequences of air pollution generated by wood heaters, the emission of highly hazardous air pollutants ('Class 3 substances') and the use of methyl bromide (an ozone depleting substance). These activities require further regulatory control.
- The preferred option to address the risk from wood heaters is a compliance note to clarify GED obligations on suppliers and manufacturers of wood heaters. This compliance note will explain that operators in the wood heater industry will comply with the GED if they meet national standards in relation to efficiency and emissions levels. By explicitly making this statement, it will signal the importance of the national standards to the industry, influencing the behaviour of suppliers, manufacturers and consumers.
- The preferred option for addressing the risk from Class 3 substances is to prescribe a list of Class 3 substances in regulations, and outline the steps that holders of all licences must take in order to eliminate or minimise the emission of those substances (where applicable). Class 3 substances are carcinogenic, mutagenic, teratogenic, highly toxic or highly persistent and pose an extreme risk to human health. Emissions of Class 3 substances from premises that hold a licence present a particularly significant risk to human health.
- The preferred option for addressing the risk from methyl bromide is to prescribe requirements in regulations for handlers, suppliers and purchasers of equipment with methyl bromide, and persons who use methyl bromide for selected activities. The emission of methyl bromide (an ozone-depleting substance) contributes to the depletion of the earth's protective ozone layer. Commonwealth legislation and regulations prescribe the range of situations where ozone-depleting substances (including methyl bromide) are permitted to be used. However, due to the significant consequences to harm to the environment, further regulatory control is required to specify exactly how emissions of methyl bromide should be managed.
- In the absence of regulations, there will also be no requirement for businesses to report their air (and other forms of) pollution to the National Pollutant Inventory (NPI). The NPI tracks pollution across Australia, ensuring that the community has access to information about the emission and transfer of toxic substances which may affect them locally. The preferred option is to make it a requirement for businesses to report their emissions when emissions thresholds are exceeded, rather than to adopt a non-regulatory approach.

12.1 Background

Air pollution is the discharge or emission of a substance, such as a chemical, physical or biological agent, into the atmosphere through discharge or emission of wastes.

The majority of air pollution arises from diffuse sources, from a range of indoor and outdoor activities with no specific point of discharge (such as vehicles on roads and bushfires). A smaller but still significant amount of air pollution is emitted from point sources (such as emission stacks from factories or coal-fired power plants). Table 12-1 below details major sources of air pollution in Victoria and the type of pollutant that is discharged.

Table 12-1 Examples of major sources of air pollution and types of pollutants

Non-natural pollution source	Type of pollutant(s)
Motor vehicles and other powered transport	Carbon monoxide (CO) Nitrogen dioxide (NO ₂) Particulate matter (PM ₁₀ , PM _{2.5}) ²⁰⁰ Ozone ¹ (O ₃) Benzene, toluene, xylenes, formaldehyde Carbon dioxide (CO ₂)
Industry (including coal fired power plants, mining and waste incineration plants and thermal waste treatment plants)	Carbon dioxide (CO ₂) Carbon monoxide (CO) Nitrogen dioxide (NO ₂) Sulfur dioxide (SO ₂) Lead (Pb) Particulate matter (PM ₁₀ , PM _{2.5}) Ozone ¹ (O ₃)
Animal industries	Methane (CH ₄)
Wood heating (or solid fuel heating)	Particulate matter (PM ₁₀ , PM _{2.5}) Carbon monoxide
Planned burns	Ozone ¹ (O ₃) Particulate matter (PM ₁₀ , PM _{2.5})
Shipping	Sulfur dioxide (SO ₂)
Road dust	Particulate matter (PM ₁₀ , PM _{2.5}) Lead

Source: EPA. Note: ¹ Ground-level Ozone is not directly emitted, it is a secondary pollutant as that is formed through a chemical reaction between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of sunlight.

EPA's *Future Air Quality in Victoria* report highlights that key pollutants of concern in the future are expected to be particulate matter and ozone. In particular, particulate matter pollution is a major issue for high-density regions. Based on EPA 2006 Air Emissions Inventory, human sources account for 78 percent of particulate matter within the Port Phillip Region (Melbourne, Geelong and the Mornington Peninsula). Domestic wood

²⁰⁰ PM₁₀ is inhalable particles with diameters that are generally 10 micrometres and smaller; and PM_{2.5} is fine inhalable particles, with diameters that are generally 2.5 micrometres and smaller.

heating is a key source of particulate matter and is the most significant source during winter, followed by motor vehicles and industrial pollution. However, 93% of Victorian particulate matter emissions are naturally-occurring (for example, dust storms and fires), while human sources account for the remaining 7%.²⁰¹

Despite a recent reduction in vehicle exhaust emissions (such as carbon monoxide and nitrogen dioxide), emissions from unregulated sources are expected to increase or, at best, remain unchanged. These sources include wood heaters (solid fuel heaters), small petrol engines (used for garden maintenance, generators, etc.), and small to medium industries. Naturally-occurring sources, such as bushfires and dust storms, are likely to continue to cause major air-quality impacts, depending on weather conditions.²⁰²

From 1996 to 2005, both ozone and particulate matter breached short-term pollution standards in the Port Phillip Region on 39 days and 12 days respectively. Forecasts predict that this will continue, and potentially increase, into the 2025–34 decade.²⁰³

The variation to the WMP (Solid Fuel Heating) Policy Impact Statement (PIA)²⁰⁴ found that wood heaters are a significant contributor to air pollution. According to the PIA:

- Wood heaters will remain one of the largest contributors of non-natural sources of PM emissions over the next ten years due to the number of wood heaters already in Victorian homes.
- Solid fuel combustion (which includes wood heaters as well as open fireplaces and combustion for cooking purposes) contributes around 25 per cent of total PM_{2.5} pollution in the Port Phillip Air Quality Control Region.

12.2 Current legislative and regulatory framework

The EP Act 1970 has been the primary Act under which EPA's powers and obligations regarding Victorian air pollution sit. There are also additional policies related to air pollution, summarised in Table 12-2.

Table 12-2 Current legislative and regulatory framework – air pollution

Instrument type	Regulation/policy name	Acronym / publication number
Regulation	Environment Protection (Scheduled Premises) Regulations 2017	
Subordinate legislation	SEPP (Ambient Air Quality)	SEPP AAQ
Subordinate legislation	SEPP (Air Quality Management)	SEPP AQM
Subordinate legislation	WMP (Solid Fuel Heating)	WMP SFH
Subordinate legislation	IWMP (Protection of the Ozone Layer)	IWMP POL

²⁰¹ Environment Protection Authority Victoria, 2017, Variation to the Water Management Policy (Solid Fuel Heating): Policy Impact Statement, page 6.

²⁰² Ibid.

²⁰³ Environmental Protection Authority Victoria, 2013, Future air quality in Victoria, page 21.

²⁰⁴ Environment Protection Authority Victoria, 2017, Variation to the Water Management Policy (Solid Fuel Heating): Policy Impact Statement.

Subordinate legislation	WMP (National Pollutant Inventory)	WMP NPI
Subordinate legislation	Protocol for Environmental Management (Greenhouse gas emissions and energy efficiency in industry)	824
Subordinate legislation	Protocol for Environmental Management (Minimum control requirements for stationary sources)	829
Subordinate legislation	Protocol for Environmental Management (Mining and extractive industry)	1191
Non-statutory guidance	Recommended separation distances for industrial residual air emissions – Guideline	1518
Non-statutory guidance	Works approval application guidelines	1658

12.3 New EP legislation

There are no specific requirements in relation to air pollution in the new EP legislation. However, elements of the new EP legislation are expected to address a significant part of the overarching air pollution problem.

The GED and other obligations, such as a specific duty to notify EPA of pollution incidents, will apply to duty holders with regards to their air pollution. Some ambient air quality standards that now sit within SEPP AAQ (see Table 12-2) are expected to sit within a new statutory instrument known as an ERS (described in Appendix 1 – Environment Reference Standard). The proposed new ERS, which is expected to contain environmental values and health-based ambient air quality standards such as those contained in SEPP AAQ, will provide clear reference standards about acceptable ambient air quality which characterise the environmental values.

However the ERS will not have any direct regulatory force, unlike the proposed Regulations. The ERS is not being assessed as part of this RIS – it is subject to its own impact assessment.

The new EP legislation also introduces a permissioning framework which, like the existing framework, could enable EPA to monitor and establish conditions for generators that fall under the framework. As noted in Chapter 6, high-risk operators are required to obtain development and operating licences. These are designed to reduce air emissions through ensuring appropriate design of relevant operations (through development licences) and compliance with maximum emission requirements (through operating licences).

12.4 Nature and extent of problem

12.4.1 Residual risk

As noted above, the GED and the permissioning framework are, collectively, likely to address a significant portion of the overall problem of air pollution in Victoria. However, some residual risk remains in relation to the significant consequences of harms that could occur in three key areas:

- The use of methyl bromide
- Air pollution generated by wood heaters
- The emission of highly hazardous air pollutants ('Class 3 substances').

Furthermore, there is a residual risk of mismanagement in that businesses might not report their emissions to the National Pollutant Inventory (NPI) if not required to do so in regulations.

Specific residual risks are outlined in further detail below.

12.4.1.1 Ozone depleting substances

The emission of methyl bromide (an ozone-depleting substance) contributes to the depletion of the earth's protective ozone layer. Commonwealth legislation and regulations prescribe the range of situations where ozone-depleting substances (including methyl bromide) are permitted to be used (or prohibited from use).

However, in the case of methyl bromide, the Commonwealth legislation and regulations do not impose additional obligations regarding exactly how emissions of methyl bromide should be managed when it is used. This means there is a significant residual risk relating to the management of methyl bromide.

12.4.1.2 Manufacture and supply of wood heaters

There is a significant residual risk relating to wood heaters because they are one of the largest contributors of non-natural sources of PM emissions in Victoria (see further evidence of the problem in section 12.5 below). Relying on duty holders' knowledge to ensure compliance with the GED is unlikely to be adequate for two main reasons. Firstly, wood heater pollution represents a cumulative problem. No individual wood heater causes significant environmental harm, but across Victoria, they are a significant contributor of PM emissions, which cause harm to human health and the environment. Secondly, since duty holders are upstream from the point of emission they may fail to understand how their activities contribute to the overall ambient air quality.

12.4.1.3 Highly hazardous air pollutants (Class 3 substances)

There is a significant risk of harm associated with the emission of Class 3 substances (such as arsenic, benzene and dioxins). For example, short term exposure to high levels of dioxins (highly toxic organic pollutants from industrial processes) may result in skin lesions, such as chloracne and patchy darkening of the skin, and altered liver function. Long-term exposure is linked to impairment of the immune system, the developing nervous system, the endocrine system and reproductive functions, with some dioxins classified as carcinogens by the WHO.²⁰⁵

Risks posed by Class 3 substances will be partially addressed by the GED (and supported by existing 'state of knowledge' as discussed further in section 12.8 below) and permissions framework under the new EP legislation. However, the highly hazardous nature of these pollutants means a residual risk remains and additional specific controls are warranted.

Given the seriousness of harm that they can cause, lower level interventions, such as the provision of practical guidance, are likely to be less effective in adequately managing the risk if they do not explicitly state that a failure to comply with a standard approved by EPA constitutes an offence or breach of the GED. While providing guidance may indicate that reducing emissions is favourable, a more direct intervention will signal that these emissions *must* be eradicated or minimised.

12.4.1.4 Reporting to the NPI

In the absence of regulations, there will also be no requirement for businesses to report their air (and other forms of) pollution to the NPI. The NPI tracks pollution across Australia, ensuring that the community has access to information about the emission and transfer of toxic substances which may affect them locally. The NPI National Environment Protection Measure (NPI NEPM) provides the national framework for the development and establishment of the NPI, which is an internet database designed to provide publicly available information on the types, and amounts of certain substances, being emitted to the air, land, and water. There are currently 445 sites required to report emissions to the NPI in Victoria. Site operators are required to report their emissions of a range of pollutants annually only if those sites exceed emissions thresholds prescribed in NPI NEPM.

²⁰⁵ WHO, October 2016, Fact Sheet: Dioxins and their effects on human health, Accessed March 2019: <https://www.who.int/en/news-room/fact-sheets/detail/dioxins-and-their-effects-on-human-health>

Implementation of the NPI NEPM is the responsibility of each participating jurisdiction. EPA is responsible for implementing and enforcing the NPI NEPM in Victoria.²⁰⁶

A proportion of businesses may continue to report their emissions (either to the NPI, or individually) even if they were not required to do so, for corporate social and environmental reasons. However, it is likely that there would be greater gaps in the overall knowledge base than if they were required to do so.

12.4.2 Harms

This section, along with the discussion of costs in section 12.4.3, provides evidence about the air pollution problem in Victoria. Evidence is provided for the overarching problem, noting that the new EP legislation, through the GED and permissions framework, is expected to address a significant proportion of this overarching problem. While the proposed Regulations are intended to address only the residual risk, it is difficult to delineate and provide evidence to demonstrate the size of just this residual part of the problem.

Air pollution can have strong impacts on human health and the environment. As reported in the Commissioner for Environmental Sustainability's *Victorian State of the Environment Report 2018*:

*Good air quality is essential for human health and the environment. The links between air quality, population exposure and health are an increasing focus of research and policy development, with the greatest adverse health effects from air pollution experienced in densely populated areas that are exposed to emissions from motor vehicles, industrial facilities and domestic activities (e.g. wood heaters). Significant smoke impacts are also associated with bushfires and fuel reduction burns.*²⁰⁷

Air pollution can contribute to depletion of ozone in the stratosphere, which also poses a serious threat to human health and the environment. Stratospheric ozone screens out much of the sun's harmful ultraviolet-B radiation that has adverse health impacts including skin cancer. Chlorine and bromine react strongly with ozone in the stratosphere, where a single atom can destroy thousands of ozone molecules by chain reaction.²⁰⁸

The impact of air pollution on human health is dependent on various factors, including degree of exposure and vulnerability of the individual impacted.

Those most sensitive to air pollution include children, elderly people, unborn babies and individuals with underlying health conditions. Evidence suggests that short-term and long-term exposure to air pollution can lead to reduced lung function, respiratory infections and aggravated asthma. In extreme cases pollution can lead to premature death. Maternal exposure to pollution is associated with adverse birth outcomes, such as low birth weight, pre-term birth and small gestational age births. There is emerging evidence that pollution may contribute to diabetes and impaired neurological development in children.²⁰⁹ Recent research also demonstrates that air pollution may impact cognitive ability, particularly in the elderly.²¹⁰ Odours in the surrounding environment may also affect wellbeing and potentially health. Noxious odours can cause discomfort and may trigger various physiological symptoms, including exacerbation of underlying medical conditions and stress-induced illness.²¹¹

²⁰⁶ Australian Government, Department of the Environment and Energy, *National Pollutant Inventory*, <http://www.npi.gov.au/>

²⁰⁷ Commissioner for Environmental Sustainability Victoria's *Interim Victorian State of the Environment Report 2018*, page 11.

²⁰⁸ Environment Protection Authority Victoria, *Protection of the ozone layer*, <https://www.epa.vic.gov.au/your-environment/air/protecting-victorias-air/protection-of-the-ozone-layer>

²⁰⁹ World Health Organisation (WHO), 2018, *Ambient air pollution: Health impacts*. Accessed September 2018
<http://www.who.int/airpollution/ambient/health-impacts/en/>

²¹⁰ Zhang X., Chen X. and Zhang X., 2018, The impact of exposure to air pollution on cognitive performance, Proceedings of the National Academy of Sciences.

²¹¹ Schiffman SS. and Williams CM., 2005, Science of odor as a potential health issue, *Journal of Environmental Quality*, 34(1)

The EPA Inquiry noted that:

- In 2013, a health risk assessment of air pollution in Sydney, Melbourne, Brisbane and Perth estimated fossil fuel combustion contributed to 1,600 premature deaths a year, 1,250 visits to hospitals by children with asthma and respiratory illness and 2,500 visits to hospitals for adults with cardiovascular and respiratory disease.²¹²
- According to the OECD, estimated deaths from air pollution in Australia rose between 2005 and 2010, and now account for more deaths than the road toll.²¹³

A 2016 study by the Australian Institute of Health and Welfare estimated that air pollution contributes to the loss of over 28,000 disability-adjusted life years per annum in Australia. The majority of lost life years were attributed to cardiovascular disease.²¹⁴ Prior to this, a health risk assessment of air pollutants in four Australian capital cities²¹⁵ was conducted to inform a variation to AAQ NEPM in 2014. The analysis estimated that particulate matter across all four cities contributed to 1,590 deaths per annum in the long term and 3,730 hospitalisations per annum in the short term.²¹⁶

In its 2015 report investigating deaths attributable to the Hazelwood mine fire,²¹⁷ the Hazelwood Mine Fire Inquiry noted the '... known health consequences of breathing air contaminated with particulate matter over a prolonged period' and made two principal findings based on epidemiological reasoning and informed by statistical analysis and interpretation:

- It is likely that the Hazelwood mine fire contributed to some of the increase in deaths in the Latrobe Valley in 2014
- It would be surprising if the air pollution caused by the mine fire did not contribute to some deaths.²¹⁸

Ongoing analysis of the Hazelwood mine fire suggests that coal-mine fire related particulate matter led to an additional 6,002 medical consultations, including general, cardiovascular, respiratory and mental health services (excluding services not qualified for Medicare benefits). Furthermore, an estimated additional 2,501 cardiovascular medications, 574 respiratory medications and 1,429 mental health related medications were dispensed (excluding over-the-counter) due to particulate matter caused by the fire.²¹⁹

Air pollution can also directly affect exposed ecosystems. Harms to the environment include acidification or eutrophication²²⁰ of ecosystems, lower crop yields, bioaccumulation, and damage to plants and animals. Some

²¹² Morgan G, Broome R and Jalaludin B 2013, Summary for policy makers on the health risk assessment in air pollution in Australia, Prepared for the National Environment Protection Council.

²¹³ As cited in the EPA Inquiry Report, page 27: OECD 2014, The cost of air pollution: health impacts of road transport, Paris, page 52; Bureau of Infrastructure, Transport and Regional Economics 2010, Road deaths Australia: 2010 statistical summary, Canberra, page 2.

²¹⁴ Australian Institute of Health and Welfare, 2016, *Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011*, page 59.

²¹⁵ Melbourne, Sydney, Perth and Brisbane

²¹⁶ National Environment Protection Council, 2014, *Draft Variation to the National Environment protect (Ambient Air Quality) Measure: Impact Statement*, page 79.

²¹⁷ In February 2014 the Hazelwood mine fire burned for 45 days, spreading pollutants including particulate matter, carbon monoxide, sulfur dioxide and nitrogen dioxide over towns in the Latrobe Valley.

²¹⁸ *Hazelwood Mine Fire Inquiry Report*, 2014.

²¹⁹ Hazelwood Health Study, 2018, Hazelinks Research Summary: Use of health services and medications.

²²⁰ The excessive richness of nutrients in a body of water leading to excess growth of plants and algae.

plant and animal species are more sensitive to fluoride and sulphur dioxide than humans. Air pollution may also damage infrastructure, for example through the formation of acid rain.²²¹

12.4.3 Costs

Depending on the type and degree of harm, the costs associated with air pollution can be both short-term and long-term. Short-term costs are related to medical costs and reduced quality of life, administrative costs such as responding to odour or dust complaints, as well as amenity impacts due to haze. Potential long-term costs include reduced quality of life or loss of life and associated medical costs, cost of reduced agricultural productivity, infrastructure costs, cost to tourism, and other costs from reduced value of natural ecosystems.

A 2015 study estimated the health cost of ambient air pollution in the Greater Sydney Metropolitan Region which includes Sydney, Illawarra and the lower Hunter. This information was prepared to assist decision-making on proposals that have the potential to affect the Greater Sydney Metropolitan Region's air quality. The report shows that at the average levels of ambient particulate pollution that occurred across the Greater Sydney Metropolitan Region from 2000 to 2002, the total health costs of annual emissions of common ambient air pollutants from all sources in the GMR were conservatively estimated to be \$4.7 billion per annum in 2003 dollars (the mid-point of a low and high estimate). This is equivalent to an annual cost per capita of \$893.²²²

The PIA prepared for the variation to the WMP (Solid Fuel Heating) policy estimated quantified total health costs from PM emissions from the use of wood heaters in Victoria will be over \$8 billion from 2018 to 2028.²²³

12.5 Wood heater pollution

In November 2017, EPA released a PIA for a variation to the Waste Management Policy (Solid Fuel Heating) policy that adopts the Australian standards. The discussion below provides an overview of the case made in the PIA for policing Victorian wood heater products.²²⁴

Wood heating has long been a popular form of heating in Victoria for social, economic and environmental reasons. However, wood heaters emit particulate matter and other pollutants as a result of the combustion process of burning wood. The total emissions of particulate matter from using a wood heater are affected by both the heater's efficiency (how much wood is needed to be burnt to achieve a desired heat output) and its emission factor (the rate of emissions per kilogram of wood). A heater's efficiency and emission factor vary according to the design of the heater, and for a given heater, vary according to the type of wood used and the temperature at which it is operated.

Efficiency and particulate emission factors are generally measured at the design stage, tested under specific laboratory conditions and methods. This includes specifying the type of wood and taking a statistical average of emissions over different burn settings. A wood heater's emission levels will vary depending on the types of wood used and the condition and maintenance of the appliance.

Since the use of hardwood in home wood heating is somewhat unique to Australia, Australian wood heaters are typically built to different product specifications than those built for northern hemisphere markets. According to consultation with the Australian Home Heater Association (AHHA), imported wood heaters not built to Australian standards result in significantly higher emissions and lower efficiency. Wood heaters manufactured to meet Australian standards require testing and model development in order to be deemed suitable for use with

²²¹ Environmental Protection Agency South Australia, 2017, Understanding air quality. Accessed September 2018

https://www.epa.sa.gov.au/environmental_info/air_quality/understanding_air_quality

²²² Department of Environment and Conservation NSW, *Air Pollution Economics - Health Costs of Air Pollution in the Greater Sydney Metropolitan Region*, 2015.

²²³ Regulatory Impact Solutions, *Policy Impact assessment for the variation to the Waste Management Policy (Solid Fuel Heating)*, 2017.

²²⁴ EPA 2017 *Policy Impact Assessment: Variation to the Waste Management Policy (Solid Fuel Heating)*, pages 3-16.

Australian hardwoods. Testing and development is expensive to undertake, such that upholding high emissions standards imposes additional costs on businesses and consumers. In the absence of these standards, there would be an incentive for businesses to import inefficient and high emitting wood heaters at a lower cost.

Emissions of air pollutants contribute directly to the quality of the air. The amount of particulate matter emitted from wood heaters—at both PM₁₀ and PM_{2.5} levels—is significant. The extent to which emissions from wood heaters contribute to poor air quality is complex due to the dependency on meteorological factors such as winds, sunlight and atmospheric structure.

Solid fuel combustion contributes over 25% of human sources of particulate matter emissions in the Port Phillip region, the majority from wood heaters.²²⁵ In addition to particulate matter, wood smoke can consist of over a hundred different chemical compounds including carbon monoxide, nitrogen dioxide and some air toxins (for example benzene, formaldehyde and polycyclic aromatic hydrocarbons), which are also harmful to human health. Some components are known to be carcinogenic and chronic exposure is known to cause heart and lung disease and certain cancers. Oxides of nitrogen (NO_x), ammonia (NH₃), sulphur oxides (SO_x) and volatile organic compounds (VOCs) are also precursors to the formation of secondary particulate pollution (formed in the atmosphere through chemical reactions). In addition to health impacts, wood heaters also affect the environment, including:

- Vegetation and ecosystems: Particles carried over long distances may change the nutrient balance in aquatic environments; deplete nutrients in soil; damage sensitive forests and farm crops; and affect the diversity of ecosystems.
- Visibility and amenity: Particles scatter and absorb light and are responsible for brown haze. Poor visibility caused by particle pollution, as well as smoke odour and irritation, has a direct impact on a location for living, tourism and investment as well as reducing residents' sense of wellbeing.
- Building materials: Particle pollution can stain and damage stone and other building materials, including heritage buildings.
- Global warming: Black carbon, the main component of soot particles, is also considered to be a powerful global warming agent.

Reducing the adverse health impacts of particulate matter from wood heaters was identified as a priority issue in the National Clean Air Agreement (NCAA) established by Environment Ministers in December 2015. The NCAA Initial Workplan (2015-17) required all jurisdictions to implement the adoption of new emission and efficiency standards for new wood heaters in 2017. In Victoria, the current Waste Management Policy (Solid Fuel Heating) requires wood heaters manufactured or supplied to Victoria comply with the following Australian New Zealand Standards:

- AS/NZS 4012:2014 - Method for determination of power output and efficiency of domestic solid fuel burning appliances.
- AS/NZS 4013 - Method for Determination of Flue Gas Emission from domestic solid fuel burning appliances.

The commitment to adopt wood heater efficiency and emission standards is part of a wider national agenda to improve air quality and requires all States to participate in order to be successful. Moreover, because of the Mutual Recognition Act 1992 (Commonwealth), any wood heater that is legal to sell in Victoria may be sold in

²²⁵ EPA 2006 Air Emissions Inventory.

any other state without meeting additional requirements of those states. Since interstate consumers would be free to purchase Victorian wood heaters, the ability for any jurisdiction to enforce the national standards would be compromised if Victoria did not have national standards mandated. According to the AHHA, Victoria accounts for a significant share of wood heaters manufactured in Australia, meaning that this could have significant implications on national outcomes.

12.5.1 Options

Under the **Base Case**, the AS/NZS 4012:2014 and AS/NZS 4013 standards exist, however there is no explicit legal requirement for Victorian businesses to supply or manufacture wood heaters that comply with these standards. The GED would apply, since businesses are required to minimise risks of harm to human health and the environment from pollution arising from the design, manufacture, installation or supply of substances, plant, equipment or structures. Under the Base Case, the relevant Australian New Zealand Standards would be considered when assessing whether a supplier or manufacturer has complied with the GED, since this forms the existing state of knowledge within the industry.

Option 1 proposes a specific provision that clearly outlines the obligations on manufacturers and suppliers of wood heaters to adopt the emissions and efficiency standards outlined in AS/NZS 4012:2014 and AS/NZS 4013 in order to comply with the GED.

Option 2 provides for non-mandatory guidelines to educate manufacturers and suppliers of wood heaters to comply with AUS/NZS 4012 and AUS/NZS 4013 wood heater standards.

12.5.2 Analysis

12.5.2.1 Approach

A cost-benefit analysis has been used to determine the net benefit of Option 1. A qualitative approach has been used to assess Option 2, which is considered when determining the preferred option.

12.5.2.2 Option 1 – Prescribed standards

Costs

Costs to businesses and consumers

Based on information gathered from consultations conducted for this RIS, it is estimated that approximately 100 new wood heater products are tested in accordance with the AS/NZS standards each year, at an average cost of \$25,000 per model. The research and development (R&D) costs associated with ensuring that models meet AS/NZS standards are estimated to be \$75,000 per model. These testing and design costs, which were obtained through consultations undertaken for this RIS, are specific to meeting AS/NZS standards, meaning that they are additional to the costs that would otherwise be incurred as part of the typical design and testing process.

Of the 100 models tested annually, seven new wood heater models are assumed to be manufactured in Australia, and the remaining 93 are assumed to be designed and manufactured overseas.²²⁶ However, both the R&D and testing costs associated with meeting AUS/NZS 4012:2014 and AUS/NZS 4013 are assumed to be passed on to Australian consumers.

Victoria accounts for an estimated 26% of wood heaters sold in Australia.²²⁷ Therefore, it is assumed that 26% of the R&D and testing costs incurred by Australian consumers are incurred in Victoria. This results in a present value cost of \$17.1 million over a 10 year horizon.

²²⁶ Various sources including industry consultation and WMP Solid Fuel Heating PIA (2017)

²²⁷ EPA 2017 *Policy Impact Assessment: Variation to the Waste Management Policy (Solid Fuel Heating)*, page 32

However, given the large amount of education and advocacy for low emission wood heaters within the industry, it is assumed that 75% of suppliers and manufacturers already comply with the standards under the Base Case.²²⁸ Therefore the incremental cost to businesses of a prescribed regulation is estimated to be \$4.3 million in present value terms. It is likely that these costs would be largely passed on to consumers.

Cost to government

EPA costs to monitor compliance with standards are estimated at \$20,000 per annum, resulting in a present value cost of \$131,000 over the 10-year period.²²⁹ This cost reflects the actions of EPA compliance officers to conduct spot checks on heaters being sold, check verification documents of suppliers, check manufacturers are able to demonstrate compliance with the AS/NZS standards and investigate complaints about non-compliance.

Benefits

Benefits to community

Actions that reduce PM_{2.5} pollution result in improved health outcomes. Benefits have been estimated using the following assumptions:²³⁰

- Health costs related to PM_{2.5} are estimated to be \$180,000 per tonne of emissions in the Port Philip Air Quality Control Region (PPAQCR) and \$50,000 per tonne of emissions in the rest of Victoria (ROV).
- There are an estimated 96,902 wood heaters in PPAQCR and 142,800 wood heaters across the ROV.
- It is estimated that, each year, approximately 1% of total wood heaters are replaced with new heaters in the PPAQCR, and approximately 2.6% of wood heaters are replaced each year in ROV.
- Growth in new heaters is forecast to be low at 0.4% per annum in PPAQCR and 0.8% per annum in ROV.²³¹ The standard only captures new wood heaters being purchased in Victoria, with almost 14,000 new wood heaters forecast in PPAQCR and over 51,000 new wood heaters in ROV over the 10 year horizon.
- Wood heaters that do not meet the requirements of the standards have an emissions factor of 11.9 g/kg of wood used, compared to the 2019 emissions factor standard of 2.6 g/kg of wood.

In the absence of regulation, this analysis assumes that approximately 25% of wood heaters installed in Victoria would not comply with AS/NZS 4012 and AS/NZS 4013. Since no data is available to verify this assumption, the CBA results have been tested using alternative assumptions in the sensitivity analysis (in Table 12-4 below).

The incremental impact of wood heaters supplied in Victoria complying with AS/NZS 4012 and AS/NZS has an estimated benefit of \$11.5 million in PPAQCR and \$13.8 million in ROV from avoided emissions, in present value terms, over the ten year period. Therefore the present value of health benefits from avoided emissions is approximately \$25.3 million, accrued over the 10-year period.

There are also other benefits associated with requiring businesses to follow a standard that could not be reasonably quantified. Due to the issues resulting from the Mutual Recognition Act 1992 (Commonwealth), a required standard ensures that health risks from wood heater emissions would not be compromised in other States.

²²⁸ WMP Solid Fuel Heating PIA (2017) notes that industry recognises that national consistency of heater standards is necessary. This view was also accepted during consultation with stakeholders.

²²⁹ EPA 2017 *Policy Impact Assessment: Variation to the Waste Management Policy (Solid Fuel Heating)*, page 33.

²³⁰ Ibid.

²³¹ EPA 2017 *Policy Impact Assessment: Variation to the Waste Management Policy (Solid Fuel Heating)*, pages 3-16.

Moreover, there may be additional benefits to vegetation and ecosystems, visual amenity and global warming from improving the efficiency of solid fuel heaters and reducing particulate matter emissions. Therefore, the total present value of benefits is likely to exceed the estimated \$25.3 million from implementing prescribed standards in regulation.

CBA of option 1

Based on the analysis above, Option 1 results in a net present value of \$20.9 million and BCR of 5.8 over the 10-year period. Impacts on stakeholders are summarised in the table below. It does not include unquantified benefits of improved health outcomes. All costs have been quantified.

Table 12-3 Option 1 CBA for wood heater options (all values in present value terms, FY 2020 to 2030).

Criterion	\$ million
Benefits	
Benefits to government relative to Base Case	-
Benefits to business relative to Base Case	-
Benefits to community relative to Base Case	25.3
Present value of total benefits relative to Base Case	25.3
Costs	
Costs to government relative to Base Case	0.1
Costs to businesses and consumers relative to Base Case	4.3
Costs to community relative to Base Case	-
Present value of total costs relative to Base Case	4.3
NPV	\$20.9
BCR	5.8

Totals may not sum due to rounding.

A sensitivity analysis was also conducted on discount rates, as well as the assumed adoption of wood heater standards under the Base Case (without a prescribed regulation). The impact on the net present value is summarised in the table below. Under each scenario, the net present value remains positive.

Table 12-4 Option 1 NPV sensitivity analysis (\$m 2018)

NPV sensitivity	Adoption level without prescribed standard in regulation (Base Case)		
	Low (30%)	Mid (75%)	High (90%)
Discount rates			
Low (4%)	70.1	24.9	9.8
Mid (7%)	58.9	20.9	8.3
High (10%)	50.0	17.8	7.0

12.5.2.3 Option 2 – Non-regulatory materials

Costs

Costs to business

The incremental cost of Option 2 on businesses, relative to the Base Case, is likely to be immaterial. Under Option 2, businesses would not be required to comply with the AUS/NZS 4012 and 4013 standards. Given that AS/NZ standards are an established standard and the AHHA has been proactive in educating industry players over the past decade, businesses that would be inclined to follow the standards are likely to do so under the Base Case. Therefore, introducing non-mandatory guidelines is not expected to have a material impact on businesses, relative to the Base Case.

Benefits

Benefits to community

As reported above, a non-mandatory guideline is unlikely to materially impact compliance with the wood heater standards, thus Option 2 would not be as effective in addressing health and environmental risks from wood heating flue gas emissions.

12.5.3 Results

Based on the above analysis, Option 1 is expected to provide a net benefit of \$20.9 million relative to the Base Case, effectively reducing health risks from wood heater particulate matter emissions in Victoria. It is also likely to accrue other environmental benefits and may have wider health benefits nationally. Option 1 is also expected to generate a larger net benefit than Option 2.

Reflecting this, Option 1 is the preferred option.

12.6 Reporting pollution to the National Pollutant Inventory

The NPI tracks pollution across Australia, ensuring that the community has access to information about the emission and transfer of toxic substances to air, land and water which may affect them locally.²³² EPA is responsible for implementing and enforcing the NPI NEPM in Victoria. Currently, under the Waste Management Policy (National Pollutant Inventory), occupiers of a facility are required to provide an annual report to EPA, quantifying all emissions of selected air and water pollutants, if a threshold for a substance is exceeded during a reporting period. EPA then aggregates this data for particular substances in specific regions within Victoria and provides the information to the Commonwealth.

12.6.1 Options

Two options are considered in relation to the NPI:

- **Option 1** is to translate this existing requirement for businesses into regulations, requiring emissions data to be collected and then reported when specified emissions thresholds are exceeded.
- **Option 2** is to provide non-regulatory materials, such as an EPA position and non-mandatory guidelines, requesting businesses currently reporting their emissions to continue to report their emission to the NPI.

No variations to the NPI policy were considered, because the framework (including the indicators and thresholds) are set out in NPI NEPM, which is a national policy.

12.6.2 Analysis

An MCA approach has been adopted to determine the preferred option for reporting pollution to the NPI.

²³² Australian Government, Department of the Environment and Energy, National Pollutant Inventory, <http://www.npi.gov.au/>

Option 1 – Prescribe in regulation

12.6.2.1 Costs

Cost to businesses

Stakeholder consultation indicates that measuring and reporting emissions to the NPI costs approximately \$13,100 per site.²³³ A number of the businesses consulted indicated that they collected emissions information as a standard practice. For those businesses, the costs of NPI involved the labour time and other costs involved with compiling the relevant indicators and preparing a report for EPA. Other businesses indicated that they engaged consultants to prepare annual NPI reports. The annual cost to prepare emissions information ranged from less than \$500 to \$130,000 per site.

There are currently 445 sites required to report emissions to the NPI in Victoria. Of the businesses surveyed that indicated that they reported to the NPI, only 30% indicated that they would continue to do so if no longer required by law.²³⁴ As such, a prescribed requirement to report to the NPI would result in an additional 312 sites reporting to the NPI under Option 1. This would result in an estimated annual total cost of \$4.1 million. Option 1 is therefore estimated to result in a \$33.1 million (present value) cost burden on businesses over a 10 year period.

Costs to government

EPA also incurs costs in collecting, aggregating and reporting pollution estimates to the NPI. In 2017-18, this was estimated to be \$204,000, comprising mostly employee costs. Of this amount, the Federal Government contributed \$85,000, while the Victorian Government funded the remaining \$119,000.

12.6.2.2 Benefits

Benefits to government and community

Reporting to the NPI provides a nationally consistent framework and database for gathering air pollution data. The database is publicly available, meaning that it provides a benefit by allowing members of the community to access information about local emissions. In addition, the data can assist with research, and allow air pollution policies and targets (at both the federal and state levels) to be evaluated more accurately. NPI data can also inform policy makers in setting future standards and targets, which could ultimately protect human health and wellbeing.

Without this requirement, it is assumed that approximately 70% of the 445 sites would not report on air pollution to the NPI (based on survey responses). This would reduce the value of the NPI database, and would diminish public knowledge on Victoria's performance with regard to air pollution and air quality. It is assumed that 100% of the 445 sites that currently report, would continue to report to the NPI if required to do so. Therefore, Option 1 is likely to be effective in maintaining the value of the NPI database to Victoria and maintaining public knowledge.

12.6.2.3 MCA of option 1

A prescribed requirement to report to the NPI would enable the NPI database to continue to operate in its current capacity, and to remain a valuable source of publicly available information regarding industrial pollution in Victoria. Reflecting this, a score of +10 is given for effectiveness.

²³³ Average NPI reporting cost estimate from businesses who complete the online survey and one-on-one consultations. Estimates varied from less than \$500 to \$130,000 per site. There were 20 responses collected for this question in total.

²³⁴ Larger businesses with interstate operations are likely to have multiple sites reporting to the NPI, and are more likely to continue reporting to NPI under the Base Case under their general environmental due diligence and to keep consistency with operations in other states.

The prescribed requirement has a moderate cost burden, estimated to cost businesses (across 445 sites) \$33.1 million over 10 years in present value terms. Given that this is relatively moderate considering the large number of sites and long period of time, a score of -5 is given for cost.

Overall, Option 1 has a score of +5 due to its effectiveness in achieving desired outcomes, while maintaining a relatively low cost burden on businesses and government.

Option 2 – Non-mandatory EPA guidance to encourage businesses to report to NPI

12.6.2.4 Costs

Cost to businesses

The incremental cost burden of Option 2 on businesses is estimated to be immaterial. Under Option 2, businesses would not be required to monitor or report on their emissions to the NPI. It is estimated that 70% of businesses would not report to the NPI if it was not mandatory (based on survey responses), while 30% would continue under their internal environmental practices and duties. Given that the NPI is a well-established national database, businesses that would be inclined to continue reporting to the database are likely to do so under the Base Case. Therefore it is expected that non-mandatory guidance would be less likely to influence businesses to report to the NPI than a mandated requirement (under Option 1).

Costs to government

EPA would be likely to continue to collect and aggregate NPI data collected from businesses who voluntarily report. The cost of preparing the guidance material is expected to be minor.

12.6.2.5 Benefits

Benefits to government and community

As suggested above, without a mandatory requirement, approximately 70% of sites would not report emissions to the NPI. As such, the publicly available database of air pollution from pollution sites across Victoria would contain data from fewer sites. This would reduce public and government knowledge of Victoria’s pollution, and may potentially impact human health and environment due to inadequate government oversight and policy surrounding air pollution management.

Therefore, Option 2 is less effective in gathering comprehensive and accurate pollution data into a centralised and publicly available database.

12.6.2.6 MCA of option 2

Option 2 would be less effective than Option 1 in influencing businesses to report to the NPI. As such, the NPI would contain less pollution information and be of less value to government and the general public. Overall, a score of +1 is given for effectiveness.

Removing the prescribed requirement would reduce the cost burden on site operators that would, under Option 1, be required to operate to NPI. Therefore, a score of -1 is given for cost (relative to the Base Case).

12.6.3 Results

Based on the analysis above, Option 1 receives the highest score overall. While Option 2 imposes a lower cost burden on businesses, it is significantly less effective in achieving the desired outcomes. Option 1 is therefore the preferred option.

Table 12-5 Summary of MCA option results for reporting to the NPI

Criteria (and weight)	Option 1	Option 2
	Prescribed requirement	Non-regulatory materials

Effectiveness (50%)	10	+1
Cost (50%)	-5	-1
Total weighted score	2.5	0

12.7 Management of methyl bromide – an ozone depleting substance

Manufactured chemicals, especially manufactured halocarbon refrigerants, solvents, aerosol propellants and foam-blowing agents, are a major cause of depletion of the earth's protective ozone layer. These chemicals are collectively known as 'ozone depleting substances' (ODSs). The ozone layer protects life on earth by absorbing harmful ultraviolet-B (UV-B) radiation from the sun.

Currently in Victoria, Waste Management Policy (Protection of the Ozone Layer) (WMP POL) sets obligations on handlers, suppliers and purchasers of equipment with ozone depleting substances to use alternatives, and on users to reuse, recover or destroy the substances.

Australia is a signatory to the Montreal Protocol on Substances that Deplete the Ozone Layer, which controls the production and import of ODSs. The Commonwealth Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 and Regulations 1995 control the manufacture, import, export, use and disposal of ozone depleting substances (ODS) and synthetic greenhouse gases (SGG) to meet Australia's obligations under the Montreal Protocol. Bulk import into Australia of most ODSs (except Hydrochlorofluorocarbons [HCFCs] and methyl bromide) are banned.²³⁵

Analysis undertaken by EPA found that state-based regulations could supplement the Commonwealth framework regarding the use of methyl bromide. Methyl bromide is a fumigant used to treat pests for import and export uses and as an *in-situ* treatment for commercial strawberry runner production. Methyl bromide used for quarantine and pre-shipment (QPS) uses and non-quarantine pre-shipment (non-QPS) uses is exempted from Commonwealth legislation.

Methyl bromide is most commonly used for quarantine pre-shipment (QPS) uses. This includes fumigation treatments for imports, exports and certain commodities transported interstate. The Commonwealth legislation exempts the discharge of methyl bromide being used for QPS application and there is no requirement as to how methyl bromide is discharged and managed. In 2016, the estimated national use of methyl bromide was 693 metric tonnes for domestic, import and export uses (the estimated usage for Victoria is expected to be a portion of this total)²³⁶.

The only remaining non-QPS use of methyl bromide (designated as a critical use exemption) is for strawberry runner production in Victoria, which is granted the exemption based on localised soil characteristics and temperatures. If granted, users can discharge as much methyl bromide as the exemption allows, provided they record and report their use. Previously, exemptions were available for other uses, such as cut flowers and almonds. In 2018, 10 producers were granted a critical use exemption for methyl bromide, all in Toolangi, Victoria.

²³⁵ Source: Australian Government, Department of the Environment and Energy, *Ozone Depleting Substances*, available at: <https://www.environment.gov.au/protection/ozone/ozone-science/ozone-depleting-substances>

²³⁶ Source: Australian Government, Department of the Environment and Energy, *Quarantine and Pre-shipment uses of methyl bromide 2013-2016 and the potential for its replacement*, available at: <https://www.environment.gov.au/system/files/resources/92a045e5-5afa-4fcf-a1d7-2bd35d24927c/files/qps-uses-methyl-bromide-2013-2016.pdf>

Methyl bromide is recognised as a significant ozone-depleting substance under the Montreal Protocol. It is estimated that 30% of the present recovery of the ozone layer (globally) is due to the regulations and phase out of methyl bromide.²³⁷

EPA considers that there is an opportunity to place an obligation on QPS and non-QPS emitters to seek viable alternatives and to minimise the use of methyl bromide and to recover, reuse, recycle or destroy it to support the Commonwealth legislation.

12.7.1 Options

Under the Base Case, the GED would apply to the use of methyl bromide in the absence of further regulations. Under the Base Case, any person who does not minimise the risks of harm to human health or the environment from the emission of methyl bromide (or any other ODS), so far as reasonably practicable, could be committing an offence under the GED.

Only one option is considered to address the risk posed by methyl bromide, other than the Base Case. This option (Option 1) is to prescribe in regulation that:

- Handlers, suppliers and purchasers of equipment with methyl bromide must replace it, or eliminate or reduce emissions of methyl bromide, so far as reasonably practicable.
- Persons who use methyl bromide for selected activities must, so far as reasonably practicable, recover it and either reuse, recycle or destroy the substance or return it to the supplier for reuse, recycling, reclamation, storage or destruction.

This approach, which requires stakeholders to minimise the use of methyl bromide and dispose of it correctly, provides flexibility to producers who are permitted to use the product. An outright ban of the product would be less appropriate in this instance, since the Commonwealth Government issues exemptions for its use for QPS uses and in commercial strawberry farming.

Option 1 would be given effect via a compliance note, meaning that failure to comply with this requirement would result in a penalty being issued under the GED.

12.7.2 Analysis

12.7.2.1 Approach

Due to lack of quantifiable data for Victoria, and the relatively small size of the problem being considered, a qualitative analysis has been undertaken.

12.7.2.2 Costs

Costs to businesses

Under this Option, businesses may incur a range of costs, including:

- Establishing protocols for the handling of methyl bromide.
- Investment in plant and equipment that does not use methyl bromide.
- Installation of equipment.
- Training costs for staff who handle methyl bromide.

²³⁷ Source: ABC News 2015, *Pesticide banned worldwide still used to grow 70pc of Australian strawberries*, 30 Mar <https://www.abc.net.au/news/2015-03-29/toxic-pesticide-used-on-australian-strawberries/6354488>

Under Option 1, not all costs relating to equipment, training and protocols could be attributed to this option. A significant share of these costs may be incurred in order to meet the Commonwealth regime, or to meet industry-wide commitments and protocols.

In considering this option, it is assumed that costs to businesses (over a 10-year timeframe) will be relatively low given the availability of lower cost methods to minimise methyl bromide emissions and the likely introduction of new cost-effective recovery techniques.

Costs to government

There may be a cost for EPA to monitor compliance in relation to ODSs. However, according to EPA, this cost is predicted to be relatively small.

12.7.2.3 Benefits

Benefits to community

The primary benefit associated with Option 1 is limiting ozone layer depletion. This will reduce risks to human health and the environment by allowing the ozone layer to absorb harmful ultraviolet-B (UV-B) radiation from the sun.

12.7.2.4 Summary – preferred option

On balance, Option 1 is expected to provide benefits over and above the Base Case, by improving clarity around the obligations of duty holders under the GED, and in doing so, reducing ozone layer depletion. This option is expected to impose minimal costs relative to the Base Case. Given this, Option 1 is recommended.

12.8 Management of Class 3 substances

Class 3 substances are extremely hazardous pollutants that are carcinogenic (can cause cancer), mutagenic (changes the genetic material of an organism), teratogenic (can disturb the development of the embryo or foetus), highly toxic or highly persistent, and which may threaten the quality of the air environment and human health. Harms caused by exposure to Class 3 substances are extreme compared to other classes of substance.

Under the current legislative framework, Class 3 substances are defined in State Environment Protection Policy (Air Quality Management) (SEPP AQM). Under SEPP AQM, holders of operating licences that generate emissions of Class 3 substances must reduce those emissions to the maximum extent achievable. EPA may prohibit the emission of a Class 3 substance if it is considered to constitute a significant threat to public health.

The table below outlines all Class 3 substances with an estimate of the number of Victorian businesses that report emissions to the NPI (where data is available).

Table 12-6 Number of Victorian premises that emit Class 3 substances

Pollutant	Number of businesses in Victoria
acrolein	0
acrylonitrile	36
arsenic and compounds	222
benzene	101
beryllium and compounds	205
1,3-butadiene	11
cadmium and compounds	218
chromium VI compounds	117
1,2-dichloroethane (ethylene dichloride)	35

dioxins and furans	212
ethylene oxide	2
hydrogen cyanide	3
nickel and compounds	249
PAH (as BaP)	429
TDI (toluene-2,4-diisocyanate and toluene-2,6-diisocyanate)	5
Trichloroethylene	35
Vinyl chloride	35
alpha chlorinated toluenes and benzoyl chloride	unknown
asbestos	unknown
epichlorohydrin	unknown
MDI (Diphenylmethane diisocyanate)	unknown
Pentachlorophenol/Phosgene	unknown
Radionuclides	unknown
Respirable crystalline silica	unknown
Propylene oxide	unknown

Note: These are not exclusive. The same premises may be counted several times if it emits different chemicals.
Source: National Pollutant Inventory (accessed 11 April 2019), EPA estimates.

12.8.1 Options

Under the Base Case, the GED would still apply to all persons conducting business or an undertaking, and this would also apply to the emission of Class 3 substances. Under the Base Case, any person who does not minimise the risks of harm to human health or the environment from the emission of air pollutants, so far as reasonably practicable, would be committing an offence under the GED. However, there would be no subset of air pollutants defined as Class 3 substances, meaning that there would be no additional obligations relating to these pollutants over other air pollutants. The SEPP AQM, which currently outlines the list of Class 3 substances, will cease to have effect when the EP Act 1970 is repealed. In the Base Case, however, SEPP AQM would continue to form the 'state of knowledge' and as such, businesses would be likely to be highly aware of their obligations to minimise or eliminate the emission of Class 3 substances. This 'state of knowledge' would be considered when assessing whether a businesses or person is compliant with the GED.

As well as the GED, the permissioning framework will also be an important mechanism for minimising the risk of harm caused by the emission of Class 3 substances under the Base Case. This would require operators of industrial facilities such as chemical works, metal works and coal processing plants (that operate above a specified threshold) to obtain development licences for the construction or modification of plant or machinery, and operating licence for ongoing operation. This would allow EPA to:

- Influence the design of the new or altered operation at the design stage, in order to reduce the emission of air pollutants (including Class 3 substances).
- Set operating conditions in order to minimise the emission of Class 3 substances, and monitor compliance.

Option 1 is to prescribe a list of Class 3 substances in regulations, and outline the steps that holders of licences that emit Class 3 substances must take in order to eliminate or minimise the emission of those substances. This

would allow EPA the opportunity to have the most influence over the emission of Class 3 substances, by being applicable during the process of seeking a development or pilot licence for a facility which emits those substances. This would be enacted as a compliance note that sets out a person’s duty in relation to the GED.

This is the only option considered in detail against the Base Case. An option to prescribe Class 2 and Class 1 substances (and the required steps to minimise their emission) was also considered, however DELWP and EPA considers that these risks are adequately addressed by the GED and permissioning frameworks. The emission of these substances does not present as serious a threat to the quality of the air environment and human health.

12.8.2 Assessment

12.8.2.1 Method

Due to the lack of quantifiable data, a qualitative analysis has been undertaken. Although not quantified, it is important to note that there would be some degree of overlap between the costs and benefits identified here, and those that are quantified in the permissioning CBA (Chapter 6).

12.8.2.2 Costs

Costs to businesses

Nine of the businesses consulted as part of this RIS identified themselves as generators of Class 3 substances. Estimates of the cost incurred by those businesses to reduce emissions to the maximum extent achievable ranged from \$15,000 to \$2 million per year. This large variation reflects differences in the actions required to comply, as well as the scale of the business or its plant. The types of costs incurred include the purchase and/or operation of equipment, consultants’ fees, monitoring, record keeping and development and/or modification of an environmental improvement plan or procedural plan.

However, two-thirds of those businesses also identified themselves as EPA licence holders. For those businesses, it is possible that there are conditions in their licence regarding emission of Class 3 substances.

It is also likely that many businesses would continue to monitor and reduce emissions of Class 3 substances to the maximum extent achievable in order to meet their obligations under the GED and, given the significant risk of harm, to prevent legal action or reputational damage. Some of the monitoring and record keeping costs may also be required for businesses to meet NPI reporting obligations.

These additional costs may, at least partially, be offset by reduced costs resulting from the added certainty by prescribing Class 3 substances and outlining the obligations of generators under the GED. This may reduce costs of under-compliance, which could include reputational damage or damages paid from civil action.

Costs to government

Option 1 would be unlikely to generate significant extra costs for Government. It is unlikely to result in significant additional monitoring or compliance activities, over and above the activities that EPA would otherwise carry out for licensed activities as part of its risk-based compliance approach.

12.8.2.3 Benefits

Benefits to community

Any reduction in the emission of Class 3 substances could have significant benefits for the community. EPA has estimated the damage costs of selected Class 3 substances in the Melbourne region as ranging from \$50,000 to \$48 billion per tonne (see Table 12-7).

Table 12-7 Class 3 marginal damage cost (AUD/tonne)

Pollutant	\$/tonne
-----------	----------

Arsenic	624,745
Benzene	136,048
Cadmium	51,913
Chromium	68,024
Dioxins and Furans	48,332,700,000
PAH	2,289,538
Other HHAP	775,561

Source: EPA Regulatory Impact Statement: Proposed Environmental Protection (Scheduled Premises) Regulations 2017. Note – for full table, see Appendix 4 of this report.

12.8.2.4 Summary

Option 1 is preferred to the Base Case. It identifies the air pollutants that are deemed to present the greatest risk to human health and the environment, and clarifies duty holders' obligations with regards to preventing or minimising emissions of those pollutants. For businesses, it is likely to reduce costs of under-compliance, while for the community, it is likely to improve human health outcomes (relative to the Base Case).

13 Water

This chapter outlines the broad problem of water pollution in Victoria and assesses regulations being proposed to address the problem of discharge of waste from vessels into Victoria's water environment. Other water pollution risks that exist once the new EP legislation takes effect are addressed by proposed Regulations for the permissions framework, waste and contaminated land.

Key points:

- Water resources are of major environmental, social and economic value. This value is at risk from pollution of Victoria's water resources by human activities, including large and small industries, wastewater treatment plants, urban infrastructure, agriculture, transport, and deliberate or accidental pollution incidents.
- When the new legislative framework takes effect in July 2020, the overarching problem of water pollution will be primarily addressed by the GED and planned introduction of the ERS, which will incorporate some aspects of SEPP (Waters). SEPP will no longer be in force under the new EP legislation. Some residual risks related to water pollution will also be addressed by the proposed permissioning, contaminated land and waste regulations, which will also incorporate aspects of SEPP (Waters) (see Chapters 6, 8 and 9).
- However, a residual risk relates to the risk of harm to the environment arising from the discharge of waste into water by vessel operators. Due to gaps and wide variation in the current state of knowledge across vessel operators, duty holders are likely to be uncertain and inconsistent in their approach to complying with the new legislation. Specific regulations will provide certainty and clarity, make enforcement easier and more effective and increase compliance rates.
- The preferred option to address this residual risk is to clarify how waste from vessels must be managed and to include a fit for purpose infringeable offence for the discharge of waste from vessels into the water environment.

13.1 Guidance for reading this chapter

This chapter outlines the broad water pollution problem that exists in Victoria. However, given the dispersed nature of the activities that can cause water pollution, the problem is addressed in different parts of the legislative framework (see section 13.5.1 for further explanation). The remaining residual risk that is not addressed elsewhere in the framework is the discharge of waste from vessels. This chapter assesses the need for regulations to address this risk.

13.2 Background

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 water environments are at risk, however, from water pollution, which is the introduction through human activity of a substance through discharge or emission in water, including:

- A reservoir, tank or billabong
- An anabranch, canal, spring, swamp
- A natural or artificial channel, lake, lagoon, waterway or dam
- Tidal water, coastal water or groundwater.

These emissions or discharges can, if not appropriately managed, have adverse impacts on water quality. For example, by changing the concentrations of naturally occurring chemicals (such as nitrates, phosphates and metals); by introducing new synthetic substances and pathogens; and by changing sediment loads, flow regimes and temperature.²³⁸

Traditionally, the main water quality issues for Victoria have been salinity, turbidity²³⁹, nitrogen and phosphorus. However, as observed in the State of the Environment 2018 report, pH levels, pesticides, heavy metals and temperatures are of increasing concern in some regions.²⁴⁰

According to EPA, the most serious threats to the water environment have included:

- Alteration of natural flows
- Increasing salinity
- Eutrophication (excess nutrients such as nitrates, phosphates and metals)
- Pollution by foreign substances (such as oil, heavy metals and other chemicals)
- Stormwater pollution
- Infestation by pests
- Pathogens
- Heat.²⁴¹

Water quality is driven by a wide range of factors, including rainfall (volume and intensity), land use, catchment management policies, water flow regimes, riparian²⁴² vegetation and both point source and diffuse pollution. Thus, it is difficult to estimate the impact of water pollution on water quality. Although there are point sources of water pollution (such as industrial sites) that EPA regulates through its permissioning framework, diffuse pollution is also an issue, coming from a range of activities with no specific point of discharge. Regulatory improvements have reduced point-source water pollution, with diffuse sources, such as urban stormwater, now the most significant contributor to pollution of Melbourne's rivers, creeks and wetlands.²⁴³

13.3 Current legislative and regulatory framework

The primary regulatory mechanism for protecting Victoria's water environments from pollution is the EP Act 1970. The SEPP (Waters), which is a subordinate instrument under the EP Act 1970, provides a framework for the protection and management of water quality in Victoria. In addition to the EP Act 1970, EPA administers the *Pollution of Waters by Oils and Noxious Substances Act 1986* (POWBONS), which is supported by the Pollution of Waters by Oil and Noxious Substances Regulations 2012.

Table 13-1 summarises the legislative and regulatory framework relating to water pollution.

²³⁸ DELWP-EPA, *Regulatory Impact Statement – Proposed Environment Protection (Scheduled Premises) Regulations 2017*, page 40.

²³⁹ Turbidity is a measure of the cloudiness of water.

²⁴⁰ State of the Environment 2018 report, available at <https://www.ces.vic.gov.au/reports/state-environment-2018/water-quality>, accessed April 2019.

²⁴¹ Environmental Protection Authority Victoria, 2012, *Threats to Victoria's water environment*, Accessed September 2018:

²⁴² As defined in SEPP (Waters of Victoria) riparian means inhabiting or situated on a river or stream bank or where vegetation interacts with surface waters.

²⁴³ Commissioner for Environmental Sustainability Victoria's *Interim Victorian State of the Environment Report 2018*, page 43.

Table 13-1 Legislative and regulatory framework – water

Regulation name	Description
EPA Act 1970	The primary regulatory mechanism for protecting Victorian waters from pollution is the Environment Protection Act 1970 (the Act). The Act defines high level objectives for the protection of the environment and identifies the roles and powers of EPA in respect to environment protection.
POWBONS	The purpose of POWBONS is to protect the sea and other waters from pollution by oil and noxious substances. This Act also implements the MARPOL Convention (the International Convention for the Prevention of Pollution from Ships 1973).
Pollution of Waters by Oil and Noxious Substances Regulations 2012	The Pollution of Waters by Oil and Noxious Substances Regulations 2012 support POWBONS. The Regulations set out to whom, how and within what time frame a discharge or probable discharge of oil or an oily mixture must be notified and reported. They also prescribe the form of a ship's oil record book.
SEPP (Waters)	The new SEPP (Waters), which commenced on 19 October 2018, combined the Groundwaters of Victoria and Waters of Victoria SEPPs. It includes environmental quality objectives and indicators to measure whether beneficial uses are being protected. SEPP (Waters) identifies rules for decision makers and obligations on industry to guide the protection and management of water quality in Victoria.

POWBONS and its supporting regulations are not impacted by the new legislative framework. SEPP (Waters) will no longer be in force when the new legislative framework comes into effect (intended to commence effect on 1 July 2020). However, SEPP (Waters) will form part of the state of knowledge that will exist under the new framework (see section 3.1 for discussion of this).

13.4 New EP legislation

Specific duties and obligations in the new EP legislation that impact water include:

- The GED: a preventative duty that requires duty holders to proactively minimise risks of harm to human health and the environment from pollution and waste. It will drive improvements in management of risks by duty holders (e.g. through appropriate environmental management systems).
- Duties relating to pollution incidents: this includes a duty to restore an area affected by a pollution incident to the state it was in before the pollution incident occurred, and a specific duty to notify EPA of pollution incidents above a certain threshold.
- Permissions – see analysis in Chapter 6 for discussion of permissions that regulate activities that involve discharge of waste to water.
- Duties relating to contaminated land – see analysis in Chapter 8.
- Duties related to industrial waste, including the duty to not deposit or abandon industrial waste at a place or premises, unless the place or premises is authorised to receive industrial waste – see Chapter 9.
- Offences relating to litter and other waste, which make the unlawful deposit of litter or waste an offence. Litter is defined as waste under 50L, while offences for waste over 50L are also outlined – see separate analysis for Litter in Chapter 10 and for Waste in Chapter 9.

Because SEPP (Waters) will no longer be in force after 2020, provisions included in SEPP (Waters) that set community goals and defined environmental standards such as beneficial uses, segments, environmental quality indicators and objectives, and pollutant load targets, will be reflected in an ERS under the new legislative framework. However, the ERS will not set out any regulatory requirements relating to water, or other problem areas (See Appendix 1 – Environment Reference Standard). Some elements of the SEPP (Waters) will however be transitioned into guidance to support the GED.

While SEPP (Waters) will no longer be in force under the new legislative framework the expectations that were in the SEPP will inform what is viewed as reasonably practicable – that is, what the person concerned knows or ought reasonably to know – for the purposes of the GED.

13.5 Nature and extent of problem

13.5.1 Residual risk

As noted above, the GED and new EP legislation are, collectively, likely to address a significant portion of the risk of harm in relation to water. There is, however, a small but material residual risk relating to the discharge of waste into water by vessel operators. There are two aspects to this residual risk:

- Gaps and wide variation in the current state of knowledge across operators creates the risk of a lack of consistency and certainty with respect to how duty holders need to comply with the new EP legislation, leading to failure to meet their duties and unnecessary costs to both duty holders and EPA.
- Reliance on the industrial waste duty under the new EP legislation may apply a significant penalty for non-compliance by vessel operators that is not proportionate to the scale of the harm to the environment and human health arising

The general nature of the GED and other duties in the new EP legislation cover a very wide variety of circumstances and risks. Some risks still remain because they are high consequence, or factors such as lack of knowledge or information mean that additional government intervention should be considered. While the harms of these risks are outlined in this Chapter, these risks will be addressed by proposed permissioning, waste, contaminated land and single use plastic bag regulations, as well as transitional Regulations. Some proposed Regulations in those chapters of relevance to water include:

- Discharge of waste to an aquifer to be managed through permissioning regulations and will be a permitted activity, specifying circumstances where it is acceptable and when EPA must refuse to issue a permit.
- Prescription of specific control measures for non-aqueous phase liquid (NAPL) contamination in the contaminated land regulations.
- An explicit obligation on the EPA in the permissions framework to refuse applications for wastewater discharges into Special water supply catchment areas set out in Schedule 5 of the Catchment and Land Protection Act 1994.

The transitional Regulations establish that certain obligations in SEPP (Waters) will continue (unchanged) in the new EP legislation for a period of no more than 24 months. This allows time for changes to be made to some government processes. EPA will use this time to scope options and engage with stakeholders affected to determine how these obligations should be managed in future. These include obligations regarding:

- Pollutant load targets.
- Subdivision and on-site wastewater management.
- Preparation of on-site domestic wastewater management plans.
- Water corporations to work with councils regarding options for sewerage services.
- Maintenance of assets, including wetlands and sediment ponds.
- Development and implementation of stormwater management plans.

- Management of saline discharges.
- Irrigation planning.

Guidance will also play a key role in helping inform what is reasonably practicable²⁴⁴ – what the person concerned knows, or ought reasonably to know – for the purposes of the GED, to meet the obligation to minimise risk of harm to human health and the environment.

A small remaining residual risk, addressed in this Chapter, is related to the need for greater certainty on the requirements regarding the discharge of waste from vessels.

Currently, waste discharges from vessels are prohibited under SEPP (Waters), which requires wastes to be contained on board and transferred to an appropriate treatment or disposal facility. Though it is not an offence to fail to comply with this requirement, EPA is currently able to issue a remedial notice under the EP Act 1970 requiring compliance (e.g. to conduct a clean-up, stop works, install controls, or change a process or activity).

The GED will also require vessel operators to eliminate risks of harm to human health and the environment so far as reasonably practicable and if elimination is not reasonably practicable, reduce those risks so far as reasonably practicable. In line with this, they must identify and implement reasonably practicable means to minimise the risks associated with the management of wastes. Waste discharge into the water environment is dispersed, the consequences are not visible, and the impact is cumulative i.e. a single discharge from one vessel at a particular location is unlikely to result in discernible impact on water quality. Waste discharge from vessels is also difficult to identify back to the source, and vessel operators do not bear the costs of their pollution.

The new EP legislation also does not explicitly reference discharge of waste from vessels, however, the following clauses apply broadly to litter and other waste, and industrial waste:

- Part 6.3, which establishes offences in relation to littering and other waste.
- Part 6.4, which establishes duties relating to industrial waste.

Waste is broadly defined in the new EP legislation and the discharge of waste to an inappropriate premises or place are offences under the new legislation. The requirements for the management of waste for vessel operators need to be clarified in regulations, including the conditions around exemptions. Otherwise, vessel operators may lack knowledge of the requirements around some specific activities. Combined with the factors identified above (lack of understanding of polluting activity and lack of incentive to implement controls), this lack of clarity may lead to vessel operators being unaware or not understanding their duties and obligations under the new EP legislation. This might lead to an increase in waste discharge from vessels into the water environment, so greater certainty is required by duty holders to ensure consistent compliance.

13.5.2 Size of problem

This section provides a discussion of the size of broad water pollution problem that the proposed Regulations (including permissions, contaminated land and waste regulations) are designed to address i.e. all residual risks after the new EP legislation takes effect. It does not specifically address discharge of waste from vessels because of the difficulty in isolating the effects of this specific pollution. However, it is important to note that the discharge of waste from vessels represents only a very small part of the broader water pollution problem in Victoria.

It is difficult to get a clear picture on water quality in Victoria. As noted in the State of the Environment (SoE) 2018 report:

²⁴⁴ EPA is currently assessing options to revise the Urban Stormwater BPPEM, with public consultation anticipated to begin in 2019.

No clear statewide picture emerges from the indicators. Water quality varies between different parts of the state, and the indicators are spread fairly evenly between good, fair and poor. However, no indicators are showing an upward trend, suggesting that water quality is not improving.²⁴⁵

The following table shows indicators for inland water quality in Victoria as reported in the SoE 2018.

Table 13-2 Inland water quality indicators, SoE 2018

Indicator	Status	Trend	Data quality
Dissolved oxygen concentration in rivers	Good	Stable	Good
Occurrence of algal blooms	Fair	Unclear	Fair
pH	Good	Stable	Good
Proportion of bodies of water with good ambient water quality	Poor	Deteriorating	Good
Reported inland water pollution incidents	Fair	Deteriorating	Fair
Salinity concentrations in rivers	Mixed	Stable	Good
Total nitrogen concentration in rivers	Mixed	Stable	Good
Total phosphorus concentrations in rivers	Mixed	Stable	Good
Turbidity levels in rivers	Mixed	Deteriorating	Good
Volume of sewage discharge to surface waters	Unknown	Unclear	Poor

The Index of Stream Condition 2010 report shows that 23 percent of rivers and streams in Victoria were in good or excellent condition, while 32 percent were in poor to very poor condition, and there was no substantial difference between the 2004 and 2010 results.²⁴⁶

Groundwater can become polluted from sources such as manufacturing sites, chemical and petrol storage, and munitions storage. Poor groundwater quality limits groundwater use by domestic, agricultural, commercial and industrial users and the productivity of lands reliant on borewater irrigation. It can also have severe implications for human and livestock health. There is only limited data available on groundwater quality in Victoria. The SoE 2018 report records that no data is available to determine the status or trend in groundwater ecosystems. Only fair data is available on groundwater quality, indicating mixed quality across Victoria and a stable trend.²⁴⁷

Inspections of industrial regions, including manufacturing, automotive, construction and transport businesses have demonstrated that risky behaviour continues to occur. A 2009 inspection of businesses in Melbourne suburbs of Thomastown and Coburg North found that 12 percent of sites had spills reach their drains and 29 percent had potential for spills to reach drains on site. A 2008 inspection of the Campbellfield industrial estate (including manufacturing, automotive, metals, warehousing, paint, transport and food businesses) found that

²⁴⁵ SoE 2018 report, available at <https://www.ces.vic.gov.au/reports/state-environment-2018/water-quality>, accessed April 2019.

²⁴⁶ Department of Environment and Primary Industries, *Index of Stream Condition The Third Benchmark of Victorian River Condition*, page 9.

²⁴⁷ SoE 2018 report, available at <https://www.ces.vic.gov.au/reports/state-environment-2018/water-quality>, accessed April 2019.

surface staining was evident at over 25 percent of sites with the potential for stormwater and soil contamination to occur. Overall containment facilities for liquids were generally poor and businesses generally lacked awareness of the impact of poor stormwater management practices.²⁴⁸

Victorian coastal and marine waters are subject to pressures from a number of maritime and industrial activities, including shipping, fishing, and oil and gas extraction, as well as recreational boating. Modelling demonstrates that coastal water is impacted by sediment and nitrogen pollution from urban waterways through storm water. A 2016 study showed that while the Western Treatment Plant is the largest point-source contributor to nitrogen loads in the Port Phillip Bay, diffuse source pollution entering through urban waterways accounted for the remaining 41 percent of nitrogen loads. Moreover, diffuse source pollution from waterways contributes 96 percent of the total sediment load that enters the Bay. It is estimated that most of this waterway pollution comes from the Yarra Catchment. It is forecasted that future urban growth, including infill and new urban developments and additional loads to regional wastewater treatment plants, will contribute an additional nitrogen load of 500 tonnes per annum and sediment load of 9,000 tonnes per year if left unmanaged. This could lead to excessive nutrients and sustained high algal levels. Moreover, if no changes are made to current operations at the Western Treatment Plant and stormwater management is not improved in the Yarra Catchment, total nitrogen loads could more than double in the long term due to a changing climate and more intense rainfall events. This could result in more periods of poor water quality and more frequent algal blooms along the north eastern shore, requiring beach advisories.²⁴⁹

Maritime pollution spills can result in heavy metals and other toxic substances and chemicals entering the marine environment. In general, monitoring by EPA Victoria indicates that Victoria generally has good marine and coastal water quality, with most incidents reported for small spills, less than 20 litres. The greatest number of marine pollution incidents reported each year is in Port Phillip Bay.²⁵⁰

The following table shows selected indicators for coastal and marine water quality in Victoria as reported in the SoE 2018. Where data is available, it shows indicators are spread across mixed and fair, while there are substantial data gaps.

Table 13-3 Coastal and marine water quality selected indicators, SoE 2018

Indicator	Status	Trend	Data quality
Catchment inputs into coastal waters	Mixed	Mixed	Mixed
Conservation of coastal ecosystems in protected areas	Fair	Stable	Fair
Conservation of marine ecosystems in protected areas	Mixed	Stable	Good
Enterococci bacteria ²⁵¹	Mixed	Mixed	Mixed

²⁴⁸ BMT WBM EPA Site Inspections 2009 Thomastown & Coburg, Parsons Brickerhoff 2008, Campbellfield Industrial Estate Site Inspections of Industrial/Commercial Premises.

²⁴⁹ DELWP 2016 Draft Port Phillip Bay Environmental Management Plan 2017-2027. Sources of pollutants: Hart, B.T., Francey, M. and White, K. (2016). Discussion Paper on Load Targets for the Port Phillip Bay Environmental Management Plan, Report by Water Science and Alluvium for Melbourne Water.

²⁵⁰ Commissioner for Environmental Sustainability Victoria, 2013, State of the Environment Report, page 125 – 163.

²⁵¹ Enterococci is a group of bacteria found inside warm-blooded animals. Enterococci is recognised as the best indicator in measuring faecal contamination of marine recreational waters (source: <https://yarraandbay.vic.gov.au/beach-report>, accessed April 2019)

Estuarine condition	Unknown	Unclear	Poor
Harmful algae blooms	Mixed	Mixed	Mixed
Point source discharges to marine waters	Unknown	Unclear	Mixed

13.5.3 Harms

As observed in the SoE 2018 Report, water quality is fundamental to biodiversity, and to the health of people, animals and the environment.²⁵² Table 13-4 presents various harms caused by different water quality issues.

Table 13-4 Water quality issues, sources and harms

Water quality issue	Key Source(s)	Harm
Excess nutrients (for instance, nitrogen and phosphorous)	Agricultural fertilisers and drainage, septic tanks, sewage discharges, animal wastes and urban stormwater.	Excessive plant growth and algal blooms, resulting in poor water clarity and depleted oxygen levels. Potential harms include fish deaths and reduced water suitability for livestock and irrigation.
Suspended solids	Erosion of waterways, roads, urban, agricultural and forested land, and cleared or disturbed land.	At high levels can reduce the amount of light available for plant growth, smother bottom dwelling plants and animals, block estuaries and river mouths and reduce water suitability for drinking, tourism, industry, and aquaculture.
Salinity	Poorly managed land and inappropriate land uses.	Salty water is unsuitable for human and livestock consumption and for irrigation, and has adverse impacts on ecology.
Industrial contaminants	<p>Leachate from antifoulants on vessel hulls, runoff from poorly managed chemical storage facilities and in runoff from urban and agricultural areas.</p> <p>Oils spills and poorly managed transfers and vessel maintenance operations.</p> <p>Contaminated industrial sites can leach heavy metals and oils into waterways.</p> <p>Mineral exploration and extraction of oil and gas in marine environment.</p> <p>Mineral extraction increases the risk of spills of drilling fluids and hydrocarbons.</p>	Toxic to plants and animals and may harm human health through direct ingestion or bioaccumulation through the food chain.
Aquatic pests	Aquatic pests can enter water environments through accidental or deliberate release, through ballast water discharge, or attached	Aquatic pests can drastically alter water environments and out-compete native plants and animals for food and shelter, impacting local biodiversity.

²⁵² State of the Environment 2018 report, available at <https://www.ces.vic.gov.au/reports/state-environment-2018/water-quality>, accessed April 2019.

Water quality issue	Key Source(s)	Harm
	to the hulls of vessels and fishing gear.	
Other threats - depleted dissolved oxygen levels and falling pH levels	A variety of human activities can result in changes in water chemistry including discharges of wastewater with different physical properties from the receiving water (such as temperate and pH) or activities which effect drainage patterns.	Changes in water chemistry can harm water dependant ecosystems. For example, nutrient overloads in aquatic ecosystems can cause algae blooms and ultimately a loss of oxygen, and of life.
Litter	Sources are both terrestrial (such as food containers, plastic bags, microplastics) and maritime (fishing gear).	Fish, birds and marine mammals can ingest or become tangled in litter, often resulting in death.
Pathogens	Wastewater discharges, leaks or spills from sewerage systems, animal wastes	Pathogens associated with faecal contamination can cause outbreaks of water-borne diseases and illnesses.

Source: EPA data 2018.

Impacts on water quality (such as algal blooms, pathogens outbreaks or toxic contamination) can harm human health, affect aquatic and surrounding ecosystems, impact water-dependent industries such as agriculture and tourism, damage infrastructure as well as harm social and cultural heritage values of the water.

Health impacts can occur through exposure to polluted water through skin contact, ingestion of water or contaminated food (such as crops or seafood) and inhalation of aerosols from water borne contaminants. There is also the risk of harm from explosions if water is polluted with volatile substances. According to the National Environmental Protection Council:

Some contaminants have the potential to be toxic, carcinogenic, teratogenic, or mutagenic to humans at particular dosages (e.g. some polycyclic aromatic hydrocarbons such as benzo(a)pyrene). Others are persistent and bioaccumulating, even when present in minute ambient concentrations (e.g. some chlorinated pesticides such as DDT). For some contaminants, significant risk to health only occurs when the contaminant is present in relatively high concentrations (e.g. diesel fuel).²⁵³

Although anyone exposed to poor water quality is vulnerable to water pollution harms, those most sensitive to health impacts include children, elderly people, individuals with underlying health conditions and individuals frequently exposed to water (for example fishers and recreational users).

All Victorian ecosystems depend on water resources for their health. Potential environmental impacts of water pollution include toxic effects on fauna living within or drinking from contaminated water and plants irrigated with contaminated water, as well as bioaccumulative impacts on fauna through indirect ingestion of polluted water. Marine and freshwater ecosystems may be particularly vulnerable to water pollution as organisms are constantly exposed to pollution through ingestion and direct contact.

Discharge of waste from vessels

Discharge of waste from vessels can cause high pathogen and nutrient concentrations in Victoria's waters and poses a risk to marine ecosystems and human health. It in turn impacts the enjoyment of recreational boating and fishing activities on these waters. Economic activity may be harmed by water pollution. The commercial and

²⁵³ National Environmental Protection Council (NEPC), 1999, Assessment of Site Contamination – Impact Statement, page 29.

recreational fishing industry strongly relies on a healthy and diverse fish population, and tourism may also be adversely impacted by poor quality water or closure of tourist sites.

13.5.4 Costs

Victoria's water environments are of great environmental and cultural value to all Victorians, especially Aboriginal 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.²⁵⁴ The Interim Victorian State of the Environment Report 2018 reported that:

*Ecosystem services from marine and coastal environments drive commercial and recreational fishing, recreation and tourism. Wild catch fisheries harvested 4,832 tonnes in 2016-17, with the abalone and rock lobster catches together worth more than \$42 million, by far Victoria's most important. The economic value of recreational fishing to Victoria has been estimated at \$7 billion.*²⁵⁵

This value of water is at risk from human activity that can result in pollution and waste discharges into Victoria's water resources. Potential costs arise from reduced quality of life or loss of life, reduced agricultural productivity, infrastructure costs, reduced tourism, and reduced value of natural ecosystems.

In particular, the commercial and recreational fishing industry strongly relies on a healthy and diverse fish population, horticulture and broad acre agriculture depend on suitable irrigation water, and tourism may also be adversely impacted by poor quality water or full closure of tourist sites.

However, there is limited data available on the extent of the costs of harms to the environment and human health arising from pollution and waste in Victoria's water environments. The costs of waste discharges from vessels is even more difficult to estimate, with no data available that enables the impact on water quality or associated harms and costs from this activity to be easily identified.

13.6 Options

Under the new EP legislation:

- A person must not deposit waste other than in the circumstances specified in subsection (5) (which permits the deposit of waste in or on a premises under defined circumstances). Water is not a listed exception under subsection (5) (Part 6.3, Division 3).
- Industrial waste is prohibited from being deposited or abandoned at a place or premises, unless the place or premises is authorised to receive industrial waste. (Part 6.4).

The option developed by EPA and DELWP considered how the GED, along with the above waste offences, could be further supplemented so that vessel operators can be given greater certainty.

The following option is being considered to clarify the requirements for vessel operators:

- **Option 1 – Prescribe that waste from vessels must not be discharged into water:** This option would be enacted as a regulation with an infringeable offence that articulates how waste from vessels is to be managed. That is, that a person must not discharge waste produced or located on a vessel into the

²⁵⁴ DELWP-EPA, *Regulatory Impact Statement – Proposed Environment Protection (Scheduled Premises) Regulations 2017*, page 40.

²⁵⁵ Commissioner for Environmental Sustainability, *Interim Victorian State of the Environment Report 2018*.

water environment except under defined circumstances, and/or if certain environmental risks are mitigated.²⁵⁶ This is consistent with the current regulatory position.

Consideration was given to including an option in this RIS that prescribes how a vessel must comply with the requirements, for example, that all vessels must have a holding tank. However, this was not pursued due to the potentially onerous costs relative to the size of the problem being addressed, which while potentially significant when added up across many vessels, is very dispersed and also quite uncertain. There is a lack of qualitative or quantitative evidence to warrant stronger controls.

13.7 Assessment

13.7.1 Method

Due to lack of quantifiable data, a qualitative analysis has been undertaken.

13.7.2 Benefits

Under the Base Case it is an offence to deposit waste into the water environment (under Part 6.3 and Part 6.4 of the new EP legislation). However, vessel operators may not be aware that these duties apply to them.

Option 1 therefore has two primary benefits:

- It provides fit for purpose requirements (including appropriate exemptions), pertaining to the activity of vessel waste management, compared to the generic obligations in Part 6.3 and Part 6.4 of the new EP legislation. As such, vessel operators would have greater certainty about their obligations.
- It prescribes a more appropriate financial penalty for the activity than Part 6.3 and Part 6.4 of the new EP legislation. The industrial waste duty has a very significant penalty that is not proportionate to the smaller-scale nature of the activity, which has more of a cumulative risk.

As this regulation does not impose any additional requirements relative to the new EP legislation (it simply provides clarification to further support duty holders) it is not expected to lead to additional benefits in the form of reduced harm to the environment or human health.

13.7.3 Costs

For the same reason as above, it is not expected to impose any additional costs on vessel operators.

The proposed regulation is expected to reduce costs for vessel operators by clarifying their obligations regarding waste management including specific exemptions for houseboats in Lake Eildon and aquatic pest management, although this impact is likely to be small and very difficult to quantify.

Similarly, the regulation is expected to reduce EPA's enforcement cost (relative to the Base Case) by clarifying its enforcement role for vessel operators. Under Option 1, EPA would be able to issue remedial notices, pursue sanctions (where appropriate), including infringement notices. The proposed regulation would have a direct penalty that is proportionate to the offence, whereas under the Base Case, remedial notices can be issued but the offence has significant financial penalties.

13.7.4 Summary – preferred option

On balance, Option 1 is likely to provide a small benefit to vessel operators and EPA due to the additional certainty it provides, and by specifying the appropriate exemptions. Furthermore, it enables EPA to issue

²⁵⁶ Discharge is allowed if (1) a greywater discharge compliant with the *Water (Lake Eildon Recreation Area)(Houseboat) Regulations 2013* or (2) part of a process of managing aquatic pests on the vessel and the person has minimised, so far as is reasonably practicable, the risks to human health and the environment posed by the waste, including by ensuring that the aquatic pests and any anti-fouling paint is contained and subsequently transferred to a place or premises that is authorised to receive that type of waste.

penalties or notices that are proportionate to the scale of the offence. Option 1 is not expected to impose any additional costs relative to the Base Case.

Given this, Option 1 is recommended.

13.8 Interaction with other legislation

The proposed Regulations may interact with the *Water (Lake Eildon Recreational Area) (Houseboats) Regulations 2013*.

Those regulations are intended to identify obligations related to the discharge of greywater from houseboats on Lake Eildon. As such, there is potential for overlap between the proposed EPA regulations, and how the discharge of greywater from house boats on Lake Eildon is regulated in other legislation. However, this interaction is specific to this circumstance, and does not extend to other vessel types or other locations.

The proposed Regulations deal with this potential overlap by prescribing that the regulation relating to waste discharges from vessels does not apply to the disposal of waste in the form of greywater produced or located on a houseboat operating on Lake Eildon if the person disposes of such greywater in accordance with the *Water (Lake Eildon Recreation Area) (Houseboat) Regulations 2013*.

14 Noise

This chapter outlines the problem of noise and assesses regulations being proposed to address the residual risks relating to the emission of noise that is expected to exist with the new EP legislation intending to commence effect on 1 July 2020.

Key points:

- Noise accounts for the majority of EPA publication and advice enquiries, and accounted for 18% of reports in 2018. A 2011 World Health Organisation (WHO) study of the burden of disease due to environmental noise in Europe found evidence linking the population's exposure to environmental noise with adverse health effects.
- The Commonwealth Environmental Health Standing Committee, of which the Victorian Department of Health and Human Services is a member, released an update to its 2014 report "The Health effects of Environmental Noise" in 2018. The Report includes a systematic review of international evidence on the influence of environmental noise on sleep, cardiovascular disease and cognitive outcomes that further supports the findings of the WHO.
- More than 100,000 noise complaints are typically received by police and Councils each year in Victoria.
- In comparison with other harms and risks discussed in this RIS, noise is ubiquitous with human activity. Noise pollution is intermittent and therefore generally characterised as a low-harm, high occurrence event.
- Noise pollution is expected to increase in future years with forecast increases in Victoria's population, higher density living and traffic.
- The new EP legislation establishes duties and penalties for the control and emission of unreasonable and aggravated noise. However, it does not explicitly address what constitutes unreasonable noise, nor defines prescribed items or prohibited times for unreasonable noise from a residential premises and also does not define aggravated noise or outline a methodology for establishing aggravated noise (however, aggravated noise can be prescribed in regulations under the new EP legislation).
- The following residual risks for noise will therefore remain after the new EP legislation takes effect:
 - A lack of consistency and certainty with respect to how duty holders need to comply with the unreasonable and aggravated noise requirements in the new EP legislation.
 - The civil penalty provisions under the new EP legislation require prescription under regulation to function effectively. Necessary for legislation to function - Some obligations under the new legislative framework cannot function or would not be enforceable without prescription under regulation.
- These risks may lead to businesses not meeting their duties under the legislation and therefore more noise pollution and risks of harm to human health. Uncertainty is also likely to lead to higher regulatory costs for businesses in determining how to comply and for EPA in administering the framework
- The preferred options to address these residual risks are to:
 - In relation to noise from commercial, industrial and trade (CIT) premises: (1) prescribe in regulation a framework for establishing noise limits for CIT premises in urban and rural areas based on the existing SEPP N-1 policy for setting noise limits and the recommended noise levels in the Noise from Industry in Regional Victoria guideline, supplemented with a range of selected improvements and additions, (2) prescribe in regulation a definition of both unreasonable and aggravated noise.
 - Noise from entertainment venues: (1) prescribe in regulation a framework for establishing noise limits for entertainment premises based on the existing SEPP N-2 framework with selected improvements, (2) prescribe in regulation a definition of both unreasonable and aggravated music noise.

14.1 Background

Noise can be defined as unwanted sound. Noise can interfere with communication, cause stress and annoyance, and disturb sleep leading to lack of concentration and reduced efficiency and irritability. Prolonged exposure to noise can result in increased incidence of cardiovascular disease and cognitive impairment in children and adults. It can contribute to stress-related health problems such as high blood pressure. Exposure to high noise levels over significant periods of time can cause deafness or partial hearing loss.

Individuals have different sensitivity to sound, based on:

- The perceptiveness of their hearing
- The character of the sound (e.g. tone, variability)
- Their tolerance or acceptance of sound in their environment. This can be affected by factors such as the time it occurs, its duration (e.g. people are often more sensitive in the evenings when there is greater risk of sleep disturbance), location, and existing background noise levels.²⁵⁷

While sound can be objectively measured in decibels (dB), identifying whether the noise is 'unreasonable' often requires consideration of the duration or character of the noise and other circumstances in which it is emitted. A range of decibel threshold values are used as the basis for calculating an objective limit for noise exposure in different circumstances in noise regulation, with more stringent limits typically being applied at night to protect against the impact of unreasonable noise on sleep in particular.

The EPA's Community response to noise survey 2007 identified the top three impacts associated with noise disturbance were.²⁵⁸

- Sleep (23% of respondents)
- Enjoyment of home (20%)
- Outdoor recreation (14%).

Noise is a by-product of all human activity. Some noise exposure is inevitable given the changing nature of society, evolving land uses, population growth and higher density living. Exposure to noise depends on a range of factors including:

- The number of noise sources there are and where they are located, which is usually related to land use
- Population density
- Distance of spread of noise - which is source-dependent and affected by topography.

Many more Victorians are exposed to noise from residential neighbours and road traffic than industry noise as most people live near residential neighbours and roads. Research commissioned by EPA in 2016 found that the top five sources of noise (but not necessarily those with the highest impact) affecting Victorians were:²⁵⁹

- Road traffic including individual vehicle and busy roads (51.7%)
- Neighbours' residences (26.7%)
- Construction activity (20.4%)
- Audible alarms (13.1%)
- Trams or trains (10.7%).

²⁵⁷ EPA, *Regulatory Impact Statement: proposed Environment Protection (Residential Noise) Regulations 2018* (2018), page 13.

²⁵⁸ Community response to noise survey 2007, (2007). Page 13

²⁵⁹ EPA, *Regulatory Impact Statement: proposed Environment Protection (Residential Noise) Regulations 2018* (2018), page 13.

The sources of noise likely to affect Victorians is location dependent. Regional Victorians were more likely to be affected by noise from farming, forestry, mining and quarrying activities; ports, boats and shipping; and factories and industry.²⁶⁰

Noise accounts for the majority of EPA publication and advice enquiries. EPA has received an average of around 2,000 noise complaints every year since 2013.²⁶¹ During that time noise has been the second most common pollution reporting category received by EPA - accounting for 11.5% of reports.²⁶² In 2018, noise accounted for 18% of pollution reports.²⁶³

The average number of complaints regarding residential noise received by local councils increased by around 20% from 2012 to 2016. This finding was based on a survey administered by EPA of 33 local governments, with an even distribution of metropolitan and non-metropolitan respondents.²⁶⁴

Noise pollution is expected to increase in future years as Victoria’s population continues to grow. Increased traffic flows will likely contribute to higher ambient and background noise levels. Conflicts regarding land use (particularly in relation to the use of land for residential premises located close to existing industry) are likely to continue to lead to increased complaints in relation to noise pollution.

14.2 Current legislative and regulatory framework

The current regulatory framework includes two separate SEPPs that control noise. These cover noise from commercial, industrial and trade (CIT) premises and music noise from public premises. Separate regulations exist to control noise from residential premises. It includes requirements mandated in a range of legislative and subordinate instruments.

Table 14-1 Overview of legislative and regulatory framework for noise

Category	Provisions under EP Act 1970	Regulations	Other subordinate instruments
Commercial, industrial and trade (CIT) noise	Section 16 Section 17(1) Section 46 Section 48 Section 31A	n/a	SEPP (Control of Noise from Commerce, Industry and Trade) – SEPP N-1
Key requirements under current regulatory framework: SEPP N-1 requires new, proposed and existing CIT premises to control noise levels so that they do not exceed the noise limits as determined in the policy. SEPP N-11 provides a methodology for establishing limits for noise emitted from CIT premises in urban locations. The Noise from Industry in Regional Victoria (NIRV) guideline provides recommended noise levels for industry in regional Victoria. The methods in the NIRV guideline are non-statutory.			
Entertainment venue noise	Section 46 Section 48AB	n/a	SEPP (Control of Music Noise from Public Premises) – SEPP

²⁶⁰ Strahan Research, *Report to EPA Victoria on Community Response to Environmental Noise* (2007).

²⁶¹ EPA, *#06 Pollution Reports* (2018).

²⁶² EPA complaints data.

²⁶³ EPA, *Annual Report 2017-18* (2018), page 29.

²⁶⁴ EPA, *Regulatory Impact Statement: proposed Environment Protection (Residential Noise) Regulations 2018* (2018), page 26.

Category	Provisions under EP Act 1970	Regulations	Other subordinate instruments
	Section 16 Section 17(1) Section 48		N-2

Key requirements: SEPP N-2 aims to control music noise levels, while recognising the community demand for a wide range of musical entertainment. SEPP N-2 provides a methodology for establishing noise limits and restrictions on operating time for musical activities undertaken in a public premises (both indoor and outdoor). SEPP N-2 applies in the whole of Victoria.

Residential noise	Section 48A Section 48B Section 71	Environment Protection (Residential Noise) Regulations 2018	n/a
--------------------------	------------------------------------------	-------------------------------------------------------------	-----

Key requirements: the Regulations apply to noise from residential premises and residential premises under construction, listing specific types of equipment and their prohibited times. Noise is unreasonable if certain items are audible inside a neighbouring residence during prohibited times.

These regulations and SEPPs will no longer have effect when the new legislation takes effect. However, the state of knowledge developed under the existing legislative and regulatory framework will continue to inform duty holders' management responses with respect to the emission of noise (see section 3.1).

A range of other instruments exist outside of the EP Act 1970 and the new EP legislation that regulate various types of noise, and include:²⁶⁵

- **Commercial and industrial noise** - The *Planning and Environment Act 1987* (which provides a framework for integrating land use and development controls and application of SEPP N-1 or NIRV) and *Occupational Health and Safety Regulations 2007* (which limits noise exposure for the protection of staff).
- **Entertainment venues** – *Liquor Control Reform Act 1998* (LCR Act), *Planning and Environment Act 1987* (council planning permit conditions can apply SEPP N-2) and *Occupational Health and Safety Regulations 2007* (which limits noise exposure for the protection of staff).
- **Residential noise** - Local government bylaws, *Public Health and Wellbeing Act 2008*, *Domestic Animals Act 1994*, *Planning and Environment Act 1987*.
- **Transport noise** – Local laws, the (former) Department of Economic Development, Transport, Jobs and Resources (DEDTJR) Passenger Rail Infrastructure Noise Policy (2013), VicRoads Traffic Noise Reduction Policy and accompanying guidance material.

More detail on the current noise regulatory framework outside the EP Act 1970 is included in Appendix 2.

²⁶⁵ EPA, *Regulatory Impact Statement: proposed Environment Protection (Residential Noise) Regulations 2018* (2018).

14.3 New EP legislation

In addition to the GED, Part 7.6 of the new EP legislation establishes duties and penalties on the control and emission of unreasonable and aggravated noise, including:

- Prohibition of unreasonable noise from a place or premises that are not residential premises
- Prohibition of unreasonable noise from residential premises and provision of civil penalties for contravention
- Management of unreasonable noise emitted from an entertainment venue and provision of penalties for contravention
- Prohibition of emission of aggravated noise and provision of civil penalties for contravention.

The new EP legislation allows for penalties to be applied to persons and/or corporate bodies committing offences in relation to the emission of unreasonable or aggravated noise.

The new EP legislation defines noise as both sound and vibration. It defines unreasonable noise as noise that is unreasonable having regard to the following:

- a) Its volume, intensity or duration
- b) Its character
- c) The time, place and other circumstances in which it is emitted
- d) How often it is emitted
- e) Any prescribed factors or if it is prescribed to be unreasonable noise.

Under Section 167 of the new EP legislation, which establishes provisions for unreasonable noise from residential premises, a person is taken to emit an unreasonable noise if the person uses a prescribed item except in a case of emergency:

- a) At any time prescribed as a prohibited time; and
- b) If noise emitted by that item can be heard in a habitable room in residential premises other than premises in which the item is being used, whether or not a window or door in that room is open.

The new EP legislation amends the definition of residential premises under Section 165 to explicitly exclude noise from residential construction activity. The effect of this change is that noise from construction or demolition of a residential premises will no longer be regulated as a residential noise source under Section 167. However, the unreasonable noise provision under Section 166 provides a mechanism for EPA and residential noise enforcement officers to apply an unreasonable noise test to construction activities. The new EP legislation also does not define prescribed items or prohibited times for unreasonable noise. In practice, this means that noise enforcement officers will need to demonstrate the occurrence of unreasonable noise prior to enforcing the unreasonable noise provisions.

The new EP legislation does not define aggravated noise or outline a methodology for establishing aggravated noise, however, it does provide that aggravated noise can be prescribed in regulations under the new EP legislation.

14.4 Nature and extent of problem

14.4.1 Residual risk

The residual risks in relation to noise are:

- A lack of consistency and certainty with respect to how duty holders need to comply with the unreasonable and aggravated noise requirements in the new EP legislation, leading to failure to meet their duties and unnecessary costs to both duty holders and EPA.
- This lack of certainty means that the civil penalty provisions under the new EP legislation will be difficult to enforce without prescription under regulation.

A significant residual risk exists because the new EP legislation does not prescribe how noise limits for CIT premises, entertainment venues and residential premises are established or measured with respect to the unreasonable and aggravated noise requirements. Specifically, the new EP legislation does not:

- Prescribe a clear methodology for measuring and establishing noise limits for activities undertaken by CIT businesses, entertainment venues and residents.
- Distinguish between 'urban' and 'rural' areas with respect to establishing background levels of noise and calculating noise limits.
- Prescribe any items or relevant operating times with respect to sources of noise from residential premises under the unreasonable noise provisions
- Prescribe a clear definition of aggravated noise with respect to noise from CIT premises, entertainment venues and residential premises.

A measurable framework for establishing noise limits for businesses, entertainment venues and residents is currently provided by SEPP N1, SEPP N2 and the Residential Noise Regulations.

In the absence of regulations to support the new EP legislation there is likely to be significant uncertainty as to what constitutes 'unreasonable' and 'aggravated' noise from CIT premises, entertainment venues and residential premises, and how such noise should be managed giving consideration to volume, intensity, time, duration, place and character. This is likely to result in increased risk to human health and detrimental community amenity outcomes. Furthermore, sufficient effect cannot be given to the civil penalty provisions under the new EP legislation without a clear definition of unreasonable and aggravated noise.

In addition, it is also possible that some duty holders might over-comply in order to avoid the costs associated with managing and responding to complaints in the absence of a framework for establishing noise limits.

These outcomes are possible due to the characteristics of noise pollution:

- Noise pollution is often diffuse and non-cumulative over time (it will dissipate the moment the activity has ended), making enforcement extremely complex
- The risk to human health and/or environment (native fauna) is often not immediately clear to the person creating noise pollution.

Overall, it is difficult to estimate the extent of the residual risk associated with 'unreasonable' and 'aggravated' noise from CIT premises, entertainment venues and residential premises. However, it seems reasonable to conclude that this risk is significant.

Further discussion of the residual risk is provided in the following sections.

Burden of establishing framework falls to businesses and residents

Compliance with noise provisions is primarily complaints driven – action against a duty holder is typically only commenced once a complaint has been made. Under the current regulatory regime there is a clear framework within which to assess any formal business, entertainment venue or residential noise complaint.

In the absence of a prescribed threshold to determine the specific circumstances that give rise to 'unreasonable' noise, there is likely to be a significant burden on any duty holder responding to any formal complaint.

A duty holder may seek to dispute the complaint through legal means, incurring legal and acoustic expertise fees (in addition to the fees incurred by the authority pursuing the penalty). While over time a range of precedents are likely to be established for the full range of business and residential activities, such court proceedings:

- Are likely to impose a significant burden on early defendants who will bear a disproportionate cost of establishing legal precedents

- May impose significant costs without due consideration to broader flow-on effects
- May result in unintended outcomes (such as bakeries being unwilling to operate during early morning periods due to costs involved in attenuating early morning noise emissions)
- Are unlikely to proceed in a timely fashion
- May not fully consider the technical complexity of noise relevant acoustic issues in the determination process.

Alternatively, duty holders may seek to resolve the complaint through avoiding the activity, reducing the time and duration of the activity, or investing in noise management and attenuation activities beyond what a prescribed unreasonable threshold would require.

The cost of abatement of noise emissions in such circumstances can be significant. Costs incurred by industry, businesses and residents may not be commensurate with the risks, particularly where there is likely to be a low risk of harm to human health. Furthermore, unnecessary costs may be imposed in circumstances or activities which should be excluded (e.g. voices, crowds, construction noise, aircraft).

A possible consequence is that businesses may, over time, over-comply with the new EP legislation to avoid the costs associated with managing and responding to complaints. However, it is difficult to estimate the extent to which this will occur.

It is also important to note that while the current SEPP N-1, SEPP N-2 and Residential Noise Regulations will no longer be enforceable with respect to civil penalties, the state of knowledge established under these policies and regulations will continue to inform duty holders' management responses with respect to the emission of noise. As discussed in section 3.1, this state of knowledge means that there is an understanding of what good environmental practice or good management of an environmental harm currently looks like. However, this does not mean that all duty holders would act in the same manner in response to this understanding, and new entrants to the industry may not be aware of this existing knowledge at all. The impact of this knowledge is expected to decline over time.

Burden on premises that do not receive complaints from surrounding neighbours

The absence of a clear and explicit framework for establishing noise levels may also result in under-compliance and increase in emission of unreasonable and aggravated noise. Due to the nature of noise pollution, businesses may not seek to comply with the new EP legislation until a complaint is raised.

This may result in an increased risk to human health. It could be presumed that complaints would be triggered when noise emissions are deemed to be an issue by surrounding neighbours, who may have an expectation that noise pollution will cease or reduce following their complaint. However, uncertainty about what constitutes 'unreasonable' or 'aggravated' noise may also impede the ability of government, councils and police to enforce compliance, including civil penalties. The ability of EPA, police and local council officers to address noise issues would be limited to the powers provided under the new EP legislation. That is, EPA, police and local council officers could issue a direction or a civil penalty to stop unreasonable or aggravated noise, but may be required to provide evidence to support the penalty per the definition in the new EP legislation. EPA, police and local government officers would need to exercise judgement to determine whether a noise incident could be considered unreasonable or aggravated. This may result in some noise pollution not being addressed, and also may result in increased administrative and enforcement costs to government.

Overall, regulatory uncertainty is likely to result in a lack of clarity and uncertainty for duty holders with respect to their noise emission and management responsibilities, leading to businesses not meeting their responsibilities, or incurring unreasonably high costs in order to meet their duties.

The absence of a well-defined and clear noise limit methodology, including prescribed items at prohibited times for residential premises, means there is a risk that the GED and noise provisions cannot adequately prevent or enforce 'unreasonable' or 'aggravated' noise, leading to ineffective and inefficient compliance with the new EP legislation.

14.4.2 Size of problem

It is difficult to quantify or reliably estimate the size of the risk posed by noise pollution in Victoria due to the nature of noise pollution and the fact that compliance under Victoria's existing noise provisions is primarily complaints driven.

However, the number of complaints received by authorities responsible for enforcing noise provides a useful indication. A recent report commissioned by EPA estimated that Victoria Police receive an estimated 50,000 noise complaints annually, while councils collectively receive approximately 20,000 to 100,000 complaints annually.²⁶⁶ In addition, EPA has received an average of 2,000 noise complaints a year over the past five years.²⁶⁷

It is likely that complaints data underestimates noise pollution in Victoria. It is common for people who suffer noise annoyance or disturbance to not lodge a formal complaint for a variety of reasons, including the commonly held view that complaining would not resolve the noise issue.²⁶⁸

The three most common sources of noise addressed by regulators in Victoria are music noise, industrial noise and neighbourhood noise. However, the extent to which regulators respond to these noise sources varies significantly. For example, music from entertainment venues is the dominant noise issue for inner city metropolitan councils, Victoria Police and the Victorian Commission for Gambling and Liquor Regulation (VCGLR). In contrast, noise complaints from entertainment venues is less frequent in regional Victoria, where residential noise is generally the largest noise issue. The issue of CIT noise is typically a concern resulting from increased residential development in close proximity to long-established industrial areas in inner Melbourne.²⁶⁹

The management of noise is also a considerable issue for duty holders. In a recent study commissioned by EPA, 81% of entertainment venues and 88% of CIT businesses indicated that noise management was an issue for their business.²⁷⁰

14.4.3 Harms

There is limited primary research conducted in Victoria that examines the costs of noise pollution.

However, there is a large body of international evidence that demonstrates the detrimental impacts of noise on health when levels exceed particular thresholds. For example, exposure to noise may lead to a range of adverse health impacts, loss of amenity, and reduced productivity. Harmful noise exposure is also linked to a range of social impacts; annoyance or stress caused by prolonged exposure to noise can contribute to aggressive or anti-social conduct, and possibly breakdown of relationships.²⁷¹

A 2011 WHO study of the burden of disease due to environmental noise in Europe found that there is sufficient evidence from large-scale epidemiological studies linking the population's exposure to environmental noise with adverse health effects. Therefore, environmental noise should be considered not only as a cause of nuisance but

²⁶⁶ Resonate acoustics et al., *SEPP N-1 and SEPP N-2 Impact Analysis Project 2: Impact on the Community and Joint Regulators* (2016), page iii.

²⁶⁷ EPA, *#06 Pollution Reports* (2018).

²⁶⁸ Resonate acoustics et al., *SEPP N-1 and SEPP N-2 Impact Analysis Project 2: Impact on the Community and Joint Regulators* (2016), page ii.

²⁶⁹ *Ibid*, page iii.

²⁷⁰ Resonate acoustics et al., *SEPP N-1 and SEPP N-2 Impact Analysis Project 1: Impact on Business* (2016), page iii, page 19.

²⁷¹ EPA, *Cost Benefit Analysis on Policy Options for Noise Regulations* (2018), page 4.

also a concern for public health and environmental health.²⁷² The main health impacts of excess noise exposure are:^{273,274}

- Annoyance and adverse effects on quality of life
- Sleep disturbance
- Higher risk of cardiovascular disease
- Negative impacts on performance and learning of school children
- Mental health
- Hearing impairment.

The Commonwealth Environmental Health Standing Committee, of which the Victorian Department of Health and Human Services is a member, released an update to its 2014 report “The Health effects of Environmental Noise” in 2018. The Report includes a systematic review of international evidence on the influence of environmental noise on sleep, cardiovascular disease and cognitive outcomes that further supports the findings of the WHO.

A separate WHO study based on data from eight selected countries (Belgium, Finland, France, Germany, Italy, the Netherlands, Norway, and the United Kingdom) covered a broad range of exposures considered significant for public health, individual risk, societal concern, and the economy. The study found that traffic noise has the third largest environmental impact on overall public health, behind ambient fine particles and second hand smoke problems.²⁷⁵

14.4.4 Costs

The nature of noise, as reported above, makes it very difficult to estimate costs to human health and the environment. There is limited data on the cost of noise pollution to the economy in Victoria. The major limitations of the data include uncertainty of the estimates and the constraints on the transferability to local contexts. A recent UK study estimated that the potential productivity cost of prevailing levels of environmental noise at £2 billion – £4 billion (AUD\$3.6 – 7.2 billion) per year in England in 2014 prices. The main causes of this cost were:²⁷⁶

- Noise-related sleep disturbance and the resulting effect on productivity
- Effects of noise on academic performance and the link to lifetime earnings
- Noise, health and productivity, focusing on the potential economic consequences of noise related ill health.

A 2015 study by the University of Michigan estimated that over 100 million Americans are exposed to unhealthy levels of noise. The analysis indicated that a 5dB noise reduction scenario may reduce the prevalence of hypertension by 1.4% and coronary heart disease by 1.8%. The study estimated that annual economic benefit of

²⁷² WHO, *Burden of disease from environmental noise - Quantification of healthy life years lost in Europe* (2011), page xvii.

²⁷³ 11 Beutel, M.E. et. al., *Noise Annoyance Is Associated with Depression and Anxiety in the General Population – The Contribution of Aircraft Noise* (2016). PLoS ONE Available from:

http://ec.europa.eu/environment/integration/research/newsalert/pdf/does_environmental_noise_lead_depression_anxiety_465na2_en.pdf

²⁷⁴ WHO, ‘*Burden of disease from environmental noise - Quantification of healthy life years lost in Europe*’, 2011

²⁷⁵ *Environmental Burden of Disease in Europe: Assessing Nine Risk Factors in Six Countries*, published in *Environmental Health Perspectives* volume 122 | number 5 | May 2014. Findings also available at <http://www.euro.who.int/en/health-topics/environment-and-health/pages/evidence-and-data/environmental-burden-of-disease-ebd>.

²⁷⁶ Department of Environment, Food and Rural Affairs, (2014). *Environmental Noise: Valuing impacts on: sleep disturbance, annoyance, hypertension, productivity and quiet*. United Kingdom Crown, pp.24-30.

reduced hypertension and heart disease alone were approximately US\$3.9 billion (approximately AUD\$5.6 billion).²⁷⁷

The mental health related costs to society of noise exposure (from all sources) are also large. While limited quantitative analysis has been undertaken in Australia, a 2007 study on traffic noise based on European data concluded that the cost of excess noise exposure is equivalent to approximately 0.4% of GDP in the 22 European Union countries studied.²⁷⁸

The costs to businesses from managing and abating noise (although different to the cost of the noise itself) can also be significant. Costs can be direct (such as the costs of installing noise reducing barriers) or indirect (such as altering the times of activities). The costs of managing noise vary considerably between businesses pending the nature of industry, nature of noise emissions, and the scale of the business. The costs to Victorian CIT businesses of managing noise can range from as low as \$20,000 to \$8.5 million per annum, while the average annual cost of managing noise for entertainment venues was approximately \$51,000 and could be as high as \$250,000 per annum.²⁷⁹

Costs to government from enforcing and monitoring compliance are also considerable. For example, Victoria Police report that a quarter of its liquor licensing unit's time, which includes six full-time equivalent staff, is devoted to addressing noise issues.²⁸⁰ Assuming an average first constable salary of \$76,418.50, this equates to almost \$460,000.²⁸¹

Councils also incur costs. For example, Mornington Peninsula Shire Council's Environment Protection Unit provides noise advice and investigate and control a range of noise issues. The council receives approximately 1,000 complaints regarding noise a year, with the majority during the peak tourist summer months. Council has estimated that it dedicates approximately 0.33 FTE over a full year. There are additional costs associated with training (\$1,000 per annum over three years), purchasing equipment (\$22,000 one-off), laboratory calibration every two years (\$1,200 per occurrence) and an annual software licence (\$400 per annum).²⁸²

14.5 Assessment

This section assesses the feasible options for addressing the three different problem areas:

1. Noise from CIT premises
2. Noise from entertainment venues
3. Noise from residential premises.

14.5.1 Assessment method

MCA is used to assess options for the noise problem area because insufficient information is available to allow a fully quantitative CBA to be undertaken.

²⁷⁷ Swinburn et al, *Valuing Quiet: An economic assessment of US environmental noise as a cardiovascular health hazard*, (2015). American Journal of Preventative Medicine.

²⁷⁸ L.C. den Boer & A. Schrotten (2007). Traffic noise reduction in Europe. CE Delft, March 2007. See: http://www.transportenvironment.org/sites/te/files/media/2008-02_traffic_noise_ce_delft_report.pdf

²⁷⁹ Resonate acoustics et al., *SEPP N-1 and SEPP N-2 Impact Analysis Project 1: Impact on Business* (2016), pages ii-iii.

²⁸⁰ *Ibid*, page 44.

²⁸¹ FairWork Commission, *Victoria Police (Police Officers (Excluding Commanders), Protective Services Officers, Police Reservists and Police Recruits) Enterprise Agreement 2015*, (2016).

²⁸² EPA, *Cost Benefit Analysis on Policy Options for Noise Regulations* (2018), page 45.

14.6 Noise from CIT premises

14.6.1 Options

The options considered in addressing the residual risk associated with the emission of noise from CIT premises under the unreasonable and aggravated noise provisions are:

- **Base Case - do nothing:** no regulations to complement the GED and unreasonable and aggravated noise provisions with respect to CIT businesses.
- **Option 1 – prescribe a framework for establishing noise limits for CIT premises in urban and rural areas and define aggravated noise:** Option 1 involves prescribing a framework that establishes noise limits for emissions from CIT businesses based on the existing SEPP N1 and NIRV framework, including prescribing noise sources that will not be assessed using the regulatory framework due to the nature of the noise (such as mobile noise sources). These sources may still be considered unreasonable under the unreasonable noise provision under the new EP legislation. Option 1 also involves defining aggravated noise from CIT premises, and defining ‘urban’ and ‘rural’ areas with respect to the application of unreasonable and aggravated noise provisions under the new EP legislation.

In addition to the above, Option 1 will prescribe the Urban Growth Boundary (UGB) for Melbourne under the *Planning and Environment Act 1987* and any regional centre with a population of over 7,000 as ‘urban areas’ for the purposes of selecting the appropriate methodology of assessing compliance with unreasonable and aggravated noise from CIT premises. All other areas within Victoria would be deemed ‘rural areas’.

- **Option 2 - Option 1 plus selected improvements:** Option 2, in addition to the prescribed regulations under Option 1, also includes a range of selected improvements to the existing SEPP N1 and NIRV noise frameworks to reduce mismanagement and improve transparency, including:
 - Aligning the Saturday evening period (with respect to the application of noise limits) with the evening period for Monday to Friday. This will apply to all of Victoria.
 - Establishing a night time noise limit of 55 dB for emissions from CIT premises
 - Prescribing a new requirement for CIT premises to manage emissions of frequency spectrum noise
 - Expanding prescribed noise sensitive areas as outlined in SEPP N1 and NIRV to include childcare centres, kindergartens, and primary and secondary schools within urban areas and tourist areas and camping and caravan parks in rural areas
 - Increasing statutory guidance on certain sources of noise.

Regarding other potential options, the SEPP review identified a number of potential options (other than those above) to reduce mismanagement and improve transparency. These included increasing the number of noise sensitive areas, greater controls on land-use to support consideration of noise impacts on noise sensitive areas and increasing statutory guidance on certain sources of noise. However, the above options to increase regulation are considered a proportionate, evidence-based response, balancing the likely future increased impact of noise, the need to protect human health and the environment, and the potential impost on duty holders.

EPA and DELWP consider that guidance material alone is not an appropriate option for addressing residual risks associated with unreasonable and aggravated noise provisions under the new EP legislation. This is because a prescribed noise limit framework is required to give effect to the noise and aggravated noise provisions with respect to CIT premises, and to reduce mismanagement by duty holders seeking to avoid obligations. The GED alone cannot adequately define the specific factors that need to be considered to enable the aggravated or unreasonable noise provisions to apply. Lastly, contravention of these provisions results in a civil penalty to the duty holder, and non-statutory guidance is insufficient to give full effect to the civil penalty provisions under the new EP legislation.

14.6.2 MCA

14.6.2.1 Effectiveness

Option 1 (prescribe a framework for establishing noise limits for CIT premises in urban and rural areas and define aggravated noise) will establish a clear and defensible noise framework for CIT businesses that:

- Prescribes a clear methodology for measuring and establishing noise limits for CIT businesses
- Clearly distinguishes between 'urban' and 'rural' areas with respect to establishing appropriate noise limits for each area
- Prescribes operating times (Day, Evening and Night) with respect to sources of noise under the unreasonable and aggravated noise provisions
- Defines aggravated noise with respect to noise from CIT premises.

Relative to the Base Case, Option 1 is considered to provide greater clarity and certainty for CIT businesses with respect to what constitutes 'unreasonable' and 'aggravated' noise, what their respective noise emission and management responsibilities are, and how noise from CIT premises should be managed in respect of volume, intensity, time, duration, place and character.

Option 1 gives effect to the unreasonable and aggravated noise provisions and civil penalty provisions in the new EP legislation. In doing so, it supports the prevention, compliance and enforcement of unreasonable and aggravated noise from CIT businesses.

Given the nature of noise, it is difficult to quantify the likely impacts on human health associated with **Option 1**. Overall, it is expected to reduce the emission and incidence of unreasonable and aggravated noise, and in turn reduce human health impacts associated with noise annoyance and noise disturbance relative to the Base Case. Overall, a score of +4 is given relative to the Base Case.

Option 2 (Option 1 plus selected improvements) is expected to enhance the management and prevention of unreasonable and aggravated noise relative to Option 1 and the Base Case. However, it is not possible to say with certainty the extent to which Option 2 will reduce risks to human health relative to Option 1.

By aligning weekday and Saturday times, **Option 2** aligns Victoria with other Australian jurisdictions with respect to the management of noise. Prescribing changes to Saturday noise limits would reflect the community's changing expectations regarding the types of activities undertaken on Saturday afternoons - activities that are more aligned with a busy community and commercial activities. However, this change may increase the community's exposure to noise on Saturdays. There is no evidence, however, that businesses are forced to close on Saturdays because of noise requirements. As such, for the majority of locations across Victoria there would likely be limited change in business activity and accompanying noise emissions.²⁸³

Option 2, by introducing a noise limit of 55 dB (the level at which noise is considered to impact health) during night periods, will protect the community from noise emissions over and above Option 1 and the Base Case. However, this improvement is expected to be marginal, as a review of industry noise assessments indicates only 1.4% of all sites exceed the 55 dB limit.²⁸⁴

Option 2 will also enhance protections to reduce the community's exposure to frequency spectrum noise relative to Option 1 and the Base Case. Epidemiological research on frequency spectrum noise and health

²⁸³ EPA, *Cost Benefit Analysis on Policy Options for Noise Regulations* (2018), page 32.

²⁸⁴ EPA, *Percentage of sites where industry noise limits exceed 55 dBA at night*, page 1.

effects is scarce and can suffer from a range of methodological shortcomings. However, it is recognised that there are benefits to reducing exposure to frequency spectrum noise, and that some people in particular are more susceptible to adverse effects from frequency spectrum noise, including disturbance from the throbbing and vibration sensations caused.²⁸⁵ It is not possible to estimate the extent to which **Option 2** will reduce exposure to frequency spectrum noise relative to **Option 1**, as managing frequency spectrum noise has not previously been an obligation of the regulatory framework for noise.

Lastly, **Option 2** will prescribe protection to a range of additional beneficial uses, assisting to reduce the community's exposure to CIT noise in these new noise sensitive areas over and above **Option 1** and the Base Case.

Overall, while it is not possible to quantify the reduced harm to human health, the effectiveness of **Option 2** will be higher than **Option 1** and the Base Case. Overall, a score of +7 is given to **Option 2**.

14.6.2.2 Cost

Cost to duty holders

Option 1 will provide duty holders and regulators with greater certainty and clarity with respect to the obligations under the unreasonable and aggravated noise provisions.

Option 1 may reduce the burden on duty holders from resolving noise complaints through legal means (e.g. Victorian Civil and Administration Tribunal, VCAT) and incurring accompanying legal fees and acoustic consultant fees. By way of example, the typical fee for an acoustic assessment is in the order of \$10,000, although this is highly dependent on the specific scope of work required.²⁸⁶

By providing greater certainty, **Option 1** also avoids the risk that duty holders may seek to resolve the complaint through avoiding the activity, reducing the time and duration of the activity or investing in (potentially) unnecessary noise management and attenuation activities beyond what a prescribed unreasonable threshold would require. Attenuation activities may involve equipment replacement and upgrade, plant redesign, and process management. Attenuation costs can be significant and vary widely depending on the activity being undertaken; a recent report commissioned by EPA identified attenuation costs varying from approximately a few thousand dollars to well over a million dollars.²⁸⁷

Option 1 may also induce greater compliance by duty holders, such as purchasing noise compliant equipment, resulting in duty holders incurring some additional attenuation costs over and above the Base Case. While there will be an existing state of knowledge underpinning duty holder behaviour and compliance, some duty holders may face additional compliance costs due to the revised urban area boundary. A small proportion of duty holders will now need to comply with noise limits relevant to urban areas, where previously compliance was to non-statutory rural limits. Furthermore, duty holders in rural areas will now be bound by statutory noise limits, where previously rural area noise limits were addressed through guidance.

However, given the nature of noise and the lack of data on the final attenuation solutions of premises which have been deemed to be emitting unreasonable noise, it is not possible to estimate the number of duty holders affected, the number of unreasonable or aggravated noise incidents avoided, or the likely costs to duty holders. It is likely that some duty holders may avoid some costs, while some duty holders may incur additional costs.

²⁸⁵ EPA, *Cost Benefit Analysis on Policy Options for Noise Regulations* (2018), page 34.

²⁸⁶ EPA, *Cost Benefit Analysis on Policy Options for Noise Regulations* (2018), page 49.

²⁸⁷ Resonate acoustics et al., *SEPP N-1 and SEPP N-2 Impact Analysis Project 1: Impact on Business* (2016), pages 21-22.

It is likely that **Option 1** will greatly assist small businesses in complying with noise provisions under the new EP legislation. During consultations, stakeholders suggested that small businesses typically have limited in-house resources to manage noise issues or the resources to engage acoustic consultants.

Option 2 is expected to result in a higher regulatory burden to duty holders relative to Option 1 due to the additional requirement to:

- Manage and attenuate low frequency noise
- Meet a night time noise limit of 55 dB
- Manage noise with respect to an expanded list of noise sensitive areas (e.g. childcare centres, kindergartens, and tourist establishments, caravan parks and camping grounds in rural areas).

The above requirements will likely result in additional acoustic consulting fees, noise assessment and attenuation costs for some duty holders. Interviews with acoustic consultants noted that attenuating frequency spectrum noise emissions, for example, can potentially be very expensive (i.e. over \$100,000). It is not possible to estimate the number or location of duty holders affected, or the likely number of unreasonable or aggravated noise incidents avoided under Option 2. However, these costs are unlikely to impact a significant number of duty holders. For example, an EPA assessment of night time noise limits found only 1.4% of sites assessed had limits greater than 55 dB.²⁸⁸ Overall, **Option 2** is expected to result in higher costs to duty holders relative to Option 1 and the Base Case, although the exact size of this increase is unknown.

Cost to government

Option 1 is expected to reduce the administrative burden of EPA, local councils and the Victoria Police in managing and enforcing noise provisions under the new EP legislation relative to the Base Case.

As reported above, there are an estimated 70,000 to 150,000 noise complaints received annually across government agencies (EPA, councils, Victoria Police). **Option 1** will provide regulators with greater ability to enforce unreasonable and aggravated noise. While it is not possible to estimate the impact on duty holder behaviour under **Option 1** relative to the Base Case, it is clear that **Option 1** will support the continued monitoring and enforcement of CIT noise emissions by providing a transparent, defensible measurable framework. This is likely to reduce the administrative burden on government in managing and enforcing unreasonable and aggravated noise, by reducing the need to engage acoustic specialists and legal advice to enforce noise emissions relative to the Base Case. Option 1 will broadly involve the translation of SEPP N1 and NIRV frameworks, and is therefore not expected to represent a significant cost to government to implement.

Option 2 is expected to lead to a slightly higher administrative burden on regulators due to the need to monitor and enforce frequency spectrum noise, additional noise sensitive areas and compliance with new night time noise limits.

Overall cost summary

Under **Option 1** there will be a range of duty holders who will have lower compliance costs relative to the Base Case, however this is likely to be offset by increased compliance costs to other duty holders. There is significant uncertainty with respect to the impact on duty holders, and this will depend on the nature of activities, the existing attenuation processes in place, and proximity of businesses to noise sensitive areas. However, **Option 1**

²⁸⁸ EPA, *Percentage of sites where industry noise limits exceed 55 dBA at night*, page 1.

is expected to reduce administrative and monitoring costs to government relative to the Base Case. A score of +3 is given compared to the Base Case.

Option 2 is expected to reduce administrative and monitoring costs to government relative to the Base Case, but costs will be slightly higher than Option 1. **Option 2** is also expected to result in slightly higher costs to duty holders relative to Option 1 and the Base Case. A score of +1 is given compared to the Base Case.

14.6.3 MCA summary

The preferred option to address the residual risk is **Option 2 (Option 1 plus selected improvements)**. This option is expected to best support EPA and other regulators to manage and enforce unreasonable and aggravated noise from CIT premises, and achieve the greatest reduction in unreasonable and aggravated noises incidence relative to the Base Case. **Option 2** is preferred, as it is expected to achieve the greatest reduced risks to human health.

Table 14-2 Summary of MCA assessment for CIT premises

Criteria (and weight)	Option 1 Framework and aggravated noise definition	Option 2 Option 1 plus selected improvements
Effectiveness (50%)	4	7
Cost (50%)	3	1
Total weighted score	3.5	4

14.7 Noise from entertainment venues

14.7.1 Options

The options considered in addressing the residual risk associated with the emission of noise from entertainment venues under the unreasonable and aggravated noise provisions are:

- **Base Case – do nothing:** no regulations to complement the GED and unreasonable and aggravated noise provisions with respect to entertainment venues.
- **Option 1 – prescribe a framework for establishing noise limits for entertainment premises and define aggravated noise:** Option 1 involves prescribing a framework that establishes noise limits for entertainment venues based on the existing SEPP N2 framework. Option 1 also involves defining aggravated noise from entertainment venues and implementing a range of selected improvements to the existing SEPP N2 framework, including:
 - Streamlining day and night operating periods
 - Expanding prescribed noise sensitive areas as outlined in SEPP N2 to include childcare centres, kindergartens, and primary and secondary schools and tourist establishments, caravan parks and camping grounds in rural areas.

Only one option has been considered with respect to entertainment venues because:

- Selected improvements to the existing SEPP N2 framework are likely to only have an incremental impact on human health relative to translating the existing SEPP N2 framework into regulation
- The lack of data around the impacts on human health associated with noise from entertainment venues, combined with the nature of noise, makes it challenging to quantify or estimate the likely incremental difference between (a) an option that seeks to only translate the SEPP N2 framework and (b) an option that translates the SEPP N2 framework with selected improvements.

As with noise from CIT premises, the options for improvement of the current SEPP N-2 framework are considered proportionate and are primarily designed to increase transparency to support improved outcomes in relation to the impact of noise on human health and the environment. Guidance material alone is not

considered to be an appropriate option for addressing residual risks associated with noise provisions under the new EP legislation. A prescribed noise limit framework is required to give effect to the unreasonable and aggravated noise provisions with respect to entertainment venues, and non-statutory guidance will be insufficient to give full effect to the civil penalty provisions under the new EP legislation.

14.7.2 MCA

14.7.2.1 Effectiveness

Option 1 will establish a clear and defensible noise framework for entertainment venues that:

- Prescribes a clear methodology for measuring and establishing noise limits for entertainment venues
- Defines aggravated noise with respect to entertainment venues
- Prescribes noise limits and relevant operating times with respect to indoor and outdoor entertainment venues.

Relative to the Base Case, **Option 1** is considered to provide significantly greater clarity and certainty for entertainment venues with respect to what constitutes 'unreasonable' and 'aggravated' noise and what their respective noise emission and management responsibilities are. This was supported during stakeholder consultations.

In doing so, **Option 1** gives effect to the unreasonable and aggravated noise provisions, and civil penalty provisions, in the new EP legislation and supports the prevention, compliance and enforcement of unreasonable and aggravated noise from entertainment venues.

In 2018, there were an estimated 22,500 liquor licences held in Victoria²⁸⁹ and 553 live venues hosting around 73,000 live music performances in Greater Melbourne.²⁹⁰ Relative to the Base Case, **Option 1** is expected to reduce the emission and incidence of unreasonable and aggravated noise from entertainment venues, and in turn reduce detrimental human health impacts associated with noise annoyance and noise disturbance. However, it is not possible to quantify the likely impacts on human health, or estimate the number of venues likely to engage in behaviour change. Overall, a score of +7 is given relative to the Base Case.

14.7.2.2 Cost

Cost to duty holders

Option 1 may reduce the burden on duty holders from resolving noise complaints through legal means (e.g. VCAT) and incurring legal fees and acoustic consultant fees. By providing greater certainty, **Option 1** also avoids the risk that duty holders may seek to resolve the complaint through avoiding the activity, reducing the time and duration of the activity or investing in (potentially) unnecessary noise management and attenuation activities beyond what a prescribed unreasonable threshold would require. Attenuation activities may involve installing noise limiters, undertaking building upgrades, engaging acoustic advice and undertaking noise surveys.

Attenuation costs can be significant and vary widely depending on the activity being undertaken; the average costs incurred by entertainment venues for such activities are:²⁹¹

- \$7,000 – music amplifier and system noise limiter

²⁸⁹ Music Victoria, *Melbourne Live Music Census 2017 Report* (2017), page 1.

²⁹⁰ EPA, *Cost Benefit Analysis on Policy Options for Noise Regulations* (2018), page 48.

²⁹¹ Resonate acoustics et al., *SEPP N-1 and SEPP N-2 Impact Analysis Project 1: Impact on Business* (2016), page 41.

- \$32,000 for building upgrades such as insulation, installation of curtains, upgrade of doors etc.
- \$20,000 for an acoustic assessment.

Option 1 may also induce greater compliance by duty holders, resulting in additional attenuation costs over and above the Base Case.

However, it is not possible to estimate the number of entertainment venues affected or the likely costs to duty holders. It is likely that some duty holders may avoid some costs, while some duty holders may incur additional costs.

It is likely that **Option 1** will greatly assist smaller entertainment venues in complying with noise provisions by providing greater clarity and certainty around their responsibilities under the new EP legislation.

Cost to government

Option 1 is expected to reduce the administrative burden of EPA, local councils and the Victoria Police in managing and enforcing noise from entertainment venues relative to the Base Case.

As reported above, a quarter of the Victoria Police’s liquor licensing unit’s time is devoted to responding to noise complaints. Furthermore, a significant proportion of the estimated 70,000 to 150,000 noise complaints received annually across government (EPA, councils, Victoria Police) relate to noise from entertainment venues. **Option 1** will also provide regulators with greater ability to enforce aggravated noise. While it is not possible to estimate the impact on duty holder behaviour under **Option 1** relative to the Base Case, it is clear that **Option 1** will support the continued monitoring and enforcement of entertainment venue noise emissions by providing a transparent, defensible measurable framework. This is likely to reduce the administrative burden on government (in particular inner Melbourne councils) in managing and enforcing unreasonable and aggravated noise. **Option 1** will broadly involve the translation of the SEPP N2 framework, and therefore its implementation is not expected to represent a significant cost to government.

Overall cost summary

Under **Option 1**, there may be duty holders with lower compliance costs relative to the Base Case, however this may be offset by increased compliance costs for other duty holders. There is significant uncertainty with respect to the impact on duty holders, and this will depend on the nature of activities, the existing attenuation processes in place, and the location of the venue. Overall, **Option 1** is expected to have a neutral impact on costs to duty holders. However, **Option 1** is expected to reduce administrative and monitoring costs to government relative to the Base Case. A score of +3 is given compared to the Base Case.

14.7.3 MCA summary

Option 1 is proposed over the Base Case. **Option 1** gives effect to the unreasonable and aggravated noise provisions with respect to entertainment venues, and supports the prevention, compliance and enforcement of unreasonable and aggravated noise. **Option 1** will reduce the administrative burden of EPA, local councils and the Victoria Police.

Table 14-3 Summary of MCA assessment for entertainment venues

Criteria (and weight)	Option 1 Framework and aggravated noise definition
Effectiveness (50%)	7
Cost (50%)	3
Total weighted score	5

14.8 Noise from residential premises

14.8.1 Options

The options considered in addressing the residual risk associated with the emission of noise from residential premises under the unreasonable and aggravated noise provisions are:

- **Base Case - do nothing:** no regulations to complement the GED and unreasonable and aggravated noise provisions with respect to residential premises.
- **Option 1 – prescribe specific items and prohibited times for residential premises and define aggravated noise:** Option 1 involves prescribing Section 6 (prescribed items and prohibited times) of the Environment Protection Regulations (Residential Noise) 2018 with respect to the application of unreasonable noise provisions under the new EP legislation and defining aggravated noise from residential premises. Option 1 also involves selected additions to Section 6 of the Environment Protection (Residential Noise) Regulations 2018, specifically:
 - Inclusion of an exemption for air conditioners on heat health alert days, as determined by the Department of Health and Human Services (Victoria).
 - Inclusion of vessels and personal watercraft in residential premises (i.e. where engines are idling or maintenance is being undertaken) to align with existing internal combustion vehicles.

Again, only one option has been considered with respect to addressing the residual risk associated with residential noise because:

- From a practical perspective, it is likely that the translation of Section 6 of the Environment Protection (Residential Noise) Regulations 2018 and selected additions would be implemented as a single regulatory package
- Selected additions to the existing residential noise framework are likely to only have an incremental impact on human health relative to translating the existing framework into regulation
- The lack of data around the impacts on human health associated with residential noise, combined with the nature of noise, makes it challenging to quantify or estimate the likely incremental difference between (a) an option that seeks to only translate the Section 6 of the existing residential noise framework and (b) an option that includes additional improvements. However, in the case of the improvements for the residential noise framework, the inclusions reflect feedback received during the 2017 review of the current Environment Protection (Residential Noise) Regulations 2018. In this way it is predicted that the changes will result in a measurable reduction in complaints to EPA and other relevant authorities in the future.

Furthermore, guidance material is not considered to be an appropriate option for addressing residual risks associated with unreasonable and aggravated noise provisions under the new EP legislation. A prescribed noise limit framework is required to give effect to the unreasonable and aggravated noise provisions with respect to residential premises. Furthermore, civil penalty provisions under the new EP legislation cannot be enforced via non-statutory guidance.

14.8.2 MCA

14.8.2.1 Effectiveness

Option 1 will provide greater clarity and certainty for residential premises with respect to what constitutes 'unreasonable' and 'aggravated' noise and what the respective noise emission and management responsibilities of residential premises are.

Option 1 will give effect to the unreasonable and aggravated noise provisions, and civil penalty provisions, in the new EP legislation and supports the prevention, compliance and enforcement of unreasonable and aggravated noise from residential premises. **Option 1** also translates into regulation the Environment Protection (Residential Noise) Regulations 2018 that already state that the prohibited times relating to air conditioning will

not apply at any time when a heat health alert is in effect. This will enable households to maintain reasonable comfort and avoid human health impacts, without the concern of non-compliance with the noise regulations during periods of extreme heat.

In addition, **Option 1** will assist in addressing the forecast increase in the residential noise problem due to greater medium/high density living and establishing a common community understanding of what is and isn't reasonable noise.

Relative to the Base Case, **Option 1** is anticipated to reduce the emission and incidence of unreasonable and aggravated noise from residential premises, and in turn reduce detrimental human health impacts associated with noise annoyance and noise disturbance. However, it is not possible to quantify the likely impacts on human health, or estimate the number of residential premises likely to engage in behaviour change relative to the Base Case. Option 1 gives full effect to the new EP legislation with respect to the management of noise from residential premises. Overall, a score of +7 is given relative to the Base Case.

14.8.2.2 Cost

Cost to duty holders

Option 1 will also reduce requirement for duty holders to resolve noise complaints through legal means (e.g. VCAT) and other less efficient means. By providing greater certainty, **Option 1** also avoids the risk that residents seek to resolve the complaint through avoiding the activity or investing in (potentially) unnecessary noise management and attenuation activities

It is not possible to estimate the number of residential premises (or number of people) likely to be affected or the likely costs to duty holders under **Option 1**. It is likely that some duty holders may avoid some costs, while some duty holders may incur additional costs.

Cost to government

Option 1 is expected to reduce the administrative burden of local council officers and the Victoria Police in managing and enforcing noise from residential premises relative to the Base Case.

Under **Option 1**, council officers and policy officers would have clear guidance available as to what constitutes unreasonable and aggravated noise. Furthermore, council officers and police officers would not have to rely on the subjective definitions of unreasonable noise contained in the new EP legislation, leading to the avoidance of time consuming and less effective enforcement activity, such as pursuing enforcement via VCAT.

Overall, **Option 1** is likely to reduce the administrative burden on local government authorities and Victoria Police in managing and enforcing unreasonable and aggravated noise from residential premises. Option 1 will broadly involve the translation of existing prescribed items and prohibited times under the Environment Protection Regulations (Residential Noise) 2018, and as such the cost of its implementation is likely to be minor.

Overall cost summary

Overall, **Option 1** is expected to have a neutral impact on costs to duty holders. However, **Option 1** is expected to significantly reduce administrative and monitoring costs to local councils and Victoria Police relative to the Base Case. A score of +5 is given compared to the Base Case.

14.8.3 MCA summary

Option 1 is preferred over the Base Case. **Option 1** gives effect to the unreasonable and aggravated noise provisions with respect to residential premises, and supports the prevention, compliance and enforcement of unreasonable and aggravated noise. **Option 1** will reduce the administrative burden of local councils and the Victoria Police, and is likely to be easily implemented. **Option 1** is also expected to reduce human health impacts associated with noise annoyance and noise disturbance.

Table 14-4 Summary of MCA assessment for residential premises

Option 1

Criteria (and weight)	Framework and aggravated noise definition
Effectiveness (50%)	7
Cost (50%)	5
Total weighted score	6

15 Vehicle emissions

This chapter outlines the problem of emissions from vehicles in Victoria, and assesses the proposal to incorporate existing Motor Vehicle Regulations into the proposed Regulations.

Key points:

- Motor vehicles, although an important part of everyday life, are a significant source of air pollution emissions (including greenhouse gases) and noise.
- The *Environment Protection (Vehicle Emissions) Regulations 2013* set various air and noise emission requirements for in-service light vehicles (under 4.5 tonnes gross vehicle mass).
- The new EP legislation makes clear the intention of the Victorian Government - to continue to regulate vehicle emissions in a similar manner, by including a provision to save the *Environment Protection (Vehicle Emissions) Regulations 2013*. This means that, in the absence of further government intervention, these regulations remain in force under the new EP legislation until they sunset in December 2023.
- The residual risk is that reliance on the *Environment Protection (Vehicle Emissions) Regulations 2013* under the new EP legislation may result in a complex and confusing legislative structure for duty holders and EPA officers, which may result in a small increase in regulatory burden for businesses and EPA.
- Translating the *Environment Protection (Vehicle Emissions) Regulations 2013* into the proposed Environment Protection Regulations 2019 overcomes this limitation.
- The current reform of subordinate legislation also presents an opportunity to incorporate relatively minor changes to ensure consistency with the national motor vehicle rules, and to ensure the regulatory requirements apply consistently to all duty holders without adding any additional burden on them.
- As such, the preferred approach is to incorporate these changes when translating the *Environment Protection (Vehicle Emissions) Regulations 2013* into the proposed Environment Protection Regulations 2019.

15.1 Background

Motor vehicles are an important part of modern life. They provide a high degree of personal mobility and are critical to the movement of goods and services. There were 4.9 million vehicles registered in Victoria in 2018.²⁹²

Yet motor vehicles are a significant source of air pollution emissions (including greenhouse gases) and noise.

Air pollutants from the use of motor vehicles include volatile organic compounds (VOCs) such as oxides of nitrogen (NO_x) and hydrocarbons (HCs), both of which can, in high enough quantities, contribute to visible summer time haze. Motor vehicles emit greenhouse gases, including carbon dioxide (CO₂). They also account for a considerable proportion of airborne particles (particulate matter). Fine particles are often visible as brown

²⁹² Australian Bureau of Statistics, Motor Vehicle Census, 31 Jan 2018.
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/9309.031%20Jan%202018?OpenDocument>

winter haze. Vehicles are also sources of invisible emissions, including carbon monoxide (CO). Emissions from in-service motor vehicles (i.e. vehicles on the road) significantly contribute to regional and local air pollution.²⁹³

There are also air emissions associated with petrol even when vehicles are not in use. Petrol easily evaporates, causing dangerous HCs to be present in the air. This evaporation occurs within storage tanks at petrol stations and within the petrol tanks of cars. Petrol vapour escapes when the petrol tank of a car is being filled. HCs can also be emitted through evaporation from a vehicle when running and stationary.

Motor vehicles are a major source of urban air pollution in urban areas.²⁹⁴ In Melbourne in 2006,²⁹⁵ motor vehicle emissions contributed the following levels of pollutants to the overall air quality:

- 72 per cent of all CO emissions.
- 70 per cent of all NOx emissions.
- 28 per cent of all volatile organic compounds HC emissions.
- 31 per cent of all emissions of PM_{2.5}.
- 27 per cent of all emissions of PM₁₀.
- 6 per cent of all sulfur dioxide (SO₂) emissions.

15.2 Current legislative and regulatory framework

Current air pollution requirements for vehicles under the EP Act 1970 are established in the *Environment Protection (Vehicle Emissions) Regulations 2013* (Vehicle Emissions Regulations). The Vehicle Emissions Regulations set various air and noise emission requirements for in-service light vehicles (under 4.5 tonnes gross vehicle mass). The Regulations:

- Prescribe a visibility standard for smoke.
- Set limits on air emissions: CO and HC in petrol vehicles and opacity, NOx and PM in diesel vehicles.
- Set limits for noise emissions (including incorporating the in-service vehicle requirements for Australian Design Rules (ADR) 83/00 compliant vehicles).
- Prescribe noise testing methods.
- Prohibit the resale of motor vehicles exceeding prescribed standards or containing temporary noise defeat devices.
- Prohibit the use or installation of temporary noise defeat devices.
- Prescribe fuel vapour pressure standards for regulated petrol producers, exemptions and requirements for record keeping and reporting.
- Prescribe the requirements for noise test labelling on motorcycles and trikes.

These Regulations operate in a broader national regulatory landscape that also includes:

- **National vehicle standards**, which sets emission and noise standards for new vehicles (at point of manufacture or import) as set by the ADRs.
- **Australian Light Vehicle Standards Rules (ALVSRs)**, which set emission and noise standards and apply once a light vehicle becomes an in-service vehicle (i.e. once it is sold to the consumer for use).
- **Fuel quality Standards**, which are set by the Commonwealth under the *Fuel Quality Standards Act 2000*.

²⁹³ Environment Protection Authority, *EPA Regulatory Impact Statement – Environment Protection (Vehicle Emissions) Regulations 2013*. Available at https://www.epa.vic.gov.au/~/_media/Publications/1543.pdf

²⁹⁴ EPA Victoria, *Vehicle emissions and air quality*, <https://www.epa.vic.gov.au/your-environment/air/vehicle-emissions-and-air-quality>

²⁹⁵ This are the latest available estimates of motor vehicle air emissions in Melbourne.

- **National Environment Protection (Diesel Vehicle Emissions) Measure** – which provides guidance and administrative measures, for developing programs to minimise the deterioration in exhaust emissions performance, or improving exhaust emissions performance, from diesel vehicles while they are in-service.
- **The Heavy Vehicle National Law**, which sets emission and noise standards for vehicles with a gross vehicle mass (GVM) exceeding 4.5 tonnes.

The Vehicle Emissions Regulations do not apply to new or heavy vehicles (over 4.5 tonnes GVM). These are regulated under the Commonwealth's *Motor Vehicle Standards Act 1989* via the ADR and the Heavy Vehicle National Law, respectively.

Within Victoria, enforcement of air and noise emissions from motor vehicles is administered through EPA's motor vehicle program. EPA uses a variety of enforcement tools to regulate motor vehicle emissions, including:

- Notices which require a vehicle owner to have their vehicle tested at an approved testing facility.
- Notices of intention to suspend which allows for the suspension of the vehicle's registration for continued non-compliance.
- Official warnings which do not carry a financial penalty but can lead to further sanctions.
- Infringement notices which impose a financial penalty.
- Prosecutions which allow the courts to decide if an offence has been committed and impose the appropriate penalty.

Other agencies, such as Victoria Police and VicRoads also have some role in enforcement. For example, Victoria Police may report a noisy vehicle to EPA. EPA is also reliant on the powers of Victoria Police to lawfully stop a vehicle. Once stopped, a vehicle can be inspected by EPA authorised officers.

15.3 New EP legislation

Aside from the GED, there are no specific duties or offences related to vehicle emissions, either noise or air, in the new EP legislation. The GED would apply to operators of vehicles, however offences for breaches of the GED do not apply to all persons - only those conducting a business or undertaking.

The Act does, however, give powers to a police officer or officer authorised under the Road Safety Act 1986 to:

- Lawfully stop and conduct any inspection, measurement or test in relation to the motor vehicle, for the purpose of performing a function or duty or exercising a power under this Act.
- And sign a report outlining that (a) the motor vehicle did not comply with a provision of this Act or the regulations; or (b) the motor vehicle was used on a highway; or (c) a specified person was the driver of the motor vehicle.

The EP Act 2017 saves the Vehicle Emissions Regulations. This means that, in the absence of further government intervention, they remain in force under the new EP legislation until 10 December 2023 or, if the regulations are revoked before that date, on the day on which they are revoked.

15.4 Nature and extent of problem

15.4.1 Residual risk

The residual risk is that reliance on the existing Vehicle Emissions Regulations under the new EP legislation may result in a complex and confusing legislative structure for duty holders and EPA officers alike, which may result in a small increase in regulatory burden for businesses and EPA.

Vehicle pollution, like many other forms of pollution, is a negative externality. The impacts of the pollution largely affect people other than those operating the motor vehicle. This means that, unless the pollution stems from an issue which impacts the vehicle's running costs, or is a nuisance to the driver themselves, there is generally limited incentive for a driver to voluntarily reduce emissions. Without some form of government intervention, the existence of externalities can encourage activities that result in a negative burden on external parties.

The GED will be unlikely to provide adequate protection against the harms of motor vehicle emissions. The environmental and health impacts posed by vehicle emissions and noise are cumulative in nature, meaning that an individual's level of pollution is unlikely on its own to trigger an obligation under the GED. Furthermore, there would be no offences for breaching the GED for individuals who are operating vehicles for personal use, since a GED offence can only be committed by a person conducting a business or an undertaking.

The Vehicle Emissions Regulations, which will remain in force until 2023, will address the vehicle pollution risk until that year.

In the absence of government intervention, the Vehicle Emissions Regulations would operate alongside the proposed Regulations in support of the new EP legislation. By virtue of saving the Vehicle Emissions Regulations until 10 December 2023, the associated offence provisions in the EP Act 1970 would also be retained. Reliance on these provisions may result in a complex and confusing legislative structure for duty holders and EPA officers alike. This compromises the objective of establishing a modernised and streamlined legislative framework and is likely to result in some increase in regulatory burden for businesses and costs to EPA; albeit quite small.

15.4.2 Harms

This section describes the broad harms from vehicle emissions. It is noted that the problem of vehicle emissions will be mostly addressed until 2023, even if there is no further intervention (i.e. in which case the current Vehicles Emissions Regulations will remain in place until the end of 2023).

Noise and air emissions from vehicles impact human health and the environment.

These air pollutants have detrimental health impacts, are precursors to the formation of ozone, and are often visible as brown winter haze. Emissions from in-service motor vehicles can contribute to poor health (adversely affecting acute and chronic health conditions) and the loss of amenity (for example, odour and poor visibility).

In a 2005 study (the most recent known national study), the economic cost of motor vehicle air pollution on health in Australia was estimated to be approximately \$2.7 billion each year.²⁹⁶ Compared to 2005, vehicles today are more efficient and use cleaner fuels, meaning that they typically emit less air pollutants, however this improvement has likely been (at least partially) offset by an increase in the number of vehicles operating in Victoria and an increase in the number of people exposed to the pollutants.

Noisy vehicles can cause annoyance, sleep disturbance and other health impacts associated with elevated sound levels. Elevated noise can cause hearing impairment, hypertension, ischemic heart disease, annoyance, sleep disturbance, and impacts on the immune system. The effects of noise from motor vehicles includes sleep disturbances (which may also have long term health impacts), amenity (affecting liveability and wellbeing), annoyance (increasing stress), and decreased social cohesion.²⁹⁷

EPA conducted a survey of 799 Victorians between 2011 and 2012, with 23 per cent of Victorians indicating that they had been disturbed in the home by road traffic from individual vehicles. A similar number (25 per cent) indicated busy roads as a source of disturbances in the home. The average level of disturbance reported by Victorians (excluding those that were not disturbed) was moderate at 5.9 out of 10. However, almost half of

²⁹⁶ Bureau of Transport and Regional Economics, Working paper 63, Health impacts of transport emissions in Australia: Economic costs, page xiv.

²⁹⁷ Environment Protection Authority, *EPA Regulatory Impact Statement – Environment Protection (Vehicle Emissions) Regulations 2013*.

Available at https://www.epa.vic.gov.au/~/_media/Publications/1543.pdf

those disturbed by these two sources (57 per cent for busy roads, 59 per cent for individual vehicles) were very to extremely disturbed.²⁹⁸

15.5 Options

Three options are considered in this RIS for addressing motor vehicle pollution in Victoria. Under each of these options, the Vehicle Emissions Regulations remain in force in Victoria with the commencement of the new EP legislation. No options consider a scenario where Vehicle Emissions Regulations do not exist in Victoria. This is primarily for two reasons. Firstly, the Vehicle Emissions Regulations generate a significant net benefit for Victoria. The 2013 Regulatory Impact Statement²⁹⁹ estimated the net benefit attributable to avoided noise was \$4.2 million over 10 years, while the net benefit attributable to avoided air pollution was \$61.1 million (when converted to real \$2019). These values only reflect the quantifiable benefits. Avoided emissions from petrol vehicles will also have benefits that were not quantified in the 2013 RIS, including benefits to the natural environment.

Secondly, by including a provision in the new EP legislation to save the Vehicle Emissions Regulations, the Victorian Government has stated a clear policy intention for these vehicle emissions to continue to be regulated under the new legislative framework.

In developing these options for the control of vehicle emissions, EPA reviewed the regulations to identify areas for potential improvement and identified potential changes (which are incorporated in the options). Other minor potential improvements identified require further data on who would be affected or can be progressed as non-regulatory options, for example, updating guidelines.

The three options considered for addressing pollution of motor vehicles are outlined below:

15.5.1 Option 1 – do nothing (Base Case)

Under the Base Case, the Vehicle Emissions Regulations remain in force from the commencement of the new EP legislation until 10 December 2023 (when they are due to sunset). Should they sunset, the Vehicle Emissions Regulations would no longer continue to have effect in Victoria beyond 2023.

15.5.2 Option 2 – Translate the Vehicle Emissions Regulations into the proposed Regulations

Under this option, the Vehicle Emissions Regulations are translated into the proposed Regulations, along with some relevant provisions and offences within the EP Act 1970 that operate in conjunction with the Regulations. Some of the motor vehicle offences in the EP Act 1970 (which has a maximum penalty of 2,400 penalty units) have a penalty higher than what is allowable under Regulations (maximum of 100 penalty units). As such, penalties would need to be adjusted accordingly.

The Vehicle Emissions Regulations (within the proposed Regulations) would remain in force until 2030 (when they would be due to sunset).

15.5.3 Option 3 – Translate the Vehicle Emissions Regulations into the proposed Regulations, with some amendments

Under this option, the Vehicle Emissions Regulations are translated into the proposed Regulations, along with some relevant provisions and offences within the EP Act 1970 that operate in conjunction with the Regulations (as per Option 2).

²⁹⁸ Environment Protection Authority, *EPA Regulatory Impact Statement – Environment Protection (Vehicle Emissions) Regulations 2013*. Available at <https://www.epa.vic.gov.au/~media/Publications/1543.pdf>

²⁹⁹ Environment Protection Authority, *EPA Regulatory Impact Statement – Environment Protection (Vehicle Emissions) Regulations 2013*. Available at <https://www.epa.vic.gov.au/~media/Publications/1543.pdf>

Option 3 differs from Option 2, in that the proposed Regulations would incorporate the following changes:

- Adoption of a consistent approach to testing diesel air emissions with the ALVSRs, which are model rules developed by the *National Transport Commission* (see section 15.2). The approach is known as the DT80 test cycle. The DT80 test cycle is currently referenced in the Vehicle Emissions Regulations, but is not referenced back to the ALVSRs.
- Restricting the sale or supply of in-service spark ignition engine vehicles that do not meet the prescribed hydrocarbon limits. These limits are already prescribed in the Vehicle Emissions Regulations. The current *Environment Protection Act 1970* (and Vehicle Emissions Regulations) restrict the sale of vehicles that do not comply with the visibility and carbon monoxide limit, but do not make the same requirement for the hydrocarbon limit. This option would extend the current restrictions on the use of vehicles that do not comply with the hydrocarbon limit to also apply to their sale and supply. Note that while there are no existing restrictions on the sale of in-service diesel vehicles that do not comply with the relevant NOx, particle and opacity limits, this restriction would naturally already be in place through the Australian Light Vehicle Standards Rules 2015, which are intended to apply to in-service vehicles.

The Vehicle Emissions Regulations (within the proposed Environment Protection Regulations 2019) would remain in force until 2030 (when they would be due to sunset).

15.6 Assessment

15.6.1 Assessment method

A qualitative assessment has been undertaken reflecting the lack of recent data that is available, and the proportionately small nature of the changes to regulations being proposed.

15.6.2 Option 1 - do nothing (Base Case)

Under the Base Case, the risk of vehicle pollution is addressed because the Vehicle Emissions Regulations remain in force, however there is a complex legislative structure that could impose costs on both businesses and EPA in terms of understanding and administering the regulations. By virtue of saving the Vehicle Emissions Regulations until 2023, the associated offence provisions in the EP Act 1970 would also be retained.

Option 1 also does not take advantage of the opportunity to make improvements to the current Vehicle Emissions Regulations. This could result in costs to businesses and EPA due to the inconsistent approach to testing diesel emissions between the current Vehicle Emissions Regulations and the ALVSRs. These costs are likely, however, to be quite small.

15.6.3 Option 2 – Translate the Vehicle Emissions Regulations into the proposed Regulations

The benefit of Option 2 relative to Option 1 is that it creates a simplified legislative structure by housing all regulations within a single set. In doing so, it may (albeit slightly) reduce regulatory burden for duty holders by making it easier to interpret and understand where to find their obligations. In reducing legislative complexity, it may also result in a small improvement in compliance, and therefore improve environmental outcomes. Furthermore, the simplified structure might make it easier for EPA to administer the new EP legislation, thus reducing government costs.

In addition, by translating the Vehicle Emissions Regulations into the proposed Regulations, the requirements would not cease in 2023. Rather, they would continue for 10 years until they sunset as part of the proposed Regulations. This could reduce costs for government in terms of the need to review and remake new vehicles emissions regulations under the new framework.

Overall, the burden imposed on duty holder and government of this approach would be reduced slightly, with no change to how the pollution risk is addressed compared to the Base Case.

15.6.4 Option 3 – Translate the Vehicle Emissions Regulations into the proposed Regulations, with some amendments

Option 3 captures the same benefits of Option 2, except for the following additional benefits

- Consistency in the approach for testing diesel air emissions as the ALVSRs. By referencing the ALVSRs when defining the DT80 test cycle, this will ensure consistency between Victorian regulations and the national emission and noise standards for in-service vehicles. This will add no additional burden to duty holders, since the DT80 test cycle is the nationally agreed test for in-service diesel vehicles.
- Ensuring the air emission limit requirements that would apply to vehicle users also apply to sellers and suppliers. As previously discussed, the only genuine change regarding the sale of in-service vehicles is the new requirement that spark ignition engine vehicles meet the hydrocarbon emission limit. It is anticipated that the impact of this change will be negligible given that the consumer law protections likely already apply in many instances (requiring that a seller or supplier of an in-service spark ignition vehicle complies with legal requirements related to its use, i.e. the existing hydrocarbon limits).

15.6.5 Preferred approach

Both Options 2 and 3 are preferred to Option 1 (Base Case) because they provide a streamlined, less complex legislative structure which is likely to result in a small reduction in costs for businesses and EPA. On balance, Option 3 is the preferred approach, because the proposed changes provides some additional benefit, over and above the benefits of Option 2, without increasing costs or adding extra burden on duty holders.

16 Cost recovery and fees analysis

16.1 Legal authority

The new EP legislation enables EPA to charge fees to recover the costs associated with undertaking permissions and other activities. Specifically, it provides for EPA to prescribe fees for the following:

- Application for development licences, operating licences, pilot project licences, permits and registrations (s50(1)(b))³⁰⁰
- Transfer of development licences, operating licences, pilot project licences and permits (s56(3)(b))
- Amendment of development licences, operating licences, pilot project licences and permits (s57(3)(b))
- Surrender of development licences, operating licences, pilot project licences and permits (s59(3)(b))
- Development licence and operating licence exemptions (s80(3)(c))
- Permit exemptions (s68(2)(c), s82(2)(c), s83(2)(c))
- Renewal of permits and registrations (s84(3)(b), s86(3)(b))
- Appointment of environmental auditors (s191(3)(c), s198(2)(d))
- Review of preliminary risk screen assessment statements and reports (s217(1))
- Review of environmental audit statements and reports (s217(2))
- Applications by prohibited persons to engage in prescribed activity (s90(2)(d))
- Applications for authorisation of the emergency storage, use etc. of waste (s157(4)(b))
- Submission of proposed better environment plans (s181(3)(c))
- Appointment of analysts and prescribed roles (s245(5))
- Application to vary or revoke site management order (s277(2))
- Public access to the Public Register (s457(1)(b))
- Application for exemption from any provision of the regulations or of a legislative instrument made under the Act in accordance with s459 (s459(3))
- The doing of an act or providing of a service under the Act (s465(2)(c)(i)).

Under s55, the holder of a permission must also pay any prescribed fee at the prescribed time or for the prescribed period.

In addition to prescribed fees, EPA is able to charge for the following:

- Reasonable costs incurred by EPA that are associated with financial assurances (s224)
- Environmental protection levies (s91)
- Waste levies (s145).

³⁰⁰ The terminology used to refer to different types of permissions in this section varies based on whether the EP Act 1970 or the new EP legislation is being referenced. 'Operating licences' as described by the new EP legislation were the only type of licences under the EP Act 1970 and termed "Licences". 'Works approvals' under the EP Act 1970 are termed 'Development licences' under the new EP legislation. 'Research, development and demonstration (RD & D) approvals' under the EP Act 1970 are termed 'Pilot project licences' under the new EP legislation. Waste transport permits are the only type of permits under the EP Act 1970; under the new EP legislation there are also other types of permits.

Environment protection levies (s91(1)) are set directly by the new EP legislation at the rate of 3 per cent of the fee prescribed for permissions activities.

The waste levy is an amount prescribed by the regulations. If regulations are not prescribed, the waste levy for each tonne of waste (other than priority waste) is set in Schedule 2 of the legislation.

EPA currently sets fees under the EP Act 1970 and prescribes fees under the *Environment Protection (Fees) Regulations 2012* (EP (Fees) Regulations 2012) for most of the items that the new EP legislation enables fees to be charged for. Although some of the fees proposed are not new, their impact must be considered in this RIS and a full cost recovery analysis undertaken.

16.2 Cost recovery considerations

The key issues in respect of cost recovery and fee setting are:

- Whether fees should be established, and if so what level of cost recovery they should achieve.
- The costs base and efficiency of costs.
- The structure and level of the fees.

Cost recovery principles generally support the concept that those who utilise services (or give rise to the need for a regulatory activity) pay for the cost of those services, rather than have them funded by others (typically through general taxation). Under full cost recovery, taxpayers do not subsidise those who use the service, or impose the costs, which are to be recovered.

Cost recovery can advance both equity and efficiency objectives, although in some cases these objectives may need to be balanced against each other. General Victorian government policy is that unless there is good reason not to, regulatory fees and user charges should be set on a full cost recovery basis.³⁰¹ Full cost represents the value of all the resources used or consumed in the provision of an output or activity. In particular full cost recovery:

- Promotes the efficient allocation of resources by sending the appropriate price signals about the value of all the resources being used in the provision of government goods, services and/or regulatory activities; and
- Ensures that those that have benefited from government-provided goods and services, or those that give rise to the need for government regulation, pay the associated cost (those parties that do not benefit or take part in a regulated activity do not have to bear the costs).

The principle of fully internalising the costs of regulation is supported by the Department of Treasury and Finance's *Cost Recovery Guidelines* which states that costs should be recovered directly, where possible, "from those that benefit from, or whose actions give rise to the need for, the government good/service/activity."³⁰²

The *Cost Recovery Guidelines* also recognise that there are situations where it may be desirable to recover less than full costs, or not to recover costs at all. Examples include circumstances where:

- Practical implementation issues make cost recovery infeasible.
- There are benefits to unrelated third parties (sometimes referred to as 'positive externalities').
- Social policy or vertical equity considerations are considered to outweigh the efficiency objectives associated with full cost recovery.

³⁰¹ Office of the Commissioner for Better Regulation, 2016, *Victorian Guide to Regulation: A handbook for policy makers in Victoria*, Department of Treasury and Finance, Melbourne.

³⁰² Department of Treasury and Finance, 2013, *Cost Recovery Guidelines*, January.

- Full cost-recovery might adversely affect the achievement of other government policy objectives.

The *Victorian Guide to Regulation* requires that, where proposed regulations impose fees or charges, the proposed fees be assessed against the principles in the *Cost Recovery Guidelines*. The *Cost Recovery Guidelines* suggest 10 key steps should be examined:

- Step 1 Is the provision of the output or level of regulation appropriate?
- Step 2 What is the nature of the output or regulation?
- Step 3 Who could be charged?
- Step 4 Is charging feasible, practical and legal?
- Step 5 Is full cost recovery appropriate?
- Step 6 Which costs should be recovered?
- Step 7 How should charges be structured?
- Step 8 Are cost recovery charges based on efficient costs?
- Step 9 What is the importance of consultation?
- Step 10 How should cost recovery arrangements be monitored and reviewed?

16.3 Context

16.3.1 Current fees arrangements

The EP Act 1970 sets fees for application for a research, development and demonstration approval, appointment of environmental auditors and application for accreditation.³⁰³ The EP (Fees) Regulations 2012, as enabled under the EP Act 1970, additionally prescribe fees for:

- Works approvals.
- Licences.
- Waste transport permits.
- Environmental audits.

EPA’s ability under the EP Act 1970 to charge fees on a cost-recovery basis is constrained in some instances by caps that are set in this legislation.

In 2017–18, regulatory fees collected by EPA totalled \$14.7 million.³⁰⁴ **Error! Reference source not found.** Table 16.1 provides a breakdown of total fees collected in 2016-17 and 2017-18. Although EPA determines and administers these fees, the revenues are paid into the Consolidated Fund except for:

- Fees paid to and administered by municipal councils for permits to construct, install or alter septic tank systems, which the council may retain.
- Fees environmental auditors pay to EPA, which EPA retains.

Table 16-1: Fees collected by the EPA

Type	2017-18	2016-17
Licence fees	12,062,661	12,772,902

³⁰³ Application for accreditation is not included in the new EP legislation.

³⁰⁴ EPA Annual Report 20178-18, page 81.

Type	2017-18	2016-17
Works approval fees	248,350	477,919
RDD application fees	2,597	5,834
Waste transport permit fees	1,694,263	1,340,668
Transport certificate fees	648,514	517,543
Environmental auditor appointment fees	48,300	26,068
Other fees	1,356	4,722
Total	14,706,041	15,145,656

Source: Data provided by the EPA

The \$14.7 million collected in 2017-18 compares to annual costs forecast in EPA's 2012 Fees RIS of \$13.4 million (in \$2011-12),³⁰⁵ which is approximately \$15.4 million in 2018-19 dollars.³⁰⁶

In addition to fees, a landfill levy is payable by those licensed premises that deposit municipal waste or prescribed industrial waste to land. The levy is aimed at environment protection and fostering environmentally sustainable use of resources, and best practice in waste management. EPA passes on all landfill levies it collects to DELWP which distributes the funds to regional waste and resource recovery groups (RWRRGs), Sustainability Victoria and EPA.

The EP Act 1970 also establishes an environment protection levy for premises that are subject to licence fees. This is paid over and above the licence fee. It is calculated at 3% of the annual licence fee. As with the landfill levy, this levy is set in the Act and not in the EP (Fees) Regulations 2012. It is noted that the environment protection levy has been rolled over from the EP Act 1970 on the basis that the EPA's funding model wasn't within scope of the Act review. Recommendation 21.1 of the EPA inquiry was to 'develop a new funding model for the EPA that provides greater revenue certainty and stability, and reduces reliance on funding sources with conflicts of interest...' The Victorian Government supported this recommendation and the environment protection levy is currently being considered as part of work being undertaken on implementing a revised funding model.

16.3.2 EPA Inquiry

The EPA Inquiry reported on the ability of EPA's current governance structures and funding arrangements to enable it to effectively and efficiently discharge its powers, perform its duties and implement its required functions. This included consideration of best practice principles for funding an independent regulator, Department of Treasury and Finance fees and charges guidelines, and the economic literature on best practice in setting environmental fees and levies. The EPA Inquiry also considered expert advice and reports commissioned by EPA and DELWP on EPA's current cost base and future funding options, including the potential for increased cost recovery.

The EPA Inquiry made several recommendations in regard to licencing and other regulatory fees, one of which stated:

- EPA's funding arrangements should reflect a greater cost recovery component. Provided costs are reasonable and efficient, greater reliance on cost recovery fees and charges better aligns EPA's funding

³⁰⁵ RIS for the *Environment Protection (Fees) Regulations 2012*, page 7.

³⁰⁶ Using an annual average rate of 2% across this period.

with its core functions and improves accountability to regulated entities for the regulatory services it provides.³⁰⁷

The Inquiry Report noted that a recent review by PwC Australia found disparities remain between fees and the cost of providing services. In particular, the review found evidence of significant under recovery of some costs – for example actual costs incurred to assess works approvals were estimated to be up to four times greater than the fee revenue.³⁰⁸ EPA noted that further work is necessary to refine cost estimates, but that there is scope for better recovering costs from works approval and licensing activities.³⁰⁹

The EPA Inquiry also recommended that the Government “Remove the current barriers to introducing a load-based licensing scheme (licence fees restricted to cost recovery and fee caps) from the Environment Protection Act 1970 and actively consider their use, together with the full suite of economic instruments available to the EPA.”³¹⁰ A load-based licensing scheme would involve allowing licence fees to be set at a level beyond cost-recovery and removing the fee caps in the legislation.³¹¹ The Government’s response to the EPA Inquiry stated that the Government will implement a funding model for EPA that is more predictable and that supports EPA to deliver its core functions and activities, ensure stakeholder confidence, maintain EPA’s independence, and be adequate and transparent.³¹² It also committed the Government and EPA to assess the application of economic instruments where they may be appropriate tools for specific problems, or to drive better performance and practice. The Government indicated it would remove barriers to load-based licencing, enabling it to be considered as one possible tool to efficiently achieve desired regulatory outcomes as part of an integrated toolkit.³¹³

EPA will undertake a future review of the fees, following a period of experience under the new EP legislation. This will allow EPA to determine the appropriateness of other economic instruments including a load-based licencing scheme. The future fees review is discussed further below.

16.4 Rationale for government intervention

Best practice regulation aims to address failures pertaining to market outcomes at minimum cost to consumers and industry. In order to make a case for government intervention, the problem the proposed Regulations are seeking to address must be established.

In this context, assessing the nature and extent of the problem should consider the need for fees on a ‘first principles’ basis, that is, to consider whether fees are needed to recover EPA’s costs at all (as opposed to assessing whether they should be kept, amended or removed). The Base Case therefore is a scenario where EPA does not charge fees for its activities associated with administering permissions and other assessment

³⁰⁷ EPA Inquiry Report, page 378.

³⁰⁸ EPA Victoria 2015, *Cost and capacity review*, Final Report, internal working report prepared for EPA by PwC Australia, November, pp. 21–22 as cited in EPA Inquiry Report, page 380.

³⁰⁹ EPA Inquiry Report, page 380.

³¹⁰ Defined in Inquiry Report as “A licensing scheme where licence fees are linked to the level of pollutants emitted by the licensee.”, page 406.

³¹¹ EPA Inquiry Report, page 288.

³¹² Government’s response to the EPA Inquiry, page 277.

³¹³ Government’s response to the EPA Inquiry, page 21.

activities.³¹⁴ Under this scenario, EPA would be required to make up the revenue shortfall from general taxpayer funded sources.

There is a strong case that fees should fully recover EPA's costs of administering the permissions framework and other assessment activities from parties required to hold permissions or that give rise to the need for these regulatory activities. This is because the assessment costs incurred by EPA and the benefits to industry should be fully internalised by the industry that gives rise to the need for the regulation in the first place. There are few sound public policy reasons for the general public to fund costs imposed by private actors. The most relevant reason here, as outlined in the cost recovery guidelines³¹⁵ is "where full cost charging could undermine other objectives". For instance, charging individuals for access to the public register of permission holders can undermine transparency about the public's ability to understand who holds current EPA permissions. Further:

- Imposing fees ensures that only 'genuine' applicants apply, effectively sets a minimum financial requirement for applicants, and helps improve the quality of licence applications.
- Many applicants also benefit from the approval process as the permissioning framework creates a barrier for entry to a sector or activity – for example, individuals must hold a licence to receive prescribed industrial waste or a permit to transport certain types of reportable priority waste.
- Without fees, regulated parties would not receive appropriate price signals about the value of all the resources being used to regulate their industries.

16.5 EPA's recoverable costs

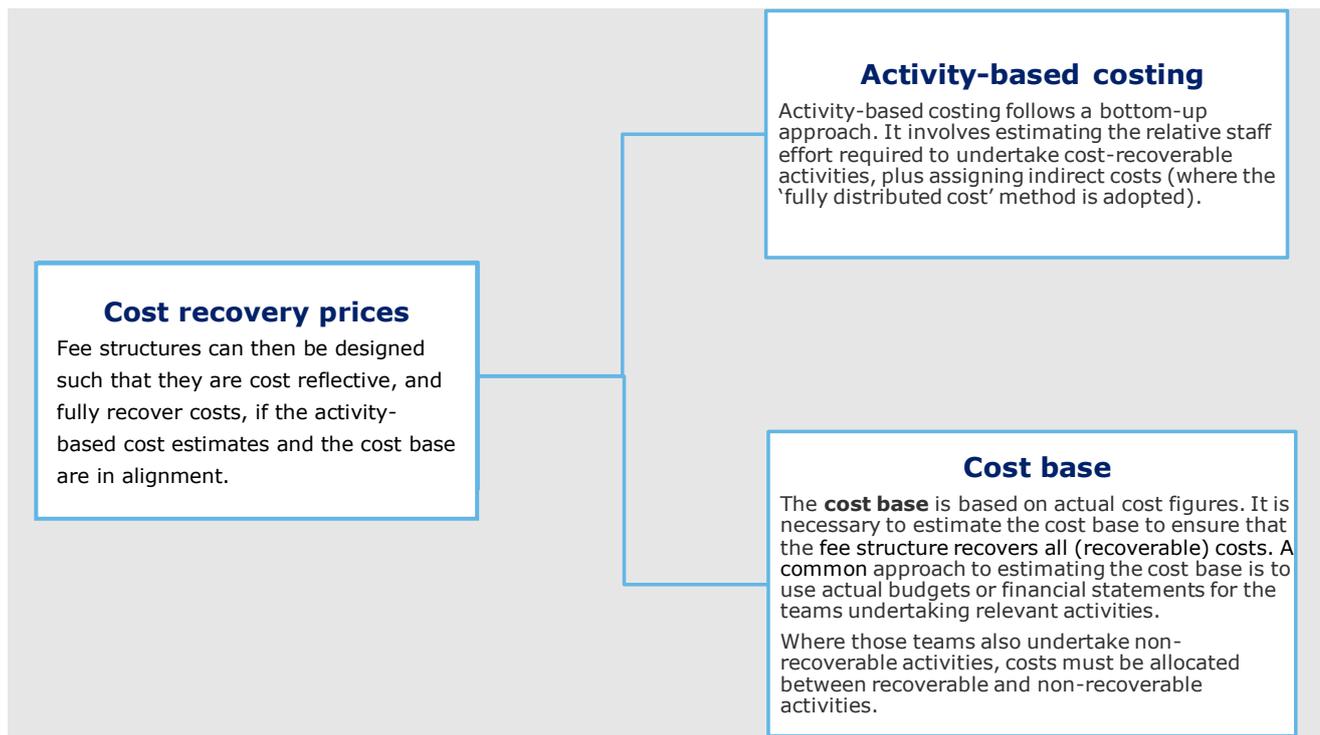
16.5.1 Cost base

Deriving fees that align with cost recovery principles requires:

- Establishing a cost base
- Ensuring cost recovery charges are based on efficient costs
- Activity-based costing (where possible), to help determine fee relativities (for example, an activity that takes longer should have a higher fee, and vice-versa).

³¹⁴ The rationale for the proposed Regulations themselves has already been addressed in the earlier chapters of this RIS.

³¹⁵ Department of Treasury (Victoria) (2013). Cost recovery guidelines, page 21



To estimate costs, EPA has used the fully distributed costs methodology outlined in the *Cost Recovery Guidelines*. This includes direct (e.g. staff costs) and indirect costs (e.g. on-costs and overheads).

EPA has estimated direct costs for most fee types using a bottom up approach. EPA has developed detailed process maps for over 60 processes that are used in the administration of its cost recoverable activities. Some of these are related to sub-processes where there is variation in assessment times for definable activities (for example, processing times can differ depending on whether an application is of greater or lesser complexity). The process maps outline each process used to undertake an activity and estimates of the staff effort and input costs required for each process. The key processes that are costed across different fee types include:

- Application planning and advice
- Receipt of applications
- Processing of application fee
- Assessment of applications, including technical assessment
- Requesting further information from applicants
- Decision / determine assessment outcome
- Licences:
 - Draft licence document
 - Approve and issue statutory document
- Permits:
 - Create and issue permits
 - Appeal process.

An example of the process map steps is provided for development licence applications in Appendix 6.

A summary of the key cost estimates is also provided in Appendix 7 for each fee type, including average time spent on each process and average cost for each process, along with estimated volumes. Changes to current

fee levels are presented in Appendix 8. These changes include proposed changes to fee design and fee unit levels based on a review, in accordance with the *Cost Recovery Guidelines*, of the activities undertaken by EPA as part of assessing applications.

Wage costs are sourced from Victorian Public Service Enterprise Agreement 2016 - Schedule B (1 July 2018). On top of wage rates, on-costs are calculated at an additional 16.5%, and overheads costs at an additional 50%, resulting in a total wage multiplier of 1.75.³¹⁶

The ground up process mapping approach has not been used for a number of regulatory activities, which are relevantly identified throughout the chapter. The decision to undertake or not undertake ground up process mapping took into account the proportionality of the analysis and whether the fee relates to new permissions or instruments which are currently not undertaken.

Note, the rationale for not undertaking detailed process mapping for annual operating licence fees is specifically discussed below.

The costs of any functions that are not a fundamental part of, or directly related to the output are excluded from the cost base. Consistent with the *Cost Recovery Guidelines*, costs associated with the broad development of policy/regulation and general parliamentary servicing roles of government are excluded.

EPA undertakes a range of other core activities that are not cost recoverable. These activities form part of the EPA's broad objectives and are typically not related to an identifiable regulatory task, industry, or business. The outputs from these activities are accessible and beneficial to the broader community, and as such, are not suitable for cost recovery. These include the following functions:

- EPA Airwatch
- Monitoring of Victoria's air
- Monitoring of Victoria's marine environment
- Beach report
- Yarra Watch
- Monitoring of Port Phillip Bay
- The Hazelwood closure and the Hazelwood recovery effort.

Detailed assumptions used in this fees chapter are provided in Appendix 9.

16.5.2 Efficient costs

EPA's estimated costs are based on extensive consultation with its own business units, and the development of detailed process mapping of its activities. EPA believes these costs are efficient. The EPA Inquiry examined how EPA performs its functions and did not find any issues in this area.³¹⁷ It is also important to note that EPA's recoverable costs have not increased materially since the previous review of fees in 2012. While benchmarking can sometimes be used to assess efficiency of costs, it is not considered appropriate in this case because of differences across jurisdictions, including differences in regulations, compliance and enforcement approaches, fee design and objectives such as level of cost recovery. It is also difficult to obtain cost information for regulators in other jurisdictions.

16.5.3 Level of cost recovery

EPA proposes a departure from full cost recovery in the following cases:

³¹⁶ Based on DTF's Guide to assessing and calculating costs. See Appendix 9 for further discussion of fee assumptions.

³¹⁷ State of Victoria, *Independent Inquiry into the Environment Protection Authority* (2016), 359.

- Zero cost recovery:
 - Development and pilot project licences: surrender
 - Registrations (except reportable priority waste transport): application, renewal
 - Emergency storage, use etc. of waste (except emergency commissioning, repair, decommissioning or dismantling of plant or equipment)
 - Appointment of motor vehicle testers as the holder of a prescribed role
 - Public access to Public Register
 - Application for environmental auditor appointment (in accordance with the provisions of the Commonwealth *Mutual Recognition Act 1992*).
- Partial cost recovery:
 - Development licence: application
- Over-recovery of costs
 - Operating licence: annual fees.

The *Cost Recovery Guidelines* (p.7) state that:

general government policy is that regulatory fees and user charges should be set on a full cost recovery basis because it ensures that both efficiency and equity objectives are met. Full cost represents the value of all the resources used or consumed in the provision of an output or activity.

However, there may be circumstances in which a departure from the full cost principle may be justified (which may require making a trade-off between efficiency, equity and other policy considerations):

- Where merit goods are being provided or where activities generate benefits to unrelated third parties.
- Where objectives of income redistribution or social insurance are important.
- Where concessions are deemed appropriate.
- Where full cost recovery may undermine innovation and product development.
- Where the government is providing goods and services on a commercial basis in competition with the private sector.
- Where full cost charging could undermine other objectives.

The *Cost Recovery Guidelines* state that consideration could be given to a regime of partial cost recovery (if it can be demonstrated that a lower than full cost recovery does not jeopardise other objectives), and/or to rely on other funding sources (e.g. general taxation) to finance the government activity.

Table 16-2 sets out the reasons for the zero cost recovery cases. Costs of these activities are expected to be immaterial compared to EPA’s recoverable cost base. Some costs may be shared with other non-fee activities – for example the public register will be closely linked to EPA’s IT processes.

Table 16-2 No fee (zero cost recovery)

Activity	Analysis
Registrations (except reportable priority waste transport): application, renewal	EPA may set prescribed fees for registration applications and renewals under sections 50(1)(b) and 86(3)(b) of the new EP legislation. Although the estimated fee would be small for this activity, no fee is being proposed in order to encourage registration uptake. This will enable EPA to support duty-holders to comply with the general duty and raise the state of knowledge about the new legislative framework. EPA has estimated that the registration application process, expected to occur online, will cost EPA approximately \$24-38 per applicant. Although there is uncertainty around the number of registrations, total cost is estimated to be approximately \$6,000 per year (for both new applications and renewals).

Emergency storage, use etc. of waste	EPA may set a prescribed fee for an application for authorisation for emergency storage, use etc. of waste under section 245(5) of the new EP legislation. No fee is being proposed to provide an efficient approval pathway in cases of genuine emergency and in order to not discourage authorisation from being sought (which may be subject to such conditions as EPA considers appropriate). It is estimated that there will be 36 applications per year costing around \$700 each, with a total cost of around \$25,000 a year.
Appointment of motor vehicle testers as the holder of a prescribed role	EPA may set prescribed fees for applications for appointment as the holder of a prescribed role under section 245(5) of the new EP legislation. No fee is being proposed in order to encourage new applicants and prevent creating a barrier to entry, particularly in regional areas where the current tester network is not comprehensive. This will enable EPA to support compliance with the requirements of the motor vehicle emissions regulations relating to noise and visible emissions. EPA has estimated that the appointment application process, will cost EPA approximately \$1,581 per applicant. Total cost is estimated to be approximately \$4,750 per year.
Public access to Public Register.	Part 14.5 of the new EP legislation requires the EPA to establish and maintain a Public Register in which is recorded the details of decisions, authorisations or documents made, issued, granted or prepared under the new EP legislation including, but not limited to, enforceable undertakings, permissions, exemptions, site management orders and better environment plans. EPA has the power to charge a fee under s457(1)(b), however no fee is proposed to be charged as a fee may discourage members of the community from searching for information about specific organisations, specific circumstances or events, and specific properties. The EPA Inquiry Report noted that "Our consultations and social research revealed that the community views information as critically important for accountability – for judging and trusting EPA's performance." Recommendation 5.4 of the Inquiry included "Accountability and access to decision making, noting the importance of procedural fairness, transparency and access to information". Access to the public register may also give members of the community access to information about a site they are interested in, for example whether the site is affected by contamination or pollution. As members of the community might not be able to access such information otherwise, no fee is important to ensure equity of access. The costs of providing access to the public register are expected to be minor, particular given that some information will be accessible via EPA'S website.
Development licence and pilot project licence: surrender	If a licence holder ceases undertaking the activity for which the licence was issued, there might be ongoing environmental impacts. It is important that the licence is surrendered so EPA can assess whether the licence holder has complied with the GED and with their licence conditions, and whether any further action by the licence holder is required, for example decommissioning activities. Duty holders are unlikely to apply for surrender but charging a fee to surrender their licence would further discourage them.
Application for environmental auditor appointment (in accordance with the provisions of the Commonwealth Mutual Recognition Act 1992)	EPA may set a prescribed fee for an application for appointment as environmental auditor under section 191(3) of the new EP legislation. For auditors who have been appointed in another jurisdiction, the majority of the costs associated with an application would have already been borne. As such, imposing a fee to recover costs incurred by EPA for this activity would be at odds with the purpose of the Mutual Recognition Act 1992 (i.e. 'promoting the goal of freedom of movement of goods and service providers in a national market in Australia').

Development licence applications and operating licence annual fees

Previously known in the EP Act 1970 as 'works approvals', the EP Legislation provides that a person must not engage in one or more of the following activities except as authorised by a *development licence* in respect of the activity:

- The construction or installation of plant or equipment for a prescribed development activity, or
- The development of processes or systems for a prescribed development activity, or
- The modification, other than general maintenance, of plant, equipment, processes or systems for a prescribed development activity or of the operation of a prescribed development activity:

- o If the modification creates a risk of material harm to human health or the environment from pollution or waste; or
- o In prescribed circumstances.

Previously known in the EP Act 1970 as 'licenses', the EP Legislation provides that a person must not engage in a prescribed operating activity except as authorised by an *operating licence* in respect of the activity (see Chapter 6 of this RIS for discussion of proposed cohorts). Licences impose conditions on the regulated activity in order to protect the environment. Compliance with the conditions is monitored by EPA.

EPA's preferred fee option for both development licence applications and almost all³¹⁸ operating licence annual fees is to maintain the existing fees set under the EP Act 1970. Together these account for over 80% of EPA's total fee revenue. A significant under-recovery of development licence costs will be recouped from operating licence annual fees which will over-recover their cost of administration. This is the arrangement currently in place.

There are expected to be approximately 30 development licence applications a year. Under the preferred fee structure for development licence applications, costs total \$1.6 million, while fee revenue is expected to total \$0.6 million, meaning a cost recovery percentage of 37%.

As noted above, EPA has not calculated the costs of administering operating licence annual fees from the ground up using detailed process mappings, due to lack of data. The best available data for estimating the cost of administering this licence is presented in EPA's 2012 Fees RIS,³¹⁹ with some adjustments to certain components reflecting new EPA analysis. This has resulted in an estimated annual cost of \$9,478,241 for administering operating licences. This includes the administrative costs associated with assessing applications, the issuing of licences, ongoing guidance and advice to licensees, compliance, monitoring, inspections and some aspects of investigation and enforcement.

In regard to the cost recovery approach noted above, the 2012 Fees RIS observed:

Given the large amount currently under-recovered from works approvals, it is proposed that the balance required should be collected from licensees; in other words, this amount is added to the cost base of licences. When fees are designed, 'cross-subsidies' should generally be avoided. However, in the present case, there is a strong nexus between works approvals and licences. It makes sense to charge licensees for the cost of their works approval over the life of their activity, rather than as an upfront cost, because the latter approach could create a barrier to entry for smaller businesses.

In a practical sense, the works approval could be viewed as the first stage of the licensing process. In fact, there are no fees charged for licence applications, on the basis that all licensees would have undergone a works approval assessment prior to applying for a licence. By cost recovering an element of the works approval via annual licences, costs are spread over a number of years (on average) and

³¹⁸ Exceptions include the annual fee for licence holders reprocessing specified electronic waste (prescribed activity A02b) and reprocessing glass waste (prescribed activity H05b). A one-tier fee will be replaced by a three-tier fee, which is expected to result in fee reductions for approximately 10 licence holders - a tiered fee structure is preferred so as to not create a barrier to entry for smaller businesses.

³¹⁹ RIS for the *Environment Protection (Fees) Regulations 2012*, page 7.

*large up-front fees are avoided. While all licensees would contribute to the cost recovery of 'new' works approvals, in the past licensees have benefited from the significant under-recovery of these fees.*³²⁰

There is a need to review this arrangement, particularly as the two fees represent the largest components of EPA's fees revenue. It is important to note that the *Cost Recovery Guidelines* state that cross-subsidies should be avoided. However, EPA considers that it is more appropriate to maintain this arrangement at this time, until a future review of the fees is undertaken, following a period of experience under the new EP legislation. This will allow EPA to determine the appropriateness of a load-based licencing scheme as per Recommendation 16.1 of the EPA Inquiry. Existing arrangements are also preferred as they are predictable and stable for current operating licence holders, particularly during this time of significant change to the environmental protection framework.

In advance of the future fees review, EPA intends to collect data on costs incurred across different activities and monitor the permission cohorts in order to develop a better understanding of its fee revenues and costs. Information to enable a more detailed review of operating licence fees is currently not available, primarily due to timing and costs not being tracked for licensing activities. Improved data collection will be critical to EPA undertaking a detailed review of this fee in the future.

As outlined in the Evaluation Strategy in Chapter 18, as part of the implementation process for the proposed Regulations, EPA will undertake a review of existing data sources to assess gaps in data and identify areas and strategies for improvement. Table 18-2 refers to broad evaluation timeframes, including for a future fees/cost recovery review.

16.6 Broad fee design options considered in this RIS

Feasible broad fee design options include fees set at a flat rate, different variable structures, and a combination of these structures. These options are discussed below.

Option 1 — Flat fee, same for all parties

Flat fees are set by calculating a simple average of costs across applicants. The advantages of this approach are that it recovers all costs of delivering the services (assuming full cost recovery), and it is simple to understand and administer.

Flat fees are generally more suitable for homogenous and repetitive processes. A potential disadvantage is that the parties that give rise to specific costs might not bear those costs if some parties cost a lot more for EPA to regulate than others. A flat fee might also disadvantage parties that have less ability to pay - small businesses in particular - and thus may present a barrier to entry, impacting competition.

Option 2 — Variable fees

Where processes have a greater degree of variability, predicting regulatory costs becomes more difficult. Some parties may also impose substantively higher regulatory costs than others. A variable fee structure enables fees to be set that more accurately recover costs from those parties that impose the costs.

A disadvantage of a variable fee structure is that it is more difficult to design and administer. It can also more difficult for regulated parties to understand and for applicants to predict in advance (depending on the basis for the variation), which might impose a barrier to entry.

Different variable fee structures are considered in this RIS:

³²⁰ RIS for the *Environment Protection (Fees) Regulations 2012*, page 11.

- **Tiered structures that have multiple fixed fee levels based on different levels of assessment complexity.** These structures can capture different levels of time and effort required by EPA to process applications and the fee charged is likely to be more predictable than a fully variable fee structure. However, it does not capture regulatory effort as accurately as a fully variable fee structures, particularly where fees are charged at an hourly rate.
- **Fully variable fee structures:**
 - **Fee based on volumes of discharges or pollutant emissions.** In the case of operating licence annual fees, smaller licensees with lower discharges or pollutant emissions would be charged a lower fee than those with larger discharges or pollutant emissions. The higher the discharge or emission levels in the licence, the more closely EPA will monitor activities to ensure they are not negatively impacting the environment. Volume of discharges or pollutant emissions is a proxy for where EPA spends its time and effort on administrative and compliance/enforcement activities, although noting there is some uncertainty about the extent to which this relationship holds.
 - **Fee calculated as a specified % of the estimated value of works.** In the case of development licences, works value is a proxy for where EPA spends its time and effort on administrative and compliance/enforcement activities. However, In the case of pilot project licences, works value may not be available, and as such is an unsuitable metric. The purpose of a pilot project licence is to test a proposed technology, demonstrate a product's quality, establish process optimisation and monitor environmental performance. Given the fundamental difference between such activities and prescribed development activities, estimated cost of works is simply not relevant.
 - **Fully variable structure based on charging an hourly rate.** This structure most accurately captures the time and effort spent by EPA in processing applications. Disadvantages are that the fee charged is likely to be less predictable than for other variable fee structures, and some parties may also be charged a very high fee for complex applications, which might reduce affordability/ability to pay and potentially reduce investment and innovation. It is also possible that an hourly rate approach might provide a disincentive for a regulator to process applications efficiently as it will no longer face the additional cost of more slowly processed applications. However, this is not considered a likely outcome for EPA due to legislated timeframes for some applications and due to there being other disincentives for delaying consideration of applications, such as needing to meet community, business and Government expectations.. Furthermore, as outlined in section **Error! Reference source not found.**, the EPA Inquiry did not find any issues in relation to EPA's cost efficiency.

Option 3 – Fixed fee (tiered or same for all parties) plus variable fee

This option combines both a fixed fee and variable fee. The fixed fee reflects that a minimum amount of time and effort that the EPA usually spends on an application is known in advance (including for smaller/low risk applications). The variable fee component enables the fee charged to accurately reflect the time and effort required by EPA to process each application.

Option 4 – Fixed fee plus variable fee, or just variable fee options with maximum cap

A fee cap recognises that there is a certain maximum amount of time and effort expected to be required by the EPA to process applications (regardless of size and complexity of the project or activity being undertaken). Imposing a maximum fee also provides a degree of certainty for applicants who will know their maximum fee exposure.

This fee structure is currently used for works approval applications, where the fee charged is the greater of 1% of the works value or a flat fee of 81.83 fee units capped at 4,500 fee units. The maximum fee is based on a cap set in the EP Act 1970 and not based on the maximum cost incurred in assessing an application for works approval. In this instance, a relatively higher proportion of costs are recovered from low and medium complexity applicants compared to higher complexity applicants.

Introduction of a load-based licencing scheme

As noted above, the Inquiry Report recommended introduction of a load-based licensing scheme. This approach involves allowing licence fees to be set at a level beyond cost-recovery. It is noted that the new EP legislation provides a head of power for establishing a load-based licensing scheme, with section 465(2) enabling the Governor in Council to make regulations prescribing fees including, but not limited to:

- Fees for the doing an act or providing a service under this Act; and
- In the case of fees prescribed for operating licences, fees that are higher than the cost of administration of, or provision of, services in connection with operating licences.

While the Government is committed to EPA considering the establishment of a load-based licensing scheme, this will be considered as part of a review of fees that is intended to be undertaken prior to sunseting of the Regulations. This will allow time to develop appropriate mechanisms to assess risk from emissions and to develop better economic instruments to encourage good performance. Hence this option is not considered in this RIS.

16.7 Assessment approach

The permissions and activities for which fees are able to be prescribed under the new EP legislation vary significantly in the nature of the regulatory service being provided, the amount of revenue to be collected, and other characteristics such as variability and homogeneity of the regulatory processes and costs involved.

Those permissions and activities that are more complex, less homogenous or repetitive, and/or impose higher administrative costs on EPA or higher costs on businesses have been subject to a more detailed analysis in this RIS to determine the preferred option. Permissions and activities in this category include:

- Operating licence: annual fees.
- Development licence: applications.
- Pilot project licence: applications
- Permit to transport reportable priority waste: applications (including temporary).
- Council-issued permit: application for permit to construct, install or alter an on-site wastewater management system.
- Authority-issued permit (except transport of reportable priority waste): applications.

Less detailed analysis has been undertaken for other permissions and activities where more than one feasible, distinct option does not exist. Unlike those fees subject to more detailed analysis, these fees are typically more homogenous and repetitive (thus suited to a simple flat fee structure) and/or impose lower administrative costs on EPA. Revenue collected for these fee categories is expected to total about \$1.8 million annually, less than 20% of EPA's total fee revenue. Permissions and activities in this category include:

- Development licence: amendment, transfer, exemption
- Pilot project licence: amendment, transfer
- Operating licence: application, amendment, transfer, surrender, exemption
- Permit to transport reportable priority waste: amendment, transfer, surrender, exemption, exemption (due to holding a valid authorisation in another jurisdiction), renewal
- Authority-issued permit (except transport of reportable priority waste): amendment, transfer, surrender, exemption, renewal
- Council-issued permit: application for exemption from permit to construct, install or alter an on-site wastewater management system
- Registration to transport reportable priority waste: application, renewal
- Environmental audit system: appointment, reappointment, preliminary risk screen assessment statement and report, environmental audit statement and report
- Authority may authorise emergency storage, use etc. of waste: commissioning (as distinct from emergency storage, use etc. of waste for which it is not proposed to set a fee)

- Better environment plans: submission, amendment, services to advise or assist a person to prepare a proposed better environment plan
- Authority may appoint analysts and prescribed roles: appointment as accredited consigner
- Application to vary or revoke site management order
- Exemption from any provisions of the regulations or a legislative instrument made under the Act
- Financial assurance: request review of form of a financial assurance, application for release of financial assurance.

Proposed fees for these permissions and activities are discussed in section 16.9.

16.8 Detailed assessment

16.8.1 MCA method

Fees that are subject to detailed analysis, except for operating licence annual fees, have been assessed using MCA. A discussion of MCA is provided in the introduction to Part 2 of this RIS. Options have been assessed against the criteria outlined in the table below. These criteria are also used as an analytical framework to support the discussion of preferred fees for which a detailed analysis has not been undertaken. A weighting of 35%/35%/30% has been adopted, reflecting that “Cost reflectivity” and “Equity” objectives are arguably slightly more important than “Simple and easy to understand and administer”. The latter criteria is still weighted strongly because if businesses don’t understand or are uncertain about the fees they might be required to pay, particularly where those fees are significant, this could adversely influence business decisions. In addition, the EPA will be imposing a large range of fees and charges and it needs to ensure that its charging systems and processes are not too complex and costly to administer.

Table 16-3 MCA criteria and weightings

Criteria	Description	Weighting
Cost reflectivity	<ul style="list-style-type: none"> • The extent to which the total fees charged reflect the total costs of providing those services 	35%
Equity	<ul style="list-style-type: none"> • The degree to which the parties that give rise to specific costs bear (only) those costs • The extent to which fees take into account the ability to pay and not present a barrier to entry, particularly for small businesses <p>There can, in some cases, be tension between these two aspects of equity. The MCAs reflect these opposing impacts in the qualitative discussion and when giving a score for this criterion.</p>	35%
Simple and easy to understand and administer	<ul style="list-style-type: none"> • The ability to easily determine what fee applies in various situations (including ability for businesses to understand fees in advance) • The level of administrative costs associated with calculating and levying fees 	30%

The criteria rating scale has a range of –10 to +10, where a score of zero represents no change from the Base Case. The Base Case is the scenario where there are no regulations accompanying the new EP legislation. Given that for the processes considered here, the new EP legislation does not set fee amounts, the Base Case for all fee categories is that no fee is charged.

Table 16-4 MCA Scale

Score	Description
-------	-------------

-10	Much worse than the Base Case
-5	Somewhat worse than the Base Case
0	No change from the Base Case
+5	Somewhat better than the Base Case
+10	Much better than the Base Case

16.8.2 Operating licence annual fees (s55)

The estimated number of operating licence annual renewals is 662 per year.

An MCA has not been undertaken for operating licence annual renewals, for the following reasons:

- As noted above, EPA's position is that operating licence annual fees will not be changed in advance of the review of fees, where consideration will be given to the appropriateness of a load-based licensing scheme. This matter will be considered as part of a future review of fees (see section 16.6).
- There is inadequate data to undertake detailed modelling of feasible alternatives for operating licence annual fees.

The preferred option for these reasons is to maintain the current fee structure, which consists of a base or minimum fee based on industry type (incorporating risk) and volumetric component fees based on type and volume of pollutants/emissions. The base fee charged depends on which prescribed activity category the licence fits into. Eleven different base fees are currently set across different prescribed activity categories, and in some cases they are set according to size or volume. Category 1 represents the lowest risk while category 11 represents the highest. The component fees take into account the risks inherent in the emission of certain pollutants on the receiving environment (land, water, and air), as well as the relative risk associated with the volume of pollutants emitted.

Advantages of this fee structure are that, if designed with appropriate base and volumetric components, it will ensure that 100% of costs are recovered. It reflects risk to human health and the environment by taking into account the type of activity being undertaken as well as the risks associated with greater volumes of pollutants emitted. This volumetric component means that larger licence holders are more likely to be charged a higher cost compared to smaller licence holders (assuming that higher volumes of pollutants are emitted by larger licence holders). The base fee component of this fee also means that it avoids the risk of significantly under-recovering costs for licence holders with very low volumes of pollutant emissions but which still give rise to administrative costs and compliance costs for EPA.

In relation to other fee options:

- A flat fee structure, while simple, has not been considered because it would result in very high fees for all licences, including smaller/less complex licences (thus reducing ability to pay). Approximately two-thirds of licensees currently pay fees of less than \$10,000.³²¹
- A base fee plus hourly rate has not been considered because it would involve a very high requirement for EPA staff to allocate work hours to hundreds of individual licences. This detailed level of allocation

of time, and the IT system required to support this, is unlikely to be simple and easy to administer for EPA.

16.8.3 Development licence applications (s50(1)(b))

There are approximately 30 development licence applications per year. A development application costs, on average, \$50,000 for EPA to administer.

The options considered for the MCA are set out below:

- **Option 1a: Percentage of works value, 100% cost recovery** - The fee is set at the greater of 2.4 of the estimated value of works or a flat fee of 81.83 fee units, capped at 13,935.27 fee units (results in overall full cost recovery).
- **Option 1b: Percentage of works value, partial cost recovery** - The fee is set at the greater of 1% of the estimated value of works or a flat fee of 81.83 fee units, capped at 4,500 fee units (results in 37% of costs recovered for the development licence fee, with the remaining 63% of the cost base for development licences recovered via the operating licence annual fee - see discussion in 16.5.3). This is similar to Option 1a, but with a lower percentage of value of works, and lower fee cap, which has been chosen as it is the same as the current fee structure for works approval applications. EPA's preference to maintain the current approach for development licence application fees (and operating licence annual fees, to which development licence applications are strongly linked) was discussed in section 16.5.3.
- **Option 2: Base fee plus hourly rate** - Flat fee plus an hourly rate for assessments exceeding 141 hours, with a specified maximum fee (results in full cost recovery). The hours chosen is based on detailed process mapping undertaken, with 141 hours the best estimate of the minimum amount of time likely to be required for EPA to assess a development licence application.
- **Option 3: Tiered fee structure** - The fee is set based on standard, complex and fast track applications (and results in full cost recovery). The three different tiers refer to the pathway for the application's assessment by the EPA. A fast track approval is used for proposals that have a low impact on the environment and community, using standard technology. Standard works approvals have medium to high potential impact on the environment and/or significant third-party interest. They also take longer (4 months versus 6 weeks for fast track). A complex application typically involves higher environmental impact, third-party interest, and/or the application of unproven technology and takes approximately twice as long to assess by EPA compared to the average standard approval (8 months versus 4 months).

For the percentage of works value options, 1% has been chosen for the status quo option (1b) since it is consistent with the current approach, and seems reasonable given previous modelling shows that higher percentage levels would result in over-recovery of costs for some mid-range works value projects.³²² For Option 1a, however, raising the fee cap alone to achieve full cost recovery is not an appropriate approach as this would result in some applicants (those with higher estimated works values) paying fees that far exceed what the cost recovery analysis determined would be the maximum costs associated with a development licence application. To achieve total cost recovery, both the fee cap and the percentage of works value have been increased to the point at which full cost recovery is achieved.

³²² Source: EPA 2012, *Regulatory Impact Statement: Environmental Protection (Fees) Regulations 2012*.

A flat fee structure has not been considered because it would result in very high fees (estimated at approximately \$50,000 per application) for all applications, including smaller/less complex applications. This is not feasible on the basis of both individual ability to pay and the principle of ensuring that parties bear only their own costs.

Table 16.5 **Error! Reference source not found.** shows the modelled fees for development licence applications.

Table 16-5: Modelled fees for development licence applications

	Option 1a - Percentage of works value - 100% cost recovery	Option 1b - Percentage of works value - Partial cost recovery	Option 2 - Base fee plus hourly rate	Option 3 - Tiered fee structure
Standard application				
Complex application	Greater of 2.4 of the value of works or a flat fee of \$1,182 (81.83 fee units), capped at \$201,364.70 (13,935.27 fee units)	Greater of 1% of the value of works or a flat fee of \$1,182 (81.83 fee units), capped at \$62,025 (4,500 fee units)	Flat fee of \$14,399.86 (996.53 fee units) plus an hourly rate of \$98.98 (6.85 fee units) for assessments exceeding 141 hours, with a maximum fee of \$178,884.21 (12,379.53 fee units)	\$19,767.74 (1,368.01 fee units) \$80,722.61 (5,586.34 fee units)
Fast-track application				\$146,115.94 (10,111.83 fee units)

Note: Fees based on EPA estimates for the time taken and costs involved with completing administrative processes and compliance and enforcement activities. See Appendices 6-9 for more information. Options 1a and 1b based on the value of works approval applications submitted over three years from 2015-16 through 2017-18. Fee units are given in 2018-19 fee unit values.

16.8.3.1 Option 1a and 1b: Percentage of works value

Options 1a and 1b (works value options) are assessed together as the fee design is largely the same.

Cost reflectivity

Under Option 1b, as discussed above, 63% of the cost base for development licences is recovered via the operating licence annual fee. For this reason, in practice there is full cost recovery of this cost to EPA, albeit via another fee type.

It is noted that EPA has not reported any concerns with the current works value-based fee arrangements in regard to applicants underestimating works value and therefore paying a lower fee, or substantial changes in works value impacting EPA's costs. It is also noted that the proposed Regulations refer to the estimated costs as meaning the '...amount that the applicant **reasonably** estimates is required to carry out the prescribed development activity to which the application for a development licence relates...' (emphasis added). In addition, EPA has significant experience with the typically estimated costs of certain types of development activities which means the likelihood of significantly incorrect works value estimations are reduced. Also, if a development activity fundamentally changes (as may be indicated by an increase in costs), the development licence may require amendment or potentially a new development licence could be required.

For the purpose of comparison, a score of +10 is given to Option 1b compared to the Base Case. Option 1a scores highly on this criterion as it fully recovers costs and is also given a score of +10.

Equity

By setting a higher fee cap, Option 1a results in high charges for some applicants with higher works values compared to the lower fee cap under Option 1b. Increasing the fee cap under Option 1a results in a significant number of applicants with higher works values paying a higher fee (smaller developments are not impacted). The maximum fee under Option 1a (\$201,364.70) which is three times as high as for Option 1b (\$62,025). Based on data from 2015-16 to 2017-18, only a small number of applications would actually reach the higher cap:

- 13% of applications hit the maximum fee (cap) under Option 1a.
- 16% of applications hit the cap under Option 1b.

EPA considers works value a reasonable proxy for administrative effort required to assess applications, noting that costs can also be heavily influenced by the type of technology being proposed and the quality of the application. If it is assumed that costs incurred by EPA increase with works value at all levels of works value, this means charges are likely to better reflect the extent that parties that give rise to specific costs bear those costs. However, there is some uncertainty about how strong the relationship is between works value and costs incurred by EPA as works value increases to very high levels (i.e. the relationship is not necessarily the same at high levels of work value as it is at lower levels of work value). EPA process mapping for development licences suggests that the likely cost for a complex development application is significantly less than \$201,364.70 (noting also complexity is not necessarily reflected in works value). Therefore, it is possible that the significantly higher fees for these applicants, based on works value, are higher than the costs to EPA of administering these licences.

In terms of ability to pay, the works value options take into account ability to pay more than the other options as a significantly lower fee is charged for the smallest developments than under Options 2 and 3 (reducing any barriers to entry). While the higher cap does not impact most applicants, it significantly impacts a small number of applicants with high works values (a \$62,025 fee cap versus a \$201,364.70 fee cap). This might create a barrier to entry for the largest projects and discourage investment and innovation (although noting that no specific evidence is available to inform how significant such an impact might be).

It is important to consider the impact of the cross-subsidy between development licence applications and operating licence annual fees. The regulatory activities are very closely related, with the cohorts very similar. The vast majority of development licence applications end up holding an operating licence and paying an operating

licence annual fee. This might not always be the case though e.g. not all prescribed activities, where a development licence is required, require an operating licence. In such cases, operating licence holders subsidise development licence applications. However, only a very small number are expected to fall into this category, which means the practical impact of the cross-subsidy is very small.³²³

Overall, Option 1a is considered better than the Base Case of having no fee because it increases the extent to which parties that give rise to costs bear those costs. However, it significantly impacts businesses with higher works values that will pay up to the maximum cap. While only a small number of applications are potentially impacted by the higher cap, the size of this impact per application is significant. As discussed, there is also uncertainty about the relationship between regulatory effort and works value as works value becomes higher – the higher charges might not accurately reflect actual EPA costs. For this reason, Option 1 is given a score of +4 for equity, while Option 1b is given a higher score, +6, reflecting that the higher fee (due to a higher cap) might not reflect actual costs to EPA of administering these licences.

Simple and easy to understand and administer

Charging based on works value will be simple and easy for EPA to administer. EPA currently has a system in place and has not reported any difficulties with this approach. It also allows applicants to understand fees ahead of time (noting that EPA has not experienced any issues with changes in works value). A score of -2 is given to Options 1a and 1b for simplicity and ease of administration. While nothing would need to change in the way EPA administers development licence applications, the fee design is more difficult for development licence applicants to understand (compared to no fee at all).

16.8.3.2 Option 2: Base fee plus hourly rate

Cost reflectivity

Option 2 scores highly in terms of cost reflectivity as all costs are fully recovered, therefore a score of +10 is given.

Equity

Under Option 2 the parties giving rise to specific costs bear those costs, more than is the case under Options 1a and 1b, as the fee is based on the number of hours EPA spends on the application. However, compared to Option 1, smaller applicants could conceivably be charged very high fees if the application is complex, which might deter investment and innovation. This could reduce ability to pay, although the size of this impact is not known as it is uncertain how many small applicants would be making complex development licence applications. A score of +6 is given for equity, the same as Option 1b, given it has both advantages and disadvantages, and there is some uncertainty around the equity effects similar to Option 1b.

Simple and easy to understand and administer

An hourly rate fee structure is significantly more complex to administer than the other options given EPA will need to implement a time recording system and EPA staff will need to record time spent per application. Despite some areas of EPA currently recording assessment time, this is a significant cultural change and will impose significant costs in terms of time and IT systems. Given there are only an estimated 30 applications a year, it may be manageable. There might also be a cost saving because, given higher quality applications take

³²³ Note, there are no prescribed operating activities for which a new applicant can go straight into an operating licence without first applying for a development licence. There are a number of prescribed activities which can have a development licence up front and then a permit, exemption or just no additional requirement

less time to administer than lower quality ones, communicating this to applicants and charging applicants based on processing time gives them an incentive to submit higher quality applications. On the other hand, the small number of applications might not justify the cost of implementing such an option. An additional drawback to this option is that applicants would be unable to know the fee in advance, only knowing the minimum and maximum fee they could be charged. This may offset some of the benefits of reduced administration costs from providing an incentive to submit a higher quality application. A score of -7 is given.

16.8.3.3 Option 3: Tiered fee structure

Cost reflectivity

Option 3 scores highly in terms of cost reflectivity as costs are fully recovered. A score of +10 is given.

Equity

With a three-tiered fee structure where fee levels are based on the complexity of the application, fees charged are reasonably targeted to the specific parties that give rise to those costs, although to a lesser extent than Option 2. Like Option 2, this fee structure does not account for ability to pay to the same extent as Options 1a and 1b; fees are based on the complexity of the application and therefore small developments could be charged very high fees. A score +3 is given for equity.

Simple and easy to understand and administer

EPA would be able to easily determine which applicants fall into which tier (while the application is in progress) as it is based on processes already in place. However, applicants might not be able to determine which tier they fall into before submitting their application, which could make the fee structure less easy to understand for applicants. It may, however, be possible for EPA to issue guidance on tiers (e.g. typical characteristics) that allows applicants to better predict what fee they will be charged. However, this is likely to be less straightforward to implement and administer than the simple works value method which is already in place and easily able to be calculated by applicants at the time of application. A score of -4 is given.

16.8.3.4 MCA summary and preferred option - Percentage of works value at partial cost recovery

As shown in **Error! Reference source not found.**, Option 1b scores highest with a total weighted score of 5.0. It is simple to administer and does not disadvantage smaller licence applicants. Because of the cross-subsidy between operating licence annual fees and development licence applications, all of EPA's cost related to development licence applications will be recovered. By comparison, Option 1a will impose substantial licence costs on developments with very high works values (more than twice as high as under Option 1a). Option 2 will be more difficult to implement and administer.

Table 16-6: Options for development licence applications: MCA results

	Option 1a- Percentage of works value - 100% cost recovery	Option 1b- Percentage of works value - Partial cost recovery	Option 2- Base fee plus hourly rate	Option 3- Tiered fee structure
Cost reflectivity	+10	+10	+10	+10
Equity	+4	+6	+8	+3
Simple and easy to understand administer	-2	-2	-7	-4
Weighted score	+4.3	+5.0	+4.2	+3.4

16.8.4 Pilot project licence applications (s50(1)(b))

Previously known as ‘Research, development and demonstration (RD & D) approvals’, pilot project licences are suited to projects that are generally limited in scale, duration and environmental impact compared to those projects requiring a development licence. There are approximately 5 applications a year.

The options considered for the MCA are set out below:

- **Option 1: Flat fee** applied to all applicants. A flat fee is the current free structure for RD & D approvals.
- **Option 2: Base fee plus an hourly rate** for assessments exceeding 145.9 hours (the estimated minimum time required), up to a specified maximum fee (based on the estimated maximum time required).

A fee option based on works value, similar to the preferred fee for development licence applications, was not considered feasible for project pilot licences applications as works value is less relevant to pilot projects because the projects are at an early, more uncertain stage.

A tiered fee structure was also considered, however given the poor data to support its calculation and the potential complexity in regard to the application process, this option was not considered feasible at this point in time. A tiered fee structure option could be considered in the future if more data becomes available.

Fee options based on other characteristics were also not considered for similar reasons.

Error! Reference source not found. shows the modelled fees for pilot project licence applications.

Table 16-7: Modelled Fees for pilot project licence applications

	Option 1: Flat fee	Option 2: Base fee plus hourly rate
Application fee	\$24,658.11 (1706.44 fee units)	Base fee of \$15,134.79 (1,047.39 fee units) plus \$103.75 (7.18 fee units) per hour for assessments exceeding 145.9 hours, up to a maximum of \$34,118.04 (2,361.11 fee units)

Note: Fees are based on EPA estimates for the time taken and costs involved with completing administrative processes and compliance and enforcement activities. See Appendices 6-9 for more information. Fee units are given in 2018-19 fee unit values.

16.8.4.1 Option 1: Flat fee

Cost reflectivity

As is the case for all the options considered here, a score of +10 is given for cost reflectivity as all costs are recovered.

Equity

Given all applicants are charged the same fee, costs are not well targeted at the particular parties that give rise to them. Additionally, a flat fee on balance does not account for ability to pay, with smaller applicants charged the same as larger applicants. In this case it presents a significant barrier to entry for smaller projects. A score of +3 is given.

Simple and easy to understand and administer

In many ways this option will be very simple and easy to understand and administer, as all applicants are charged the same fee, and know the fee in advance when submitting their application. However, a flat fee may create a barrier to entry for smaller projects. A score of -3 is given.

16.8.4.2 Option 2: Base fee plus hourly rate

Equity

In terms of equity, the variable fee option scores higher than a flat fee given fees more closely reflect costs associated with particular parties (horizontal equity). However, ability to pay may be reduced for smaller applicants since smaller projects with complex applications can potentially be charged very high fees compared to a flat fee (vertical equity). These high fees may impose a barrier on smaller businesses to invest and innovate. While in some other industries it is sometimes considered desirable to discourage too many small businesses from operating (e.g. due to concerns about not being able to control for health and safety risks across a large, highly dispersed group of businesses), this is not considered an issue for project pilot activities. Only a small number of project pilot licence applications are made each year, which EPA is able to manage administratively and monitor ongoing as required, and EPA does not wish to discourage innovation from small businesses so long as it occurs within the permissions framework where appropriate. A score of +7 is given.

Simple and easy to understand and administer

This option is complex to administer, as it requires an administrative system in place to record the time spent on each application. As noted in the MCA discussions in section 16.8.3, despite some areas of EPA currently recording assessment time, this is a significant cultural change and will impose significant costs in terms of time and IT systems. Given there are only an estimated 5 applications a year, it may be manageable. There might also be a cost saving because, given higher quality applications take less time to administer than lower quality ones, communicating this to applicants and charging applicants based on processing time gives them an incentive to submit higher quality applications. On the other hand, the very small number of applications might not justify the cost of implementing such an option. An additional drawback to this option is that applicants would not know the fee in advance. A score of -7 is given.

16.8.4.3 MCA summary and preferred option – Base fee plus hourly rate

The results of the MCA are summarised in **Error! Reference source not found.** below. The variable fee option (Option 2) scores slightly higher than the flat fee option (Option 1) largely due to it being far more equitable. However, the scores are very close. This means that the rankings could change with a small difference in scoring, or weighting of criteria.

Table 16-8: Pilot project licence applications: MCA results

	Option 1: Flat fee	Option 2: Base fee plus hourly rate
Cost reflectivity	+10	+10
Equity	+3	+7
Simple and easy to understand and administer	-3	-7
Weighted score	+3.7	+3.8

16.8.5 Permit to transport reportable priority waste applications (s50(1)(b))

Permits are currently required to transport prescribed waste or prescribed industrial waste under the EP Act 1970. Permits will continue to be required to transport reportable priority waste under the new EP legislation but with certain lower risk classes of reportable priority waste proposed to be moved to the new Registrations tier. Permits needed only for a short duration (not exceeding three months), known as temporary permits, can also be obtained. Based on current application levels, across both full and temporary permits, approximately 40 permits are anticipated to be issued annually. The options considered for vehicle permit applications are:

- **Option 1: Tiered fee structure** with different fee levels based on both volume (number of tonnes of waste transported) and type of material being transported. This is essentially the fee structure currently in place. The temporary permit fee is equal to the greater of 25% of the full application fee or a flat fee; 25% is chosen because temporary permits last for 3 months while the full permits last for a year.
- **Option 2: Flat fee.** One fee across all reportable priority waste transport permits, with a separate fee for temporary permits.
- **Option 3: Base fee plus hourly rate,** up to a maximum fee. The temporary permit fee has a different (lower) base fee.

Error! Reference source not found. shows the modelled fees for permit to transport reportable priority waste applications.

Table 16-9: Modelled fees for permit to transport reportable priority waste applications

	Option 1: Tiered fee structure	Option 2: Flat fee	Option 3: Base fee, plus an hourly rate
Application fee	Not modelled due to data limitations. ³²⁴	\$358.79 (24.83 fee units)	Base fee of \$291.25 (20.16 fee units) plus \$94.25 (6.52 fee units) per hour for assessments exceeding 3 hours, up to a maximum of \$644.69 (44.62 fee units)
Temporary permit application	Not modelled as above	25% of the full application Fee, being \$89.70 (6.21 fee units)	25% of the full application fee

Note: Option 1 is considered in the MCA, however the fees themselves are not modelled. With the movement of many waste codes to the registration tier, fine level data is required to calculate these tiers. Fees based on EPA estimates for the time taken and costs involved with completing administrative processes and compliance and enforcement activities. See Appendices 6-9 for more information. Fee units are given in 2018-19 fee unit values.

16.8.5.1 Option 1: Tiered fee structure

Cost reflectivity

As is the case for all the options considered here, a score of +10 is given for cost reflectivity as all costs are recovered.

Equity

In terms of parties bearing the costs they give rise to, this fee structure accounts for both the administrative costs involved in permits for different parties and the differences in terms of risk that transporting different

wastes presents to the community. As this fee is variable based on both the volume of waste transported as well as the type of waste, all else equal it might lead to higher fees for large businesses if they are more likely to transport large volumes. However, some parties may only transport high-risk or high-volumes of reportable priority waste on an infrequent basis, which this fee structure is unable to account for. Overall, a score of +7 is given for equity.

Simple and easy to understand and administer

While this is a somewhat complex fee structure, it is very similar to what is currently in place, and allows applicants to understand the fees they will pay in advance of submitting an application. A score of -4 is given for simplicity and ease of administration.

16.8.5.2 Option 2: Flat fee

Equity

In terms of equity, as all applicants are charged the same fee, different levels of administrative time for each application (which range from approximately 3 to 6.5 hours), and differences in risk that transporting different wastes presents to the community, are not accounted for. However, there is a relatively small gap between the minimum and maximum time required to administer these permits in part because the lowest risk classes of reportable priority waste have been moved to the registration tier.

Under Option 2 the flat fee is higher than the minimum payable for both Options 1 and 3, however the maximum chargeable is also lower. As the ability to pay of small businesses is weighted higher than large businesses in this MCA, this option is scored slightly lower than Option 1 and 3 for the equity criterion. A score of +5 is given for equity.

Simple and easy to understand and administer

In terms of ease and simplicity of administration, this option scores highest among the three options as all waste transporters pay the same fee and the fee level is known to applicants in advance. A score of -1 is given.

16.8.5.3 Option 3: Base fee plus hourly rate

Equity

In terms of equity, while a variable fee structure better targets fees to those parties that create the administrative burden in comparison to the tiered fee structure, in terms of ability to pay it does not do particularly better or worse than other options. There is a greater risk of smaller operators being charged high fees if the application is particularly complex, yet the minimum fee is lower than a flat fee. A score of +6 is given.

Simple and easy to understand and administer

An hourly rate fee structure is significantly more complex to administer than the other options given EPA will need to implement a time recording system and EPA staff will need to record time spent per application. As noted in the MCA discussions in section 16.8.3 and 16.8.4, despite some areas of EPA currently recording assessment time, this is a significant cultural change and will impose significant costs in terms of time and IT systems. Given there are only an estimated 40 applications a year, it may be manageable. There might also be a cost saving because, given higher quality applications take less time to administer than lower quality ones, communicating this to applicants and charging applicants based on processing time gives them an incentive to submit higher quality applications. On the other hand, the small number of applications might not justify the cost of implementing such an option. An additional drawback to this option is that applicants would not know the fee in advance. A score of -7 is given.

16.8.5.4 Preferred option: Flat fee

Error! Reference source not found. presents the results of the MCA. The flat fee option (Option 2) scores marginally higher than the tiered fee structure option (Option 1). While Option 1 scores higher in terms of equity due to better targeted fees, Option 2 scores higher in terms of being simple and easy to understand and administer. However, the scores are very close. This means that the rankings could change with a small difference in scoring, or weighting of criteria.

Table 16-10: Permits to transport reportable priority waste: MCA results

	Option 1: Tiered fee structure	Option 2: Flat fee	Option 3: Base fee plus hourly rate
Cost reflectivity	+10	+10	+10
Equity	+7	+5	+6
Simple and easy to understand and administer	-4	-1	-7
Weighted score	+4.8	+5.0	+3.5

16.8.6 Council-issued permit: applications to construct, install or alter an on-site wastewater management system (s50(1)(b))

These permits issued through municipal councils relate to permission to construct, install or alter an on-site wastewater management system (a septic tank). While these fees are collected by councils, the fees themselves are set by EPA. This permit applies to systems that have a flow rate not exceeding 5,000 litres on any day - systems designed with a higher flow rate require a development licence. The total number of applications submitted per year in Victoria is unknown, noting that the RIS consultation survey sought this information from councils but the response received was insufficient to inform this analysis.

The options considered for the MCA for septic tank permit applications are:

- **Option 1: Flat fee.** One flat fee for all applicants regardless of application complexity.
- **Option 2: Base fee plus hourly rate,** up to a maximum fee.

Currently, different councils charge different fees for different types of work.

Error! Reference source not found. shows the modelled fees for council-issued permit applications.

Table 16-11: Modelled fees for council-issued permit applications

	Option 1: Flat fee	Option 2: Base fee plus hourly rate
Application fee	\$748.69 (51.81 fee units)	Base fee of \$374.26 (25.9 fee units) plus \$91.61 (6.34 fee units) per hour for assessments exceeding 4.1 hours, up to a maximum of \$1,007.89 (69.75 fee units). The choice of threshold levels for the base fee, number of hours and maximum were informed by EPA's process mapping for this activity.

Note: Fee units are given in 2018-19 fee unit values.

16.8.6.1 Option 1: Flat fee

Cost reflectivity

At a state level, all costs can be recovered under a flat fee. However, both the administration of these permits as well as the collection of fee revenue falls to different councils with different cost bases and different types of

work being undertaken. Given a flat fee is likely to result in some councils over-recovering while others under-recover, a score of +5 is given for cost reflectivity.

Equity

In terms of equity, as all applicants are charged the same fee, this fee does not account for the different levels of administrative time (which range from a minimum of approximately 4 to a maximum of 11 hours) and thus the costs involved with different applications. While a flat fee is not able to account for ability to pay, the group of applicants is relatively homogenous compared to other permissions as all relate to small scale septic systems. However, making it less equitable is that all permissions, whether for new installations or simply alterations, would be charged the same fee. While different fees could potentially be set, information is not available at this time to enable modelling of such an option. A score of +4 is given for equity.

Simple and easy to understand and administer

In terms of ease and simplicity of administration, this option scores highest among the two options as all applicants pay the same fee and the fee level is known to applicants in advance. A score of -1 is given.

16.8.6.2 Option 2: Base fee plus hourly rate

Cost reflectivity

This variable fee structure scores highly in terms of cost reflectivity as the hourly rate is able to account for much of the differences in costs, such as time taken to process an application, or differences in the type of works being undertaken across different municipal councils. A score of +8 is given for cost reflectivity.

Equity

A base fee plus hourly rate structure better targets fees to those parties that create the administrative burden in comparison to the flat fee structure. This is even more so the case for on-site wastewater management system permits as the assessment work is carried out by different local councils which may have differing administrative costs. As noted above, consideration for ability to pay is not as much of an issue for these permits, compared to other permissions such as development or pilot project licences. A score of +7 is given for equity.

Simple and easy to understand and administer

Of the two options, this option is the most complex to administer as there will need to be a system in place to keep track of time spent on each application. A score of -7 is given.

16.8.6.3 MCA summary and preferred option - Base fee plus hourly rate

Error! Reference source not found. below presents the results of the MCA. The base fee plus hourly rate option is preferred. Despite the flat fee scoring much higher in terms of simplicity and ease of administration, the variable fee scores higher in terms of both equity and cost reflectivity. However, it is important to note that the scores are very close. This means that the rankings could change with a small difference in scoring, or weighting of criteria.

Table 16-12: Council-issued permit applications: MCA Results

Criteria	Option 1: Flat fee	Option 2: Base fee plus hourly rate
Cost reflectivity	+5	+8
Equity	+4	+7
Simple and easy to understand and administer	-1	-7
Weighted score	+2.9	+3.2

16.8.7 Other Authority-issued permit applications (s50(1)(b))

This group of permits includes all other permissions that fall under the permit tier under the new EP legislation. This includes (but is not limited to):

- **Complex:** e.g. animal industries, discharge of waste to aquifer, waste and resource recovery, municipal landfills.
- **Simple:** e.g. operating an outdoor entertainment venue or outdoor entertainment event.
- **Consignment:** e.g. transporting controlled waste into Victoria.

As the above are new permissions under the permit tier, there is no current fee arrangement in place. For the purposes of this section, “simple” refers to the prescribed activities L05 and L06, “complex” refers to prescribed activities A05b, A12, A13b, A14, A15, A16, A17, A18, A19, B01a, and B02a, and “consignment” refers to prescribed activity A11. There are estimated to be approximately 22 simple, 139 complex, and 416 consignment applications each year.

The options considered for the MCA for other permit applications are:

- **Option 1: Flat fee.** One fee for all applicants regardless of application complexity.
- **Option 2: Mixed structure.** Base fee plus an hourly fee, up to a maximum fee for simple and complex permits, and a flat fee for all consignment permits.
- **Option 3: Tiered fee structure** based on simple, complex or consignment type permits.

Another option is to set the fee by individual permission types, however this will add substantive complexity to the fee design, and EPA also does not have cost data by permission type to support such analysis.

Error! Reference source not found. shows the modelled fees for authority-issued permit applications.

Table 16-13: Modelled fees for other Authority-issued permit applications

	Option 1: Flat fee	Option 2: Mixed	Option 3: Tiered fee structure
Application fee (simple)	\$612.25 (42.37 fee units)	Base fee of \$790.56 (54.71 fee units) plus \$103.75 (7.18 fee units) per hour for assessments exceeding 9 hours, up to a maximum of \$2577.01 (178.34 fee units)	\$990.69 (68.56 fee units)
Application fee (complex)			\$1,727.35 (119.54 fee units)
Application fee (consignment)		\$219.49 (15.19 fee units)	\$219.49 (15.19 fee units)

Note: Fees based on EPA estimates for the time taken and costs involved with completing administrative processes and compliance and enforcement activities. See Appendices 6-9 for more information. Fee units are given in 2018-19 fee unit values.

16.8.7.1 Option 1: Flat fee

Cost reflectivity

This option scores highly in terms of cost reflectivity and is given a score of +10 (the same score is given for all options).

Equity

In terms of equity, as all applicants are charged the same fee, this fee does not account for the different levels of administrative time (which range from approximately 1 - 25 hours) and thus the costs involved with different applications. Since 64% of these permits are consignment permits, which cost substantially less to administer than the “simple” and “complex” permits, imposing a flat fee across the large number of simple, complex and consignment applicants causes them to cross-subsidise the costs of administration for other applicants - the fee is over twice as large. This reduces the degree to which the parties that give rise to specific costs bear those costs. Further, a flat fee is not able to account for ability to pay of different participants. Reflecting both aspects of equity, a score of +3 is given.

Simple and easy to understand and administer

In terms of ease and simplicity of administration, this option scores highest among the three options as all applicants pay the same fee and the fee level is known to applicants in advance. A score of -1 is given.

16.8.7.2 Option 2: Mixed structure

Equity

A variable fee structure based on EPA assessment times better targets fees to those parties that create the administrative burden in comparison to both a flat fee and tiered fee structure.

In this mixed fee option, for consignment permits, applicants are charged a flat fee based on the administration costs for this permit. For the other permits, as is typically the case of a base fee plus hourly rate structure, smaller parties (those applying for consignment permits excluded) can potentially be charged high fees if the application is complex. A score of +7 is given for equity.

Simple and easy to understand and administer

Of all three options, this option is the most complex to administer as there will need to be a system in place to keep track of time spent on each simple and complex permit. Further, simple and complex permit applicants will not know what fee they will be charged in advance. A score of -7 is given.

16.8.7.3 Option 3: Tiered fee structure

Equity

In terms of parties bearing the costs they give rise to, this fee structure performs better than a flat fee given there are three tiers instead of one, yet not quite as highly as the mixed option that is based on the number of hours.

In terms of accounting for ability to pay, smaller applicants are likely to be worse off than under Option 2 - while the minimum fee that can be charged is higher, the maximum fee is also lower. A score of +6 is given.

Simple and easy to understand and administer

As EPA has already specified which type of permits fall within each tier (simple, complex, and consignment), this option is relatively simple to administer and allows applicants to understand their fees in advance. A score of -3 is given.

16.8.7.4 MCA summary and preferred option – Tiered fee structure

Error! Reference source not found. below summarises the results of the MCA. The tiered fee structure has the highest score overall. While the flat fee structure (Option 1) is stronger on simplicity and ability to understand, the tiered fee option (Option 3) is strong on equity. However it is important to note that the scores are very close. This means that the rankings could change with a small difference in scoring, or weighting of criteria.

Table 16-14 Other Authority-issued permits application fee structures: MCA results

Criteria	Option 1: Flat fee	Option 2: Mixed	Option 3: Tiered fee structure
----------	--------------------	-----------------	--------------------------------

Cost reflectivity	+10	+10	+10
Equity	+3	+7	+6
Simple and easy to understand and administer	-1	-7	-3
Weighted score	+4.3	+3.9	+4.7

16.9 Streamlined/less detailed analysis – other assessment

This section provides streamlined analysis for a large number of fees where more than one feasible, distinct option does not exist at this point in time. Information including average fee and cost recovery level for all fees is provided in Appendix 7, with changes to current fees (either fee design or fee level) presented in Appendix 8. The future review of fees will include these fees. EPA will review information gaps to determine where data improvements can be made.

16.9.1 Flat fees

Flat fees are proposed to be set for the items outlined in **Error! Reference source not found.** Flat fees are preferred for many of these because there is minimal variation in costs to EPA of administering these fees across individual applications. For some there is also a low volume, which makes setting a more complex fee structure less feasible. The benefits of alternative tariff structures would be minimal, with potentially higher administration costs for EPA. Consideration of fee options for environmental auditor appointments was more unique, noting that setting a variable fee structure for this fee based on some characteristics of the application could impose a barrier to appointment for some environmental auditors.

The fees listed below account for approximately \$1 million of EPA's estimated annual revenue (approximately 7% of EPA's total fees revenue).

Table 16-15 Flat fees – streamlined analysis

Type	Stage	Fee variation	Volume	Total cost	Fee units	Fee \$
Development/Pilot project licences	Transfer	-	4	\$3,018.32	52.22	754.58
Development/Pilot project licences	Amendment	Start date/Duration	10	\$8,152.70	56.42	815.27
Permit	Transfer	Reportable priority waste transport	1	\$123.89	8.57	123.89
Permit	Transfer	Other - complex (application to Authority)	Unknown	Unknown	52.22	754.58
Permit	Amendment	Reportable priority waste transport	8	\$1,608.00	13.91	201.00
Permit	Surrender	Reportable priority waste transport	5	\$515.25	7.13	103.05

Permit	Surrender	Other - complex (application to Authority)	Unknown	Unknown	47.08	680.24
Permit	Exemption	Reportable priority waste transport	Unknown	Unknown	13.91	201.00
Permit	Renewal	Reportable priority waste transport	107	\$4,770.06	3.09	44.65
Permit	Renewal	Other - complex (application to Authority)	Unknown	-	28.56	412.67
Permit	Exemptions for transporting reportable priority waste (due to holding a valid authorisation to transport reportable priority waste in another jurisdiction)		1	\$201.00	13.91	201.00
Registration	Application	Reportable priority waste transport	779	\$161,876.20	14.38	207.80
Registration	Renewal	Reportable priority waste transport	2042	\$76,575.00	2.60	37.50
Environmental Audit	Appointment	Assessment	20	\$40,948.80	141.69	2047.44
Environmental Audit	Appointment	Administrative and technical support services	22	\$163,080.94	512.99	7412.77
Environmental Audit	Reappointment	Assessment	21	\$53,550.63	176.47	2550.03
Environmental Audit	Reappointment	Administrative and technical support services	21	\$139,247.43	458.88	6630.83
Environmental Audit	Preliminary risk screen assessment statement and report		100	\$30,143.00	20.86	301.43
Environmental Audit	Environmental audit statement and report		176	\$280,413.76	110.26	1593.26
Authority may appoint analysts and prescribed roles	Accredited consigners		20	\$10,216.80	35.35	510.84

Note: See Appendices 6-9 for details on underlying data and assumptions used. Fee units are given in 2018-19 fee unit values.

16.9.2 Variable fees

Variable fees are proposed to be set for the fees outlined in **Error! Reference source not found.** Variable fees are preferred because costs are more variable or some parties impose much greater regulatory costs than others. A variable fee structure enables fees to be set that more accurately recover costs from those parties that impose the costs. The variable fee thresholds are based on the minimum assessment time estimated by the cost recovery analysis. An average time was not used as it would result in an over-recovery of costs for many applicants.

The 19 fees listed below account for \$0.85 million of EPA's estimated revenue per annum (approximately 6% of EPA's total fees revenue).

Table 16-16 Variable fees – streamlined analysis

Type	Stage	Fee variation	Volume	Total cost	Fee
Development licence	Exemption		40	\$295,984.00	68.8 fee units on application plus 6.29 fee units per hour for assessments exceeding 10.95 hours up to a maximum of 780.32 fee units.
Development/Pilot project licences	Amendment	Terms and conditions	4	\$21,122.76	243.73 fee units on application plus 6.4 fee units per hour for assessments exceeding 38.1 hours up to a maximum of 706.96 fee units.
Operating licence	Application		4	\$22,051.64	84.78 fee units on application plus 6.53 fee units per hour for assessments exceeding 13 hours up to a maximum of 965.35 fee units.
Operating licence	Amendment	Administrative	60	\$50,973.00	Lesser of 10% of the annual fee or a flat fee of 58.79 fee units
Operating licence	Amendment	Terms and conditions	20	\$107,614.00	126.12 fee units on application plus 6.28 fee units per hour for assessments exceeding 20.1 hours up to a

Type	Stage	Fee variation	Volume	Total cost	Fee
					maximum of 1119.18 fee units.
Operating licence	Transfer		15	\$11,318.70	Lesser of 10% of the annual fee or a flat fee of 52.22 fee units
Operating licence	Surrender		20	\$43,932.30	Lesser of 10% of the annual fee or a flat fee of 152.01 fee units
Operating licence	Exemption		Unknown	Unknown	68.8 fee units on application plus 6.29 fee units per hour for assessments exceeding 10.95 hours up to a maximum of 780.32 fee units.
Permit	Amendment	Other - complex (application to Authority)	Unknown	Unknown	25.2 fee units on application plus 6.49 fee units per hour for assessments exceeding 3.9 hours up to a maximum of 322.31 fee units
Permit	Exemption	Other - complex (application to Authority)	6	\$5,145.66	45.82 fee units on application plus 7.16 fee units per hour for assessments exceeding 6.4 hours up to a maximum of 73.03 fee units.
Permit	Exemption	On-site wastewater management system	Unknown	Unknown	25.9 fee units on application plus 6.34 fee units per hour for assessments exceeding 4.1 hours up to a maximum of 69.75 fee units.
Authority may authorise emergency storage, use etc. of waste	Commissioning		30	\$202,939.20	70.77 fee units on application plus 6.47 fee units per hour for assessments exceeding 10.95 hours up to a maximum of 840.99 fee units.
Better environment plans	Submission of		Unknown	Unknown	103.29 fee units on

Type	Stage	Fee variation	Volume	Total cost	Fee
	proposed better environment plan				application plus 6.94 fee units per hour for assessments exceeding 14.9 hours up to a maximum of 593.71 fee units.
Better environment plans	Amendment of better environment plans		Unknown	Unknown	103.29 fee units on application plus 6.94 fee units per hour for assessments exceeding 14.9 hours up to a maximum of 593.71 fee units.
Better environment plans	Services to advise or assist a person to prepare a proposed better environment plan		Unknown	Unknown	6.94 fee units per hour up to a maximum of 593.71 fee units.
Application to vary or revoke site management order	-		Unknown	Unknown	103.29 fee units on application plus 6.94 fee units per hour for assessments exceeding 14.9 hours up to a maximum of 593.71 fee units.
Exemptions	-		Unknown	Unknown	45.82 fee units on application plus 7.16 fee units per hour for assessments exceeding 6.4 hours up to a maximum of 888.26 fee units.
Financial assurance	Request for review of form		5	\$39,693.60	227.84 fee units on application plus 10.24 fee units per hour for assessments exceeding 22.25 hours up to a maximum of 1798.14 fee units.
Financial assurance	Application for release		12	\$44,511.84	84.48 fee units on application plus 8.77 fee units per hour for assessments exceeding 9.65 hours up to a

Type	Stage	Fee variation	Volume	Total cost	Fee
					maximum of 1147.41 fee units.

Note: See Appendices 6-9 for details on underlying data and assumptions used. Fee units are given in 2018-19 fee unit values.

Note: The proposed prescribed fee for a 'Request for review of form' of a financial assurance is dependent on clause 23 of the EP Amendment Bill 2019 being enacted before the regulations are made.

17 Preferred options

This chapter summarises the preferred options identified throughout the report, their likely impact on stakeholders relative to existing arrangements, their impacts to competition and small business, and the costs and benefits that they will generate.

17.1 Summary of preferred options

Table 17-1 below summarises the preferred options identified throughout this RIS.

Table 17-1 Summary of preferred options

Problem area	Preferred option
Permissioning	<p>The preferred option is to:</p> <p>Prescribe those activities that will require some form of permission, exemption or financial assurance. This is summarised below:</p> <ul style="list-style-type: none"> • Development Licence: All activities currently requiring a works approval, plus large WRRs. • Operating Licence: All activities currently requiring a licence, plus selected WRRs. • Financial assurance: Almost all activities currently requiring a financial assurance, plus selected WRRs • Permit: Selected activities that currently require an EPA or council permission or approval under different heads of power, along with selected WRRs, landfills exempt from licencing and selected other activities that previously did not require a permission. • Registration: Selected activities that are currently excluded from requiring a permission through a general exemption, along with dry cleaning, selected WRRs and other waste storage and processing facilities. <p>This will enable EPA to establish greater certainty of control for activities which pose the most significant risks of harm to human health and the environment through its permissioning framework.</p>
On-site wastewater management systems	<p>The preferred option is for councils to continue to issue permits for the construction, installation or alteration of on-site systems, but not to issue ongoing permits for their operation, which will be addressed primarily through the GED. Councils would be required to refuse an application to install if the system is not of a type approved by EPA or does not meet the specifications required by EPA.</p> <p>This option would aim to enable councils to manage the risks to human health and the environment, posed by on-site systems, but avoid overly burdensome ongoing costs for owners and councils.</p>
Waste	<p>The preferred option is to:</p> <ul style="list-style-type: none"> • Adopt a tiered waste classification pathway with supporting guidance which guides the user through the classification process to understand their waste and identify its source, type and classification as priority, reportable priority or industrial waste. • Use the permissioning framework to establish to lawful authority to accept waste, plus the introduction of one additional tool for allowing the use of wastes using a self-assessment process. • Prescribe waste types that are determined to be very-high-hazard, high-hazard and moderate hazard, and those at risk of mismanagement, as priority waste • Require transport permissions for all very high to moderate hazard waste, and transaction tracking for all very high, high hazard wastes and tyres. Transaction duties and waste tracking responsibilities can be fulfilled by waste using a new electronic tracking system under development. • Prescribe the sensitive environmental areas that must not be impacted by a landfill, and clarify technical landfill requirements, in regulations.

Problem area	Preferred option
	<ul style="list-style-type: none"> • Prescribe elements of the waste levy scheme in regulation that are required for its effective operation. <p>Collectively, these proposals aim to enable the effective operation of Victoria’s new waste framework established in the EP Act, and reduce the significant risks of harm from waste mismanagement in Victoria.</p>
Contaminated land	<p>The preferred option is to:</p> <ul style="list-style-type: none"> • Enable EPA to make determinations on background levels on a case by case basis and prescribe specific control measures for NAPL contamination. • Prescribe in regulation an alternative risk-based definition of notifiable contamination, specific exemptions to notifiable contamination and the requirement for duty holders to provide a management response with their notification to EPA. <p>Collectively, these aim to provide greater clarity to duty holders with respect to complying with contaminated land duties under the new EP legislation, address the risks posed high-risk contaminants, and minimise the cost burden on duty holders.</p>
Litter	<p>The preferred option is to:</p> <ul style="list-style-type: none"> • Include the ‘remaining’ litter offences from the EP Act 1970 (i.e. those that were not incorporated into the new EP legislation) into regulations, in a more streamlined and modernised manner. These offences would be enforceable by EPA and other litter enforcement agencies (including local councils, Victoria Police and Parks Victoria). <p>This aims to address the harm caused by depositing material that may become litter, and by damaging litter receptacles.</p>
Plastic bags	<p>The preferred option is to:</p> <ul style="list-style-type: none"> • Ban retailers in Victoria from selling or providing all lightweight plastic bags to a customer to carry or transport goods sold or provided by the retailer. Lightweight degradable, biodegradable and compostable shopping bags made wholly or partly of plastic would also be subject to the ban. However, barrier bags (without handles) and reusable polypropylene (heavier-weight) bags will not be banned. • This option aims to significantly reduce the harms that plastic bag pollution causes to wildlife and ecosystems, visual amenity and contamination of recyclables.
Air	<p>The preferred option is to:</p> <ul style="list-style-type: none"> • Specify risk control measures for licenced emitters of Class 3 substances that are commensurate to their risk by specifying obligations in relation to such pollutants. • Place requirements on handlers, suppliers and purchasers of equipment with methyl bromide, and users of methyl bromide. • Require all wood heaters sold and manufactured in Victoria to comply with Australian New Zealand standards for emissions and efficiency. • Require businesses that exceed pollution thresholds (specified in the NPI NEPM) to report selected emissions to the NPI. <p>Collectively, these options aim to address the residual risks of harm to human health and the environment from air pollution.</p>
Water	<p>The preferred option is to:</p> <ul style="list-style-type: none"> • Prescribe that waste from vessels must not be discharged into water: This option would be enacted as a regulation with an infringeable offence that articulates how waste from vessels is to be managed. <p>This aims to reduce uncertainty for duty holders in relation to their obligations regarding the discharge of waste from vessels under the new EP legislation.</p>
Noise	<p>The preferred option is to:</p> <ul style="list-style-type: none"> • Prescribe a framework for establishing noise limits for CIT premises in urban and rural areas based on the

Problem area	Preferred option
	<p>existing SEPP N-1 and NIRV arrangements with a range of selected improvements and additions, and prescribe a definition of aggravated noise in regulation.</p> <ul style="list-style-type: none"> • Prescribe a framework for establishing noise limits for entertainment premises based on the existing SEPP N-2 framework with selected improvements. • Prescribe a range of specific items and prohibited times for residential premises and define aggravated noise. <p>Collectively, these preferred options aim to reduce uncertainty in relation to the new noise framework and, in doing so, reduce instances of under-or-over-compliance with the new requirements.</p>
Vehicle emissions	<p>The preferred option is to translate the <i>Environment Protection (Vehicle Emissions) Regulations 2013</i> into the proposed Environment Protection Regulations 2019, and to incorporate minor changes to improve certainty and to make regulatory requirements consistent for duty holders.</p> <p>This aims to reduce complexity for duty holders and vehicle testers in identifying their obligations and relevant offences.</p>

17.2 New requirements and changes from preferred options

The table below outlines the significant changes that stakeholders will face, relative to the existing environment protection framework (as a result of adopting the preferred options within this RIS). Reasons underlying the proposed changes are outlined in the chapters above.

Table 17-2 Key changes to stakeholders from preferred options

Problem area	Key changes for stakeholders under the preferred option
Permissions	<p>All activities for which a works approval and licence is required will be carried over unchanged. Existing licence holders will automatically be taken to receive a 'new' licence and will not need to reapply. There will also be no retrospective change from perpetual to time bound licences. Statutory reviews will, however, apply to all licences (both existing and those issued post-commencement) and these may result in variation of licence conditions, or revocation of a licence.</p> <p>New activities introduced into the permission framework include:</p> <ul style="list-style-type: none"> • Waste Resource and Recovery Activities (required to hold a licence, permit or registration, based on prescribed thresholds). • Supplying or using reportable priority waste (required to hold a permit). • Containment of category D contaminated soil on a project site (required to hold a permit). • Small-scale (below licence threshold) reprocessing of specified e-waste (required to hold a registration). • Small-scale (below licence threshold) organic waste processing (required to hold a registration). • Small-scale (below licence threshold) waste tyre storage (required to hold a registration). • Small-scale (below licence threshold) glass reprocessing (required to hold a registration). <p>Where appropriate, existing approvals under other instruments have been rehoused as equivalent permissions, meaning that instead of applying through different/varied approval pathways to obtain permission to operate, duty holders will instead apply for the necessary permission. This will increase clarity, fairness and transparency, as well as providing a streamlined and consistent assessment and approval process. Activities which have been reframed in this manner include:</p> <ul style="list-style-type: none"> • Environment Improvement Plans (EIPs) for animal industries, livestock saleyards and holding pens, supplying or reusing biosolids or effluent/wastewater (replaced by a permit requirement). • Interstate movement of controlled waste (Consignment Authorisations)/ reportable priority waste (replaced

Problem area Key changes for stakeholders under the preferred option

- by a permit requirement).
- EPA-issued approvals for outdoor concerts at outdoor venues (replaced by a permit requirement).
- Permits to transport Prescribed Industrial Waste (replaced by a permit or registration, depending on the type of waste being transported – the vast majority of waste types will require a registration. Permit requirements will only apply to the transport of a small number of prescribed waste codes).

A range of businesses which are currently not required to register their activities with the EPA will now be required to do so, including dry-cleaners and various waste processing and re-processing facilities.

Under the existing Scheduled Premises regulations, if a scheduled premises is prescribed such that a financial assurance is required, all duty holders conducting this activity must provide a financial assurance. The proposed regulations will instead prescribe the scheduled activities for which a financial assurance may be required, subject to case-by-case assessment against the prescribed risk assessment criteria.

On-site systems

While the introduction of the GED may impact the role of councils and duty holders' obligations going forward, the proposed regulations largely represent a continuation of the existing framework for the management of on-site systems.

For duty holders, the preferred option provides clearer criteria addressing how councils assess applications for on-site systems.

Waste

Key changes for stakeholder include:

- The preferred option enables 'accredited consigners' to accept management or control of waste from a waste generator; assisting with waste consignment duties for the waste producer. Under the current framework, no such role exists. This proposed role will reduce administrative burden on waste producers, as accredited consigners can take a significant role to assist those unfamiliar with the regulatory process or dealing with complex waste classifications.
- The preferred option proposes a new approach to waste classification, designed to provide clearer structure and certainty through provision of a list of pre-classified, commonly-generated wastes. The new approach also adopts an enhanced hazard-based approach (hazard criteria and thresholds) to waste classification for waste that does not automatically fall within a pre-classified list).
- The preferred option for determining lawful place for the use of waste materials is under a new Declaration of Use (DoU) mechanism. It is a self-assessed tool for satisfying lawful place requirements outside of permissioning, by declaring what the waste materials are and their intended uses and fitness for those uses. The waste intended for use would not be exempt from the industrial waste duties, but compliant as a lawful place if the declaration is true. As it is a self-assessed tool that does not require EPA approval, it is not expected to be a significant impediment to legitimate resource recovery. A DoU would cover industrial waste or priority waste, other than reportable priority waste for the purposes of section 143 of the Act.

Three major changes have been proposed for regulating contaminated soil. The key changes are summarised below:

- A new Category D would be created, which would cover current Category C soil that has low-level hazardous properties. Threshold limits for Category D will be set using landfill modelling and largely equate to the less hazardous portion of the current Category C thresholds.
 - Fill material would need to be classified and be included as an industrial waste, to ensure that it is taken to an appropriate site and managed correctly
 - Duty holders would only be allowed to blend contaminated soil waste, to change the categorisation or classification of that waste, if it is in accordance with an EPA-issued designation.
-

Contaminated land

There are currently no general obligations on land owners to manage or remediate contaminated sites or to notify EPA of their contaminated sites (when identified). However, there are some exceptions. Where land contamination poses an acute risk, EPA can direct a site owner to remediate. Site owners seeking to redevelop a site to a higher beneficial use (e.g. residential or a child care facility) may be captured by the environmental audit system.

Under the new EP legislation, all owners and occupiers of land in Victoria will have obligations to manage risks of contaminated land to human health and environment. They will also have a duty to notify EPA of contaminated

Key changes for stakeholders under the preferred option	
	<p>land.</p> <p>The regulations will specify what types of contamination must be notified to EPA. For matters prescribed in the regulations, duty holders will now need to identify whether their contamination is notifiable and then will provide their proposed management response to EPA.</p>
Litter	Relative to existing arrangements, changes are very minor. The proposed offences to be included in the Regulations already exist in the EP Act 1970 and are enforceable by litter enforcement authorities.
Plastic bags	Retailers will be prohibited from supplying lightweight plastic bags in Victorian stores. No such prohibition exists at present, although some major retailers have voluntarily ceased providing lightweight bags.
Air	<p>Obligations proposed for duty holders who handle methyl bromide are similar to existing requirements in the Industrial Waste Management Policy (Protection of the Ozone Layer) [IWMP POL], except this now only applies to methyl bromide as this is a risk where state-based obligations can complement Commonwealth requirements.</p> <p>Under the new framework, it is proposed that duty holders (development licence applicants, operating licence holders and pilot licence holders) will have obligations to eliminate emissions of Class 3 substances so far as reasonably practicable, and to reduce the generation of Class 3 substances where elimination is not reasonably practicable. This is similar to current requirements in SEPP (AQM).</p>
Water	The preferred option is consistent with the current regulatory position, and as such, does not represent a new burden on vessel owners.
Noise	<p>Aggravated noise is defined under section 168 as noise that is prescribed to be aggravated noise. It is proposed to set regulations to define aggravated noise for residential, industrial, commercial and trade premises and entertainment venues. These do not exist under the current framework.</p> <p>Some enhancements to the existing framework for noise are being made to contemporise the management of noise and make it more fit for purpose. Key changes are:</p> <ul style="list-style-type: none"> • Noise sensitive areas: The existing number of sensitive receptors (noise sensitive areas) will be expanded to include childcare centres, kindergartens, primary and secondary schools, and camping grounds and caravan parks in quiet rural areas • Frequency spectrum noise: This will clarify that noise at varying frequencies can be unreasonable noise and sets an expectation of the need to control such noise. • Application boundary: It is proposed to amend the current boundary in SEPP N-1 (Control of noise from Industry, commerce and Trade) to the Urban Growth Boundary. • Saturday evening period determination: It is proposed to align the Saturday 'evening' period for the purpose of setting limits to be the same as for Monday to Friday. The rationale for this is the changing nature of Saturday afternoon economic activity. • Night time noise from industry: A 55dB limit will be set for industry at night time. • Public transport noise: Align the definition of a Commercial, Industrial and Trade premise to the noise exemption in the Victorian Transport (Compliance and Miscellaneous) Act 1983.
Vehicle emissions	Stakeholders would experience minimal change from existing arrangements.
Fees	<p>The following fees would be unchanged under the preferred fees options (together these account for over 80% of EPA's total fee revenue):</p> <ul style="list-style-type: none"> • Development licence: application • Operating licence: annual fee. <p>The following fees would be revised under the preferred fees options:</p> <ul style="list-style-type: none"> • Development licence: transfer

Problem area **Key changes for stakeholders under the preferred option**

- Environmental auditor: application for appointment, application for reappointment, environmental audit statement and report
- Operating licence: amendment, transfer
- Pilot project licence: application, transfer
- Reportable priority waste transport permit: application, transfer, amendment, renewal.

The following fees would be introduced under the preferred fee options:

- Appointment of prescribed roles: accredited consigners
- Better environment plans: services to advise or assist a person to prepare, submission, amendment
- Development licence: amendment, exemption
- Emergency storage, use, etc of waste: application for authorisation (commissioning)
- Environmental auditor: administrative and technical support services in relation to appointment, administrative and technical support services in relation to reappointment, preliminary risk screen assessment statement and report
- Exemption from any provision of the regulations or of a legislative instrument made under the Act
- Financial assurances: request for review of form, application for release
- Operating licence: application, exemption, surrender
- Other Authority-issued permits: application, transfer, amendment, surrender, exemption, renewal
- On-site wastewater management permit: application, exemption
- Pilot project licence: amendment
- Reportable priority waste transport permit: surrender, exemption, exemption (mutual recognition)

Reportable priority waste transport registration: application, renewal.

17.3 Summary of costs and benefits

The nature of the costs and benefits vary across the numerous problem areas considered throughout the RIS. Similarly, the groups that will be impacted by the proposed Regulations also differ. These costs and benefits cannot be quantified for each individual problem area, nor combined into aggregate estimates for all preferred options combined. However, this RIS has assessed that the benefits of each preferred option outweigh the costs. The table below summarises a range of the types of costs and benefits, across 4 broad stakeholder group categories, relative to the Base Case.

Table 17-3 Examples of costs and benefits from preferred options

Stakeholder group	Costs	Benefits
Business	<ul style="list-style-type: none"> • Costs to comply with new requirements • Pollution abatement costs • Compliance with permission conditions • Fees paid to EPA • Costs to remove NAPL • Emissions monitoring and reporting costs • Noise attenuation costs • Delays to major works 	<ul style="list-style-type: none"> • Increased certainty of duties and obligations • Reduced burden from notifying of contaminated land • Streamlined waste classification • Reduced pollution incidents
Government	<ul style="list-style-type: none"> • Permissioning administration costs • Compliance and monitoring costs • Enforcement costs • Costs to determine contamination background levels 	<ul style="list-style-type: none"> • Reduced administrative burden • Reduced administrative costs

Stakeholder group	Costs	Benefits
Council	<ul style="list-style-type: none"> • On-site system inspections and approvals • Litter enforcement costs 	<ul style="list-style-type: none"> • Reduced contamination of plastic bags in municipal recycling • Reduced costs to clean up litter and illegally dumped waste • Reduced noise administration costs
Community/environment	<ul style="list-style-type: none"> • Reduced convenience for shoppers that use lightweight plastic bags 	<ul style="list-style-type: none"> • Reduced exposure to hazardous pollutants • Reduced health and amenity impacts from septic tanks • Less pollution in waterways • Reduced litter • Improved air quality • Reduced depletion of the ozone layer

17.4 Small business and competition impacts

This section assesses the small business and competition impacts of the preferred options.

Small businesses may experience disproportionate effects from regulatory requirements for a range of reasons. These include that the requirement applies mostly to small businesses, or because small businesses have limited resources to interpret compliance requirements or meet substantive compliance requirements compared to larger businesses.

The Victorian Guide to Regulation also requires a RIS to assess the impact of regulations on competition. Regulations can affect competition by preventing or limiting the ability of businesses and individuals to enter and compete within particular markets. In undertaking this assessment we have considered questions such as:

- Is the proposed measure likely to affect the market structure of the affected sector(s) – i.e. will it reduce the number of participants in the market, or increase the size of incumbent firms?
- Will it be more difficult for new firms or individuals to enter the industry after the imposition of the proposed measure?
- Will the costs/benefits associated with the proposed measure affect some firms or individuals substantially more than others (e.g. small firms, part-time participants in occupations etc.)?
- Will the proposed measure restrict the ability of businesses to choose the price, quality, range or location of their products?
- Will the proposed measure lead to higher ongoing costs for new entrants that existing firms do not have to meet?
- Is the ability or incentive to innovate or develop new products or services likely to be affected by the proposed measure?

The analysis of small business and competition impacts is provided in the following table. In summary, most elements of the proposed Regulations are not expected to have a material impact, or be relatively more significant, for small businesses. Proposed Regulations that are expected to have an impact on small business include those for permissions, plastic bags, waste, contaminated land, air (wood heaters), noise and water. However, the impact on small businesses in most of these cases is likely to be small and DELWP/EPA consider they will be proportionate (i.e. commensurate to risk). In a small number cases it is difficult to predict whether small businesses will be disproportionately impacted.

For the regulations that are expected to have an impact on competition, DELWP/EPA consider that the restriction on competition is necessary to reduce the risk of harms to human health and the environment, and that the benefits of the restriction outweigh the costs.

Table 17-4 Small business and competition impacts

Problem area	Impact on small business	Competition
Permissions	<p>Most of the impact of permissions will be borne by medium and large businesses. Some small businesses will be required to obtain a permit or registration, such as waste transporters. The cost of obtaining a permit may impact small businesses. The permissioning system is designed to reflect risk, and typically the level of risk is higher for larger businesses. Therefore it is generally expected that the impact on small businesses will not be disproportionate.</p> <p>Up to 3,000 small businesses (such as dry cleaners and MRFs) will be required to be registered, however the registration requirement imposes only a small cost and is not considered material, even for a small business.</p>	<p>Current permissions arrangements do impose barriers to entry (i.e. requirement for licence to undertake certain polluting activities) and the proposed system will continue to do so. The cost of permissions could have the potential to change the industry structure (e.g. reduce number of participants) or deter entry (compared to if there were no permissions in place). The permissions framework will help facilitate a more even and level playing field for all business.</p> <p>However, as noted, the permissions system is designed to be proportionate to risk: the cost of permissions will increase as the level of hazardous risk increases. The restriction on competition is therefore considered to be necessary to reduce the risks of harm to human health and the environment, and is expected to generate a net benefit when those reduced risks are considered.</p>
On-site wastewater management systems (septic tank systems)	<p>The proposed Regulations are not expected to materially impact small business as there is not a disproportionate number of small businesses impacted.</p>	<p>The proposed Regulations are not expected to impact on competition – no likely impacts on market structure, market entry or particular market participants have been identified.</p>

Problem area	Impact on small business	Competition
Contaminated land	<p>The proposed Regulations for contaminated land could have two opposing impacts on small business:</p> <ul style="list-style-type: none"> • Increased clarity around the duty to manage and duty to notify could reduce the impact on small business by reducing the amount of time and resources businesses need to spend on interpreting compliance requirements. • Prescribing the clean-up and removal of NAPL is expected to impose significant costs on a relatively small number of duty holders, which would disproportionately impact a small business if they had a NAPL contamination problem. However as noted in the RIS, it is very difficult to estimate the number of NAPL contamination instances, and the number of small businesses that would be impacted is not known. However, some petrol stations (which are commonly small businesses) are likely to be impacted by this requirement. 	<p>The proposed Regulations are not expected to impact on competition – no likely impacts on market structure, market entry or particular market participants have been identified.</p>
Waste	<p>As noted in the discussion of permissions, the proposed Regulations for waste are designed to be proportionate to risk, and typically the level of risk is higher for larger businesses. Therefore it is generally expected that the impact on small businesses will not be disproportionate.</p>	<p>The proposed Regulations are likely to make it more costly for businesses to operate in the less hazardous parts of the waste sector, for example businesses dealing with industrial wastes and priority wastes. This is likely to impact on competition in that it might reduce the number of participants in the market if existing businesses in the market or potentially new entrants find it too costly to comply with the requirements.</p> <p>However, as already discussed, the proposed Regulations for waste are designed to be proportionate to risk: costs associated with the Regulations will increase as the level of hazardous risk increases. The restriction on competition is therefore considered to be necessary to reduce the risks of harm to human health and the environment and is expected to generate a net benefit when those reduced risks are considered.</p> <p>In some cases, due to the level of hazardous risk and also the existence of illegal activities in the sector, departures of non-compliant existing businesses from the industry or deterrence of rogue businesses from entering the industry might also be beneficial for the community.</p>

Problem area	Impact on small business	Competition
Litter	The proposed Regulations are not expected to materially impact small business, with the requirements focused on the general community rather than businesses.	The proposed Regulations are not expected to impact on competition – no likely impacts on market structure, market entry or particular market participants have been identified.
Plastic bags	<p>The proposed Regulations will impact a large number of Victorian businesses, the majority of which are likely to be small businesses. In section 11.4.2 it was noted that, based on ABS counts of retail businesses in Victoria, there might be about 16,500 businesses that are currently considered likely to use plastic bags and will be impacted by the proposed Regulations.</p> <p>The proposed Regulations will apply equally to all businesses, but might disproportionately impact small businesses that have more limited resources to respond in different ways to the changes. For example, small businesses may be less likely to be able to offer alternative options to customers such as re-usable bags or pre-packaged products (e.g. meat) in the absence of plastic bags. It is possible that this could provide larger businesses with a competitive advantage, however this possible impact is uncertain.</p> <p>Ultimately, some of this cost will be passed onto consumers, although small businesses might need to absorb relatively more of the cost compared to large retailers if they have less market power and therefore less power to set their prices at a level that will recover their costs.</p> <p>However, it is expected that the voluntary move to phase out plastic bags by large retailers will have assisted smaller retailers, e.g. by changing consumer habits and equipping consumers with re-usable bags that they can also use at smaller retailers.</p> <p>Overall, it is difficult to estimate with certainty the impact on small businesses</p>	Because the impact is small per customer and very dispersed across a large number of retailers, some of the costs will be passed onto customers. It is possible smaller businesses with tighter margins might have more difficulty passing on costs to customers, and therefore be more impacted, however there it is difficult to establish whether this is the case (due to limited information) and to estimate the size of this impact. Overall DELWP/EPA consider the preferred option unlikely to lead to any material impacts on competition such as affecting the market structure of the retail sector or making it more difficult for new firms to enter the market.

Problem area	Impact on small business	Competition
Air	<p>The proposed Regulations relating to wood heaters will require Victorian businesses to supply or manufacture wood heaters that comply with AS/NZS 4012:2014 and AS/NZS 4013 standards. Larger businesses are already understood to be operating in compliance with the standards. It is more likely to be small businesses that will need to take action to achieve compliance with the standards. This is therefore likely to disproportionately impact small businesses, particularly as they have more limited resources to undertake the necessary testing and certification process.</p> <p>The proposed Regulations impose obligations in relation to the management of methyl bromide and Class 3 substances (which are highly hazardous substances). They are currently regulated under WMP POL and SEPP AQM respectively. There is no evidence to suggest that proposed Regulations for these substances will disproportionately impact small businesses.</p>	<p>Some impact on competition is likely as a result of the wood heater obligations, as wood heater models need to be tested in accordance with the AS/NZS standards. This might make it more costly to operate or enter the market with a new model. However, this impact on competition is considered necessary to reduce the health risks from wood heater particulate matter emissions in Victoria, and is expected to result in a net benefit as any reduction in population exposure to PM can have improved health outcomes and reduce the burden from associated health impacts.</p> <p>Proposed Regulations relating to the management of methyl bromide and Class 3 substances might result in deterrence of some businesses from entering markets where these substances are used/emitted, however the substances are either very hazardous or can significantly deplete the ozone layer, and businesses impacted are likely to be very specialised. Consequently, the restriction on competition is expected to be small. This restriction is considered necessary to reduce risks from use of these substances because they are particularly harmful to health and the environment. methyl bromide is considered to be one of the most harmful substances in terms of depleting the ozone layer, and Australia is a signatory to international conventions governing the use of methyl bromide (The Montreal Protocol). Class 3 indicators are the most significant carcinogenic, mutagenic and teratogenic substances, meaning they can cause cancer, or harm the embryo during pregnancy. Considering the increased safety this will generate, the restriction is expected to generate a net benefit.</p>
Water	<p>The proposed Regulations, in relation to vessel discharges, do not impose any additional requirements relative to the new EP legislation (it simply provides clarification to further support duty holders). It is therefore not expected to impact small businesses</p>	<p>The proposed Regulations are not expected to impact on competition – no likely impacts on market structure, market entry or particular market participants have been identified.</p>

Problem area	Impact on small business	Competition
Noise	<p>Additional requirements on CIT premises will impose higher costs on affected duty holders, however the number of duty holders affected is not known. It is likely there will be an impact on small businesses, however there is no evidence to suggest that small businesses will be disproportionately impacted. It is also not possible to estimate the number of small businesses likely to be impacted.</p> <p>By establishing a framework for establishing noise limits for entertainment premises and defining aggravated noise, the preferred option may assist small businesses that operate entertainment premises in understanding how to comply with the unreasonable and aggravated noise provisions in the new EP legislation.</p>	<p>The proposed Regulations are not expected to impact on competition – no likely impacts on market structure, market entry or particular market participants have been identified.</p>
Vehicle emissions	<p>The preferred option translates the Vehicle Emissions Regulations into the proposed Regulations, with small amendments that will likely result in a small reduction in costs for businesses. Most impacts of the preferred option are borne by larger businesses, although smaller businesses may also be impacted. However, there is no material change compared to the status quo for small businesses.</p>	<p>The proposed Regulations are not expected to impact on competition – no likely impacts on market structure, market entry or particular market participants have been identified.</p>

PART 3 – IMPLEMENTATION AND EVALUATION

18 Implementation plan

18.1 Implementing the proposed Regulations

This implementation plan outlines:

- What needs to be done?
- When will it be done?
- Who will be doing it?
- Who will monitor implementation?

18.2 EPA modernisation and legislative reform

As noted earlier in this RIS, the Victorian Government is undertaking a once-in-a-generation transformation of EPA to equip it for the future. A significant organisational transformation program is currently underway within EPA to transform EPA to a flexible and adaptable, knowledge based, world-class regulator and influential authority. Implementation of the new EP legislation and proposed Regulations will form part of this transformation.

Implementation of the new EP legislation, proposed Regulations and ERS will occur concurrently and in an integrated way where appropriate.³²⁵ It will be important to manage the implementation program such that all stakeholders (including EPA itself) have a complete picture of the new arrangements, including roles, obligations, responsibilities and duties.

This implementation plan identifies what tasks need to be done for the implementation of the proposed Regulations and how each task is being addressed as part of the broader transformation project.

18.3 What needs to be done and when will it be done?

This section provides an overview of the tasks needed to implement proposed Regulations, how this is being addressed by EPA, and the expected timing for completion. Tasks are described in Table 18-1. Unless otherwise stated, responsibility for the actions lies with EPA.

In some areas implementation arrangements are well developed; in others further detail will need to be developed.

More information on the stakeholder engagement and communications plan is provided below the table.

Table 18-1 Tasks and timing

Task	EPA transformation project stream and project	Timing
Public consultation on RIS	This process is outlined in section 1.2 of this RIS.	The proposed Regulations and this RIS will be released for a 60 day period. The closing date for submissions is 31

³²⁵ The proposed ERSs and impact statement will be published for public comment in mid-2019.

Task	EPA transformation project stream and project	Timing
Develop and deliver high level education and information campaign to promote industry and public awareness of the new legislative and regulatory framework and inform duty holders and the broader public that they may have new obligations and duties.	<p><i>Improving communications and engagement:</i></p> <ul style="list-style-type: none"> - Stakeholder and duty holder communication and transition engagement. Stakeholders include duty holders, government departments, agencies, regulators, community groups (such as environment groups) that may have regulatory roles, or may be impacted by the new legislative framework, or may represent members who are impacted. 	<p>October 2019.</p> <p>Planning for the broader education and information campaign has been completed, and activities have commenced.</p> <p>Upon making of the Regulations (anticipated April 2020) there will be specific education and information rolled out to support duty holders, with the education campaigns likely to continue throughout 2020.</p>
Prepare and send communication informing stakeholders and Government Departments that proposed Regulations have gone "live". Education and information campaigns to be developed and delivered to support duty holder understanding of their duties and obligations under the new Regulations.	<p><i>Improving communications and engagement:</i></p> <ul style="list-style-type: none"> - Stakeholder and duty holder communication and transition engagement 	<p>Upon making of the Regulations (anticipated May 2020) and again on July 1 2020 (upon commencement of new EP legislation).</p> <p>This will continue through 2020 alongside the broader information and education campaign for the new EP legislation.</p>
Provide feedback to all participating parties and public who expressed interests during RIS process (required under the <i>Subordinate Legislation Act 1994</i>).	<p><i>Improving communications and engagement:</i></p> <ul style="list-style-type: none"> - Stakeholder and duty holder communication and transition engagement 	May 2020.
Coordinate implementation of new Regulations with implementation of new Environment Reference Standards	<p><i>Setting regulatory direction</i></p> <ul style="list-style-type: none"> - Regulatory Transition Management <p><i>Building subordinate legislative framework</i></p>	May 2020 – July 2020 alongside implementation activities associated with the commencement of the new EP legislation.
Develop compliance and enforcement policy for new EP legislation and proposed Regulations	<p><i>Improving sanctions impact:</i></p> <ul style="list-style-type: none"> - Sanctions Strategy Implementation (including compliance and enforcement policy) - Build future sanctions capability and capacity 	Initial draft anticipated in late 2019, with a finalised policy anticipated in April 2020.
Develop evaluation information and data strategy	<i>Improving surveillance, monitoring & reporting:</i>	December 2019 - July 1 2020, and ongoing.

Task	EPA transformation project stream and project	Timing
	<ul style="list-style-type: none"> - Implementing EPA's Environmental Public Health Tracking Network - Environmental and Health Indicators - Environmental Monitoring Strategic Framework <p><i>Enhancing enterprise analytics and intelligence capability</i></p>	
Internal training of staff about systems, processes and procedures to be able to administer and enforce the new Regulations.	<p><i>Building a workforce of the future</i></p> <ul style="list-style-type: none"> - Workforce planning / capability - People and Culture Transformation program <p><i>Build regulatory excellence</i></p> <ul style="list-style-type: none"> - Regulatory Excellence Framework including building and delivering frontline training <p><i>Enhancing strategic management</i></p> <ul style="list-style-type: none"> - Regulatory strategy, planning and management capability - Organisational performance management framework 	<p>By July 1 2020, and ongoing. Specifically:</p> <ul style="list-style-type: none"> - Workforce planning: March 2020 - Regulatory Excellence Framework: commencing 2019, concluded by July 1 2020 <p>Regulatory strategy, planning and management capability: anticipated August 2019</p>
Resource planning and management: - Increased workload due to commencement of new Regulations - Peak workload requirements.	<p><i>Building a workforce of the future</i></p> <ul style="list-style-type: none"> - Workforce planning / capability 	July 1 2019 (and ongoing).
Develop requirements, processes and procedures for new permissions framework, including: - Develop the new licensing, permit and registration conditions. - Transition of existing permissions holders to new framework under Part 16.3 of the EP Amendment Act 2018. - Other permission transition arrangements e.g., applications received under the EPA Act 1970.	<p><i>Setting regulatory direction:</i></p> <ul style="list-style-type: none"> - Regulatory transition management <p><i>Building subordinate legislative framework</i></p> <ul style="list-style-type: none"> - Design and build of regulatory strategy, planning and management capability - Review and refine regulatory tools 	<p>April / May 2020</p> <p>Full transition – July 2021</p>
New permissions communication: develop and publish communication about process to be followed by parties applying for a permission where their activity is newly subject to a permission requirement.	<p><i>Developing state of knowledge:</i></p> <ul style="list-style-type: none"> - State of knowledge industry guidance: (stocktake, partnerships, develop guidance) 	<p>May 2020, with new 'state of knowledge' (including use of existing industry and EPA guidance and regulatory controls) industry guidance development ongoing.</p>

Task	EPA transformation project stream and project	Timing
Transition arrangements - transition provisions for lawful place will need to be determined.	<i>Setting regulatory direction</i> – Regulatory Transition Management	July 1 2020.
Capacity building of other regulators with environment protection responsibilities e.g. in noise and septic tank regulation areas.	<i>Developing state of knowledge:</i> – State of knowledge industry guidance: (stocktake, partnerships, develop guidance) <i>Setting regulatory direction</i> – Regulatory Transition Management <i>Improving communications and engagement:</i> – Regulatory partnership management function	July 1 2020, ongoing.
Permissions applications and ongoing management – Application process, procedures, and system requirements.	<i>Enhancing corporate systems</i> – Business Planning Reform – IT operating model <i>Building subordinate legislative framework</i> – Design and build of regulatory strategy, planning and management capability – Review and refine regulatory tools <i>IT Transformation program</i>	2021-22.
Develop new or update existing guidance materials to support the new Regulations.	<i>Developing state of knowledge:</i> – State of knowledge industry guidance: (stocktake, partnerships, develop guidance) <i>Building subordinate legislative framework</i> – Design and build of regulatory strategy, planning and management capability – Review and refine regulatory tools	Taking effect July 1 2020 (development of guidance has commenced and will be progressively released before, on and following commencement of the regulations).
Review need for updated or amended internal EPA operating procedures, methodologies, systems, processes, procedures and databases to support new Regulations.	<i>Enhancing corporate systems:</i> – Business Planning Reform – IT operating model <i>Setting regulatory direction:</i> – Design and build of regulatory strategy, planning and management capability <i>Managing land for the future:</i>	July 1 2020, ongoing.

Task	EPA transformation project stream and project	Timing
	<ul style="list-style-type: none"> - Creating an integrated system to manage contaminated land - Statewide database of potentially contaminated sites (Historical Land Use Database) - Improving contaminated land risk assessment - Improve planning standards and guidance <p><i>IT Transformation program</i></p>	
Quality Assurance and independent evaluation implementation for transition to new legislative and regulatory framework	<p><i>Build regulatory excellence</i></p> <ul style="list-style-type: none"> - Establish internal review function - Regulatory Excellence Framework 	<p>2021-22.</p> <p>Internal Review function: established July 1 2020.</p>
<p>Delegation and Authorisations</p> <p>In accordance with section 437 of the EP legislation, EPA's Governing Board may by instrument in writing delegate all or any of the Authority's powers and functions to -</p> <ol style="list-style-type: none"> a. a public sector body; or b. a council; or c. an officer or employee, or class of officer or employee, of the Authority; or d. an officer or employee, or class of officer or employee, of any other public sector body or a council. <p>Delegations under the existing framework will need to be revised under the new EP legislation. You can find out more about EPA's delegation's here: https://www.epa.vic.gov.au/~media/Publications/1478%204.pdf</p>	<p><i>Delegation and Authorisations</i></p> <ul style="list-style-type: none"> - Preparation of the necessary instrument of delegation and authorisations of powers under the EP Act 2017 and the proposed regulations (for EPA and required external delegation) 	<p>Required to be in place by 1 July 2020</p>

18.3.1 Stakeholder communications and engagement plan

The new EP legislation establishes a new regulatory environment whereby all Victorians have a general duty to take reasonably practicable steps to eliminate or otherwise reduce the risk of harm to human health and the environment from pollution and waste.

This change significantly impacts how EPA needs to engage and consult. EPA's focus prior to the new EP legislation was on a relatively small number of high-risk industries, businesses and activities. Its focus is now broadened to encompass all Victorian businesses and the community.

EPA has developed a Legislative Transition Stakeholder Consultation and Engagement Plan (Stakeholder Consultation and Engagement Plan) which, amongst other things, reflects this broadened responsibility. The aim of the Plan is to:

1. Build business, government and community awareness about the new EP legislation and its importance to protect human health and the environment by reducing the harmful effects of pollution and waste.
2. Inform, and educate and collaborate with businesses and individuals on what they need to do to be compliant with the new EP legislation once it comes into operation and what they can do to prepare.
3. Ensure key stakeholders have an opportunity to provide their expert input into the development of the new subordinate instruments, industry guidance and EPA policy documents through formal and informal consultation.

The Stakeholder Consultation and Engagement Plan sets out:

- Objectives of the Plan
- Information to be communicated
- Key streams of activity, work tasks and timelines
- Risk management
- Evaluation methods.

A coordinated approach will be used by EPA to manage its consultation and engagement with stakeholders including five streams:

1. General education, awareness and guidance about the new EP legislation, who it applies to and how it works, including a public awareness campaign. This will include:
 - Communication and engagement with the community about the new EP legislation, and support to comply with the new scheme, primarily via EPA website and an advertising campaign.
 - Targeted communications to existing licence holders at different risk levels: high risk, medium to high risk, and low risk businesses and individuals. This will be undertaken via direct contact, EPA website, and other channels such as social media and EPA newsletters.
 - Engagement with stakeholder groups and joint regulator via workshops and information sessions.
2. Engagement and consultation to develop specific guidance for a hazard or an industry sector to comply with the GED. EPA will, where appropriate, engage directly with the industry groups and businesses within specific sectors and/or who undertake the particular activity that is the subject of guidance.
3. Engagement and consultation on the development of proposed Regulations and other subordinate instruments (a joint DELWP and EPA responsibility). This includes stakeholder consultation to prepare this RIS, and any consultation which will occur following the public release of the RIS.
 - Information and consultation about the transition of existing licence and permit holders. This will be highly targeted consultation including direct communication with licensees and works approval holders, and engagement and information provision through the key industry groups. There will also be strong overlaps with consultation that occurs in other streams.
4. Engagement and consultation on the development of key policy documents, such as the Charter of Consultation (required under section 53 of the new EP legislation) and a Compliance and Enforcement Policy. Where appropriate, this will include direct consultation with businesses, industry groups and community groups.

To help prioritise effort and tailor messaging to different stakeholder groups, the Plan is segmented by the type of stakeholder and their risk profile:

- Businesses with high risk activities: major sites/high complexity/high risk.
- Businesses with medium to high risk activities: business with material but not major risk of harm to the environment and human health (often specifically linked to waste generated via activities).

- Low or Negligible Risk Activities: businesses or activities that represent low or negligible risk, provided appropriate and basic waste management occurs.
- Victorian Government Departments and Agencies: joint regulators (Local government, Worksafe, Earth Resources Regulator, Victoria Police, Metropolitan Fire Brigade, Country Fire Authority).
- Local community environmental groups and State-wide environmental groups.
- General community.

18.3.2 Transition measures for the permission holders

Permission holders (both new and existing) will be required to transition to the new permissioning framework.

To facilitate this process effectively:

- Existing licence holders will automatically be taken to hold a 'new' licence for the relevant operating licence activity and will not need to reapply. Their licences will remain perpetual to and will not become time bound licences.
- For existing businesses or duty holders conducting an activity that will newly require a permission under the proposed regulations such as transfer stations and dry cleaners), the regulations propose a 'grace period' of 3 or 6 months from the commencement of the regulations for these businesses to apply for their licence or permit or to register with EPA (as applicable). This time is being provided as a matter of fairness, to ensure these existing businesses have time to become aware of their new obligation, prepare their permission application and make any necessary adjustments to their operations to align with EPA's permission conditions. It is noted that other requirements in the proposed Regulations that are not related to the permissioning framework will not have a similar grace period.
- Where a licence or permit is newly required, the 'grace period' for the existing business will continue until EPA finalises its assessment of their application.
- Where a permissioned activity involves the receipt of industrial waste, the proposed regulations deem the site to be authorised to receive the industrial waste that they receive as part of the relevant permissioned activity (for the purposes of section 134 of the new EP legislation) for the duration of the relevant grace period.

18.4 Who will be doing it?

EPA will be primarily responsible for implementation of the proposed Regulations. DELWP will provide input into key strategic policy development and support EPA in identifying any necessary linkages with whole of Government policy, specifically providing support in determining whether any whole of Government policies influence the implementation of the new subordinate legislation.

18.5 Who will monitor implementation?

Monitoring of implementation, including identification and management of implementation risks, will be undertaken by EPA, with support from DELWP.

19 Evaluation strategy

19.1 Purpose

This evaluation strategy has been developed to evaluate the effectiveness and efficiency of the proposed Regulations and to ensure that there is continuous improvement in environmental protection in Victoria. The evaluation strategy will assess the proposed Regulations as an integrated part of the new environmental protection legislative framework in terms of whether they meet the Victorian Government objectives to protect human health and the environment from pollution and waste.

As per the *Victorian Guide to Regulation*³²⁶ the key elements of the evaluation strategy are as follows:

- What will be evaluated
- How it will be done
- Who will do it
- When it will be done.

19.2 What will be evaluated

An evaluation logic map highlighting the activities, outputs and outcomes underpinning the regulatory objectives is set out in the figure below. The logic map defines the objectives of the proposed Regulations and the strategies or activities that will be used to achieve those objectives. The evaluation will measure the efficiency and effectiveness of the proposed Regulations in meeting the objectives and outcomes of the proposed Regulations.

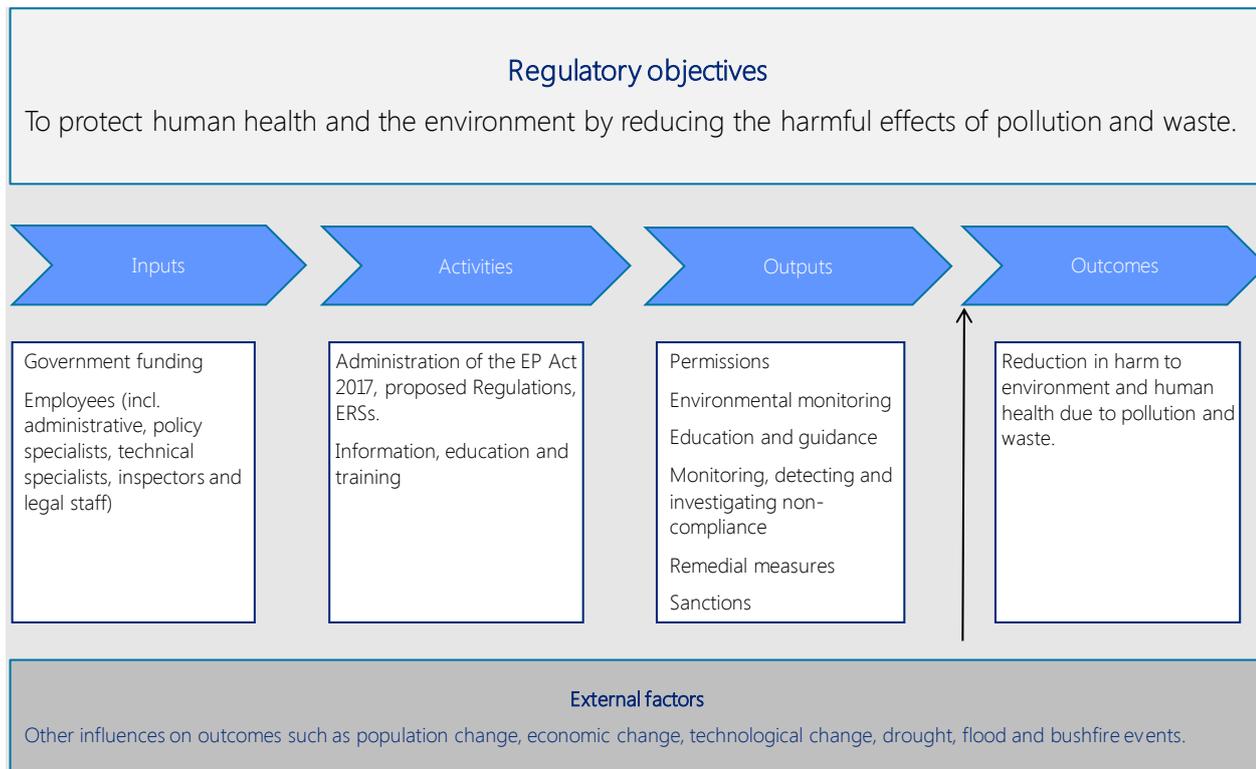
It is expected that the new EP legislation, the proposed Regulations and ERS will all take effect on the same date (1 July 2020). Hence it will be difficult to separate the impact of the proposed Regulations from the impact of changes to other parts of the legislative framework. Despite this, the aim is to identify impacts and review of the effectiveness of the proposed Regulations, separate to other impacts, as comprehensively as possible.

Where possible the evaluation will identify specific aspects of the proposed Regulations that can be reviewed in isolation. It is expected that it will be easier to isolate the impact of the proposed Regulations for some areas of proposed Regulations than others. Examples include those regulations in whose absence the new EP legislation would not be able to operate, or where regulations address a gap in the new EP legislation. It will be more difficult to isolate the impacts of regulations aimed at addressing lack of clarity or prescription in the legislation. In these cases the analysis is expected to be qualitative.

Given the difficulty in separating the varying effects of the legislative framework and other measures aimed at addressing the Government's objective for environmental protection, the scope of the logic map includes a broad range of EPA activities such as administration of the new EP legislation and ERS, not just the administration of the proposed Regulations.

³²⁶ Office of the Commissioner for Better Regulation. (2016). *Victorian Guide to Regulation: A handbook for policy-makers in Victoria*. Melbourne, Australia. <http://www.betterregulation.vic.gov.au/files/98181269-905c-4893-bff3-a6bb009df93c/Victorian-Guide-to-Regulation-PDF-final.pdf>

Figure 19-1 Evaluation logic map



19.3 How it will be done

Design

The design of the evaluation comprises before-Regulations and after-Regulations information collection to assess how and whether change has occurred, and in what direction. Before-Regulations measurement is the baseline measure of outcomes.

The evaluation will adopt a mix of both qualitative and quantitative methods.

Qualitative evaluation methods will draw on stakeholder consultation (such as interview and surveys) with organisations that are impacted by the proposed Regulations, regulators with responsibility for the administering the proposed Regulations (EPA and joint regulators), DELWP and other Victorian Government Departments and agencies as appropriate. This will primarily comprise the stakeholders outlined in section 18 of this RIS. This will enable collection of information regarding, for example:

- Stakeholders' understanding of the proposed Regulations, costs of compliance and changes in behaviour brought about by the proposed Regulations.
- Stakeholders' understanding of the requirements of the new EP legislation versus proposed Regulations.
- Issues encountered by environmental protection joint regulators regarding administration, compliance and enforcement of the proposed Regulations.

The quantitative method of evaluation will involve assessment of baseline data against after-Regulations data. Specific methodologies for the collection and analysis of data will vary depending on the indicator in question.

Currently available data sources

The evaluation will largely use currently available data sources, including:

- Incidents: number of incidents recorded, attended, assessed as requiring planned or immediate EPA attendance.
- Pollution reports: total number, by type.
- Inspection reports: report information, total inspections, by type.
- Remedial notices: total notices issued and by type, number complied with or revoked and escalated, number issued for illegal dumping of waste.
- Official warnings: total number, number complied with.
- Environmental monitoring data from the Victorian State of the Environment 2018 report.³²⁷
- Permissions data: number and type of permissions.
- Investigations and prosecutions: number initiated and completed.
- Litter reports: number of reports and infringements.
- Environmental audits and preliminary risk screening reports.
- Social research projects.
- Third party data from other agencies, research organisations and industry, especially any generated by outcome based funding agreements.

Establishing a baseline

The proposed baseline is the 2019-20 financial year, which is the final year of operation of the current legislative and regulatory framework. As noted above, the evaluation will have to closely analyse and judge the impact of the new EP legislation versus proposed Regulations. This complexity is standard for evaluation projects, which always have to closely assess what factors (i.e. program/Regulators and/or external factors) are impacting outcomes.

It is possible that 'pre-emptive' changes might be made in 2019-20 by businesses knowing that some changes to the regulatory framework will be made. A sense check of the baseline will be taken to assess whether this has occurred e.g. a check of numbers against the previous year to assess whether there have been significant changes.

The current available data sources as outlined above will be the main data sources used to establish the baseline for comparison.

Data improvement

As part of the implementation process for the proposed Regulations, EPA will undertake a review of existing data sources to assess gaps in data and identify areas and strategies for improvement. This will include considering whether new types of data/information will need to be collected to better understand the effects of the new approach. The objective will be to ensure that adequate data is available to enable effective evaluation of the proposed Regulations. Depending on the outcomes of this review, quantitative data sources will be developed to ensure that appropriate data is collected and managed. However, it is not expected that changes to data collection will be implemented within the initial years after commencement of the new framework because gaps in data will not be addressed before the new framework is in place. This will impact the baseline measurement i.e. before-regulations in some areas. Evaluation will not be able to rely just on quantitative assessment; other techniques such as collection of data via stakeholder consultation will be used. Table 19-1 identifies availability of baseline data and gaps.

³²⁷ State of the Environment 2018 report, available at <https://www.ces.vic.gov.au/reports/state-environment-2018/water-quality>, accessed April 2019

Evaluation questions

The table below contains evaluation questions and potential measurement and indicators that could be used to inform the assessment of whether objectives of the proposed Regulations have been achieved. Due to data availability, the vast majority of indicators are output measures rather than outcome measures. This may limit the extent to which the evaluation will be able to assess effectiveness against the objectives. In the longer term (i.e. over a period of three or more years) it may be possible to develop indicators that measure harms (e.g. health impacts from certain types of pollution), however such indicators are not likely to be available in the short to medium term; in addition, for such indicators it is more difficult to isolate the impacts of the Regulations from the new EP legislation and other external factors. The evaluation will also consider whether there have been unintended consequences, such as an increase in illegal dumping due to higher costs or increased burden associated with legally disposing of waste (whether actual or perceived).

Furthermore, the use of indicators can make it difficult to ascertain whether a movement in detected activities actually represents a 'good' outcome or not. For instance, a reduction in the volume of illegally dumped waste may reflect actual changes (a good outcome) or a simply reduction in detection. This possibility will need to be considered to assess whether there has been an actual improvement in environmental outcomes. One way to address these issues is to use a mixed method that involves both quantitative and qualitative collection and analysis. Evidence could be gathered via stakeholder consults undertaken for the evaluation and from EPA's ongoing monitoring and engagement with duty holders and other stakeholders.

Table 19-1 Evaluation questions, measurement and data availability

Evaluation question	Measurement and indicators	Outcome or output data	Availability of data
Reduce risks of harm to human health and environment			
Have more organisations applied reasonable preventative measures to manage and minimise the risks of harm to human health and the environment posed by pollution and waste as a result of the new EP legislation and Regulations?	Information will be collected through stakeholder consultation on measures such as: <ul style="list-style-type: none"> • % of organisations that report a change in preventative measures (as a result of the new EP legislation or the Regulations) • The nature of the change undertaken, including whether activities have been maintained/amended /added/reduced compared to what was in place before the new EP legislation was introduced. • Environmental harms by industry activity (in order to consider the need for changes to the permissioning cohorts in future 	Output data	Not currently available – stakeholder consultation will need to be undertaken.
Permissions	<ul style="list-style-type: none"> • Number of pollution incidents (e.g. tyre fires) at sites of permission holders • Duration of pollution incidents (e.g. tyre fires) at sites of new permission holders. • Particulate matter in air. • Water quality levels • Harms to human health and environment e.g. hospital admissions from pollution incidents, fish deaths etc 	Output Output Outcome	Existing data available, or readily able to be collected. Existing data available Existing data available Potentially available from public research and different EPA data sets, but ad hoc.

Evaluation question	Measurement and indicators	Outcome or output data	Availability of data
Septic tanks	<ul style="list-style-type: none"> • Odour levels in towns or regions • Water contamination incidents 	Output	Not available – information would need to be collected via consultation with local councils.
Contaminated land	<ul style="list-style-type: none"> • Number of sites on EPA's contaminated sites register. • Number of sites that pose a known risk of harm. • Number of audits completed and proportion of sites not meeting standard. • Number of sites that move to a more sensitive use based on audit. • Number of enquiries received by EPA about contaminated land. 	Output	Existing data available or partially available
Waste	<ul style="list-style-type: none"> • Reduce the share of waste that ends up in landfill <ul style="list-style-type: none"> – Share of waste that is recovered, by waste type 	Output	Existing data available
	<ul style="list-style-type: none"> • Reduce the volume of illegally dumped waste <ul style="list-style-type: none"> – Number of recorded incidents of illegal waste dumping, remedial notices, official warnings, investigations and prosecutions. 	Output	Existing data available (analysed in conjunction with assessment of impacts of enforcement activities)
	<ul style="list-style-type: none"> • Reducing the share of waste delivered to incorrect facilities <ul style="list-style-type: none"> – Proportion of waste that arrives at the correct facility – Number of instances (once-off determinations made by EPA) where waste has no lawful place to go. 	Output	Existing data available (analysed in conjunction with assessment of impacts of enforcement activities)
	<ul style="list-style-type: none"> • Reducing the impact and number of pollution incidents <ul style="list-style-type: none"> – Number of pollution incidents (e.g. tyre fires) 	Output	Existing data available
	<ul style="list-style-type: none"> – Duration of pollution incidents (e.g. tyre fires) – Estimated cost of pollution incidents 	Output Outcome	Existing data available Existing data available although ad hoc and not easily aggregated
Litter and other wastes	<ul style="list-style-type: none"> • Reduce littering of the environment from material that might become litter <ul style="list-style-type: none"> – Stakeholder consultation with local councils on effectiveness of regulations and to collect data on council enforcement of litter offences for advertising material, leaflets etc. 	Output	Information was collected via consultations with councils undertaken for this RIS. Consultation would be needed to collect further data in future.

Evaluation question	Measurement and indicators	Outcome or output data	Availability of data
Plastic bags	<ul style="list-style-type: none"> Reduce plastic bags being used <ul style="list-style-type: none"> Volume of plastic bags being consumed. Increase in sale of bin liners and other plastic alternatives 	Output	Not publicly available – would need to be collected via consultation with retailers. Baseline would take into account voluntary action already taken by retailers.
	<ul style="list-style-type: none"> Reduce plastic bags being disposed of incorrectly <ul style="list-style-type: none"> Volume of plastic bags ending up as litter Volume of plastic bags contaminating municipal recycling Total volume of litter (plastic bags may have played a role in containing litter) 	Output	Existing data available
	<ul style="list-style-type: none"> Cost of cleaning up litter 	Output	Council cleaning costs – available but not at disaggregated level of plastic bags
Air	<ul style="list-style-type: none"> Reduce emissions of highly hazardous air pollutants <ul style="list-style-type: none"> Level of particle pollution in air 	Output	Existing data available
	<ul style="list-style-type: none"> Meet standards for the manufacture and/or sale of solid fuel heaters <ul style="list-style-type: none"> Level of particle pollution in air 	Output	Existing data available
Water	<ul style="list-style-type: none"> Reducing vessel discharge into waters <ul style="list-style-type: none"> Number of recorded incidents of illegal waste dumping, remedial notices, official warnings, investigations and prosecutions. 	Output	Not currently available at disaggregated level of vessel discharge offences
Noise	<ul style="list-style-type: none"> Compilation of noise pollution complaints and reports across EPA, Victoria Police, local councils, and the Victorian Commission for Gambling and Liquor Regulation. Sources of noise affecting Victorians. 	Output	Existing data available. Surveys conducted by EPA on a regular basis.
Vehicles emissions	<ul style="list-style-type: none"> Carbon monoxide emissions Nitrogen oxides emissions. 	Output	Existing data available.
To what extent do duty holders and permission holders understand their duties and obligations under the new framework and how they may comply with proposed Regulations?	<p>Qualitative analysis based on stakeholder consultation feedback. Consultation could request information on:</p> <ul style="list-style-type: none"> Proportion of businesses that sought EPA advice, professional/expert advice or advice from professional/industry organisations. Estimated costs per businesses of seeking such advice. 	Output	Not currently available. For future evaluations will need to be collected via stakeholder consultation (through duty holder direct contact with EPA or through ongoing interaction with EPA's Industry Reference Groups).

Evaluation question	Measurement and indicators	Outcome or output data	Availability of data
To what extent do regulators (EPA and joint regulators) understand their administrative, compliance and enforcement responsibilities?	<ul style="list-style-type: none"> Qualitative analysis based on stakeholder consultation feedback. Consultation could request information on cost of resources required to deliver regulatory role. 	Output	Not currently available. For future evaluations will need to be collected via stakeholder consultation (through duty holder direct contact with EPA or through ongoing interaction with EPA's Industry Reference Groups).
Regulatory burden			
To what extent has the cost of duty holders and permission holders meeting environment protection duties and obligations increased, decreased or not changed compared to the current framework?	<ul style="list-style-type: none"> Estimated cost to meet obligations under current framework (EPA Act 1970) versus new framework, by area of regulation. Estimated time to assess permission applications. 	Output	Some cost information was collected for this RIS. Periodic consultation will be needed to collect further data in future.
Compared to if just the new EP legislation was in place, to what extent have proposed Regulations increased, decreased or not changed the costs of duty holders and permission holders meeting environment protection duties and obligations?	As above	Output	As above

19.4 Who will do it

Responsibility for the evaluation will be shared between DELWP and EPA as the primary regulator. Integrated and coordinated delivery of the evaluation will provide for the clearest lines for meeting the evaluation objectives and ensure learning and improvement can occur at both the departmental (legislative) and regulator levels.

While EPA has overall ownership of the evaluation strategy, DELWP will be responsible for the whole of government policy evaluation. EPA is responsible for ongoing monitoring and will play a significant role in data collection and management activities. Joint regulators will also have responsibility for data collection and management in those areas that share regulatory responsibility.

19.5 When it will be done

Table 19-2 outlines a high-level overview of when evaluation activities will occur.

Table 19-2 Timeline for evaluation

Activity	Timing
Establish baseline.	EPA has already commenced this process as part of establishing a baseline for assessing the new legislative framework. This will inform ongoing monitoring systems and reporting below.
Data collection.	EPA's existing data collection processes will continue. As noted in section 18.3, EPA will undertake a review of existing data sources to assess gaps in data and identify areas and strategies for improvement.
Data monitoring and reporting.	Annual reporting by EPA.
Intermediate evaluation that assesses short term outcomes and identifies potential improvements in the design and use of proposed Regulations, including cost recovery review.	2 to 3 years following the new EP legislation and Regulations taking effect. This will include consultation with key government departments, agencies and regulators, plus key industry group, environment groups and community groups. This review is being undertaken for best practice and to improve understanding of how the Regulations are operating. It will also inform understanding of progress working to address data gaps. The review will follow the principles and steps set out in sections 19.2 and 19.3.
Evaluation of effectiveness and efficiency of Regulations, including cost recovery review.	This evaluation will commence after the new legislative and regulatory framework has been operational for 4.5 years, and will take approximately 6 months to complete. The review will follow the principles and steps set out in sections 19.2 and 19.3.

20 Stakeholder consultation

20.1 Who was consulted?

DELWP and EPA undertook a comprehensive stakeholder engagement approach, which utilised newly formed Stakeholder Working Groups to test the viability of different options considered for regulatory and non-regulatory controls. These Stakeholder Working Groups consisted of representatives from peak and industry bodies, environmental justice groups, community members, industry and licence holders.

In addition to the Stakeholder Working Groups, DELWP and EPA also consulted with local councils via workshops and focus groups. These workshops and focus groups were established in collaboration with Municipal Association of Victoria (MAV).

During the process of this RIS, Deloitte Access Economics also conducted extensive consultations with businesses, environmental consultants, industry associations, Victorian Government departments and agencies and local councils. In total, Deloitte consulted with (conducted either face-to-face or over the phone):

- 25 Industry associations or experts (or similar organisations)
- 13 businesses (including both private and government businesses)
- 10 Victorian government agencies
- 8 local councils.

Furthermore, Deloitte conducted a survey to supplement this information with further responses around the costs, benefits and other impacts of the proposed Regulations. This online survey was completed by 105 participants, comprising:

- 64 private businesses
- 16 Government-owned entities
- 24 local council representatives.

20.2 How were they consulted?

Stakeholders were consulted in one of four ways:

- Online survey
- Face-to-face consultations
- One-on-one phone consultations
- Workshop (for local councils, in relation to on-site wastewater management system regulations).

20.3 What information was collected?

In consultation with businesses, questions were asked about the costs of the proposed Regulations and the possible costs associated with the proposed Regulations. Some government agencies and councils were also able to provide estimated costs of the proposed regulations: some from the perspective of an enforcement agency, and other from the perspective of a duty holder.

The consultation with industry groups focussed on understanding the impacts of the proposed Regulations rather than asking industry groups to provide cost details. However, where information on cost details could reasonably be provided then this was explored with relevant industry stakeholders.

20.4 How information collected has been incorporated into the RIS

This information has been incorporated into the RIS primarily to inform the analysis of the costs and benefits associated with the proposed regulations. In some cases, the level of information collected was insufficient to inform the analysis, either because the sample size was insufficient, or businesses were uncertain of the impact of the proposed regulations and were therefore unable to provide reliable estimates or insights.

Where consultation information has been used as a modelling assumption or information source, it has been referenced in the RIS.

20.5 Key themes by topic

A number of key themes emerged from the stakeholder consultations. These are summarised below.

Table 20-1 Consultation themes

Theme	Key discussion points
Permissioning	<p>Stakeholders provided detailed cost information about the permissioning framework which informed the cost-benefit analysis in the report.</p> <p>Generally, permission-holders saw value in holding an EPA permission, since it provided greater clarity to them in terms of their environmental obligations, and also provided a 'level playing field' with their competitors.</p>
Water	<p>Stakeholders were generally of the view that new regulations are unlikely to impose any additional constraints on industry.</p>
On-site Wastewater management	<p>Local councils were able to provide estimates surrounding the costs of administering Permits for on-site wastewater management systems.</p> <p>They were generally of the view that it was important to continue the existing permit system (for installation of and alteration to on-site systems), for the following reasons:</p> <ul style="list-style-type: none">• Improvements in public health• Improved experience for septic system users, including maintained quality and increased awareness and education• Reduction in the future workload of Councils regarding septic tanks• Environmental benefits from increased and proper septic tank use• Benefits to regional areas with high septic tank density, with improvements to local air quality. <p>Council officers were generally of the view that a system of operating permits would be very costly for councils, and difficult to enforce in specific areas where financial hardship was an issue. However, as aging and failing on-site systems is considered a significant issue in certain areas across the state, any actions that enabled councils to address this issue were viewed favourably.</p>

Theme	Key discussion points
Landfill	<p>Stakeholders broadly considered existing regulations as too prescriptive. Stakeholders generally indicated they would prefer the BPEM to remain a 'live document' that the industry can update as best practice standards evolve. Furthermore, stakeholders indicated a clear preference for clear, prescriptive guidelines on how to comply with EPA regulations.</p> <p>Stakeholders consulted were not overly concerned with landfill design requirements, given new landfills are designed to the highest standard. However, stakeholders were primarily interested in how the EPA will ensure environmental protection regulations are applied consistently across all sites to ensure a level 'playing field' for all businesses.</p>
Air	<p>Stakeholders were generally supportive of a general environmental duty to manage air emissions, although were unsure how this would be monitored and applied in practice. They also generally supported a provision that requires the manufacture and sale of home heaters to be in line with Australian and New Zealand standards.</p> <p>Most, but not all, larger businesses supported the requirement to report air emissions to the NPI; those in support generally saw this activity as part of their national practices and general duty. Those that were largely indifferent indicated that they would be unlikely to continue to monitor and report to the NPI if it was not a statutory requirement.</p>
Contaminated land	<p>Stakeholders overwhelmingly agreed that the \$50,000 threshold triggering the duty to notify for contamination land was too low and unlikely to address the policy intent of the new EP legislation. There was consensus among stakeholders that a risk-based approach to triggering the duty would better enable the EPA to manage sites that represented a high-risk to human health and environment.</p> <p>Stakeholders broadly agreed that a mechanism that enabled the EPA to make determinations with respect to what constitutes 'background contamination' for specific contaminants and wastes in specific locations was reasonable and appropriate. Stakeholders also overwhelmingly welcomed the addition to include information on their proposed approach to managing contamination as part of their notification to the EPA.</p> <p>It was generally noted that the duty to manage contaminated land is likely to have greater implications for smaller businesses. Small businesses are less likely to have the internal resources, knowledge, and environmental management systems in place, and are more likely to require greater education and guidance to ensure compliance with the duty to manage contaminated land.</p>

Theme	Key discussion points
Noise	<p>Stakeholders agreed that an accompanying noise assessment framework that enables the clear measurement and monitoring of noise was required to give full effect to the new EP legislation. It was widely agreed that such a framework would provide greater certainty to duty holders in complying with unreasonable and aggravated noise provisions.</p> <p>Stakeholders broadly supported the proposed enhancements to the management of noise from CIT premises and entertainment venues, noting that the changes reflected a more modern approach that reflected society’s expectations with respect to noise and activities.</p> <p>Stakeholders noted in consultations that the issue of the ‘Agent of Change’ (which was recognised as predominantly a planning issue) remains an area of concern for duty holders.</p>
Waste	<p>Larger waste businesses indicated that waste classification, priority waste and lawful place duties will not materially change their operations. The impacts of waste regulations would mostly be felt by smaller businesses at the sub-threshold of current permissions who would have new obligations.</p> <p>There was a general acceptance that the high level waste regulations were appropriate, noting that a streamlined waste classification option was pragmatic and priority waste controls were proportional to risk. There was some uncertainty around how the new instruments (DoU, SoA) for lawful place would impact businesses.</p> <p>Stakeholders were generally more interested in the detail on the regulations, as the detail is needed to determine cost implications. In particular, stakeholders were interested and, in some instances, raised concerns about how individual waste types would be treated (e.g. farm wastes and soils), the volume thresholds for certain waste, and the definition of a site. Finally, associations expressed the need for EPA guidance for small businesses on how to meet the GED and comply with specific waste regulations, and concerns were raised by some stakeholders around how the regulations ensure coverage of non-compliant businesses.</p> <p>Stakeholders were generally of the view that for the stability of the industry it would make sense to increase the levy at a faster rate to help with economic and market responses to recycling. There are also remaining challenges with waste moving interstate.</p> <p>Stakeholders expressed concern with regards to cover material, that the levy scheme and timing to claim a rebate may discourage sustainable or innovative uses of materials – for example, importing and stockpiling cover material from a nearby construction site to use for a number of years may be discouraged due to the time limits on claiming the rebate. Cover material is recognised as a major issue as the current system creates a perverse incentive to minimise use of cover material as it is costly to obtain clean fill.</p> <p>Stakeholders indicated that they would like the EPA to consider waste to energy and how landfills may in future be able to claim the rebate on waste that is ‘mined’. They felt that timing in claiming the rebate was important, and that shorter periods would be more expensive as administrative tasks need to be repeated for each claim period.</p> <p>There were no concerns expressed by stakeholders with respect to proposed information collection and retention requirements concerning the operation of the levy system, as current landfill operations already do this.</p>

Theme	Key discussion points
Vehicle emissions	No consultations were undertaken in relation to Vehicle emissions, reflecting the similarity between the Base Case and Options.
Plastic bags	Limited consultation was undertaken for plastic bags, since DELWP had already undertaken consultations separately on this issue through engage Victoria (see https://engage.vic.gov.au/waste/plastic-pollution).
Litter	Council litter officers expressed support towards re-introducing offences that were previously included in the EP Act 1970 (and excluded from the new EP Legislation), but noted that such offences were not regularly used rarely and that there was some overlap with other legislation (such as the <i>Summary Offences Act 1996</i>).

Appendix 1 – Environment Reference Standard

An environment reference standard (ERS) is a subordinate legislative instrument of the EP Amendment Act 2018, which may be made on the recommendation of the Minister. The EP Amendment Act 2018 declares that an ERS is used to assess and report on environmental conditions - and must identify environmental values that specify the environmental condition and uses of the environment to be achieved or maintained - in the whole or any part of Victoria.³²⁸

An environment reference standard describes the environment in terms of the features that we value to allow a range of important uses. For example, a standard may describe the quality of water for its use as a drinking source, or as a place to swim in, as being environmental values.

An environment reference standard is made up of objectives for supporting different uses, and indicators that tell policy makers whether those objectives are being met

Each standard specifies which part of the environment it applies to as a location within Victoria. This means that a standard may apply only to a specific location, for example, Port Phillip Bay, or to the whole of Victoria.

An environment reference standards will assist in assessing and reporting on current environmental conditions, and changes in those conditions over time, creating a set of benchmark values.

Although the environment reference standards are not 'compliance standards' for businesses, EPA must consider environment reference standards when assessing development, operating licences and pilot licences under the new EP legislation.

EPA may also use environment reference standards for:

- Making other decisions under the new EP legislation that may have an impact on the environmental values of a location
- Setting benchmarks and goals for maintaining environment values in the long term
- Monitoring changes in the environment over time.

An environment reference standard will also be required to be considered by:

- The Minister when:
 - Making Regulations
 - Developing compliance codes
 - Declaring issues of environmental concern
- Environmental auditors when conducting audits
- VCAT when relevant to reviewing EPA decisions
- Responsible authorities, when making planning decisions.

³²⁸ EP Act section 93(1) and section 93(2).

EPA is currently developing the first set of standards that will take effect when the new EP legislation comes into effect. To support a smooth transition, EPA will look at the beneficial uses set out in existing SEPPs, as a starting point. The proposed ERS and impact statement will be published for public comment in mid-2019.

The ERS must be reviewed every 10 years, but can also be updated more often as new knowledge becomes available, such as when our understanding of risks of harm change. Information about the ERS is available on the EPA website at <https://www.epa.vic.gov.au/about-us/response-to-epa-inquiry/understanding-environment-reference-standards>.

Appendix 2 – Noise pollution legislative and regulatory instruments

Instruments controlling various types of noise outside of the EP Act 1970 or new EP legislation are outlined below.³²⁹

Residential noise

- Local government bylaws - some councils have local laws about certain noise sources (e.g. residential intruder alarms). These laws vary across the different councils.
- *Public Health and Wellbeing Act 2008* - Nuisance provisions provide local government with the flexibility to determine nuisance noise and require appropriate action to remedy. The focus is on the impact on a person, not the source of noise.
- *Domestic Animals Act 1994*.
- *Planning and Environment Act 1987* - developments that are likely to cause noise must identify the likely effects of noise emissions. Planning authorities must consider these when deciding whether to approve a development through a permit. As an example, the Apartment Design Guidelines for Victoria include design standards (including noise, energy, waste and landscaping, among others) that have been incorporated into the planning schemes of all councils.

Commercial, industrial and trade noise

- *Planning and Environment Act 1987* - provides framework for integrating controls for land use and development, and associated environmental and social protection, including from excessive noise. Council planning permit conditions can apply SEPP N-1 or NIRV.

Transport noise

- Local laws - some Victorian local councils have laws about certain noise sources (e.g. recreational vehicles). There is no consistency across the state and laws apply only in that municipality.
- Department of Economic Development, Jobs, Transport and Resources' Passenger Rail Infrastructure Noise Policy (2013) - guidance for transport bodies and planning authorities for redevelopment/design of new passenger rail infrastructure and changes to land use near existing and planned rail corridors.
- VicRoads Traffic noise reduction policy - sets noise criteria for freeways and aims to limit noise impacts from new or upgraded roads. This policy is currently under review by VicRoads.
- VicRoads' A guide to the reduction of traffic noise for use by builders, designers and residents aims to reduce the impacts of road traffic noise by building improvements and other measures.

Entertainment venues

- *Liquor Control Reform Act 1998* (LCR Act) - noise levels are considered as part of the licensing process. Some licences contain conditions for licensees to follow certain noise management practices. Local councils, police and the Victorian Commission for Gaming and Liquor Regulation (VCGLR) is responsible for enforcement under this Act.
- *Planning and Environment Act 1987* - council planning permit conditions can apply SEPP N-2.

³²⁹ Section 2.1.1, *Regulatory Impact Statement: proposed Environment Protection (Residential Noise) Regulations 2018*, Publication 1694 – May 2018

Appendix 3 – Contaminated land current legislative and regulatory framework

The legislative and regulatory framework for managing potentially contaminated and contaminated sites encompasses the *EP Act 1970*, the *Planning and Environment Act 1987*, a range of complementary directions and practice notes, and an environmental audit system. A summary is provided in the table below.

Table: Current legislative framework - contaminated land

Instrument	Description
<i>EP Act 1970</i>	<p>PART VII – Control of Solid Wastes and Pollution of Land</p> <p>PART IXD – Environmental Audits - including sections 53R through to 53ZE.</p> <p>Specific attention is given to 53X, 53V, 53Y and 53Z with regards to the environmental audit framework.</p> <p>PART III – Pollution abatement notices</p> <p>PART X - Notice to take clean up and on-going management measures</p>
<i>Planning and Environment Act 1987</i>	<p>When preparing a planning scheme or planning scheme amendment to, planning authorities are required to 'take into account any significant effects which it considers the scheme or amendment might have on the environment or which it considers the environment might have on any use or development envisaged in the scheme or amendment' (Section 12).</p> <p>Ministerial Direction No.1 – Potentially Contaminated Land (MDN1) – A Ministerial Directive that specifically outlines that an environmental audit must be undertaken in certain circumstances, including the rezoning of industrial land to residential.</p>
Regulations	<p>Environment Protection (Fees) Regulations 2012 – namely fees for auditors</p> <p>Victorian Planning Provisions 45.03</p> <p>Planning and Environment Regulations 2015 - Section 8(o)</p>
Subordinate instruments	<p>State Environment Protection Policies (SEPPs)</p> <p>In particular, SEPP (Groundwaters of Victoria) and SEPP (Prevention and Management of Contamination of Land) outline the health and environmental objectives for specific segments of the Victorian environment.</p> <p>These are the key SEPPs for contaminated environments, however all SEPPs are relevant to the audit system.</p>
Guidance	<p>Industrial Waste Resource Guidelines (IWRG) - Environment Protection (Industrial Waste Resource) Regulations 2009. With regards to contaminated soil, IWRG outline the guidelines for the handling and destination of prescribed industrial waste.</p>

DSE General Practice Note 30: Potentially Contaminated Land provides guidance on potentially contaminated sites' uses and their inherent risks.

National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) was created in 1999, and is intended for use by the broader contaminated environments community which includes regulators, site assessors, environmental auditors, land owners, developers and industry. In Victoria, the ASC NEPM is mainly implemented through the SEPP (Prevention and Management of Contamination of Land) 2002.

Appendix 4 – Marginal air and water emissions values

The following tables display the marginal air emissions values and water emissions values for different regions of Victoria.

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 unspciated)	\$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.

Source: EPA 2017, Regulatory Impact Statement for Environment Protection (Scheduled Premises) Regulations 2017

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.

Source: EPA 2017, Regulatory Impact Statement for Environment Protection (Scheduled Premises) Regulations 2017

Appendix 5 – Cohort size for proposed permission tier

EPA has estimated the cohort size for each proposed permission activity. These estimates are outlined in the tables below.

Licences

Activity/Tool	Cohort Size
Option 1 and Option 2	
All activities which require a works approval and licence under the current Environment Protection (Scheduled Premises) Regulations 2017	~663 sites
Option 2 only	
Materials recovery – receiving 4,000 tonnes (or more) of combustible waste in any month.	Approximately 15 sites (in addition to the 663 sites)

Permits

Activity/Tool	Approx. Cohort Size
Option 1 and Option 2	
Category B01 (Animal Industries)	~20 in operation
Category B02 (Livestock saleyards or holding pens)	~2 in operation
Waste Transport (Prescribed waste codes)	~24 applications annually
Movement of Controlled Waste into Victoria	~416 applications annually
Movement of Reportable Priority Waste out of Victoria	~20 applications annually
Outdoor concerts - Later operations (outside of hours)	~20 applications annually
Outdoor concerts - Outdoor venue to conduct more than six concerts in a year	~2 applications annually
Municipal landfills serving less than 5000 people	~16 in operation
Supply or use of wastewater	~25 applications annually
Supply or use of biosolids	~4 applications annually
Temporary plant for on-site waste treatment	~2 applications annually
Discharge of waste to aquifer	~5 applications annually
Option 2 only	
Materials recovery – Moderate scale (Containing 5,000 cubic metres (or more) on the premises at any time OR receiving 4,000 tonnes of more of waste in any month)	Approximately 50 sites

Supply or Use of Reportable Priority Waste and liquid wastes	50 applications annually
Containment of Category D soils on project site	8-10 applications annually

Registrations

Activity/Tool	Approx. Cohort Size
Option 1 and Option 2	
Biomedical storage by a council, health service or ambulance service	Varied (case by case)
Temporary asbestos storage	Varied (case by case)
Temporary storage of 1000 litres or less of designated waste not generated at the premises	Varied (case by case)
Waste Transport (wastes requiring a Registration)	~3000 in operation (~500 new applications annually)
Option 2 only	
Materials recovery – Less than 5,000 cubic metres on premises at any time.	~2500 in operation
Dry-cleaning	~330 in operation
Sub-threshold reprocessing of specified e-waste	~5 in operation
Sub-threshold A07 (Organic waste processing)	unknown
Sub-threshold A09 (Waste tyre storage)	~85 in operation
Sub-threshold H05 (Glass works)	~5 in operation

Appendix 6 – Process map example

The following table outlines the steps in the process map developed for development licence applications (standard application). It should be noted that not every step incurs a cost for every development licence application. For example, only some applications would end up going to VCAT review.

Application planning	Create development licence service order
	Review application
	Contact the applicant and preparing for the meeting
	Conduct meeting and update application documents
	Receive and review draft application
	- Review the environment/health harm assessment details
	- Review the community/stakeholder impact/interest details
	- Advise applicant to submit application and fees
	- Process application fee
	Receive and formally accept the application
	Complete and review a works approval project plan template
	Assessment
Internal referrals	
External referrals & advertising	
- Upload formal application to EPA Portal	
- Prepare & send referral letters	
- Develop and obtain consent for advertising content	
- Placing an advertisement in a publication	
- Receive and review public comments	
- 20B conference requirement details	
- Requesting further information (s22 notice & 67A time waiver)	
Writing the assessment report	
- Identify the impacts of the application	
- Identify standards that apply to the application	

	<ul style="list-style-type: none"> - Assess the estimated impacts against standards
	<ul style="list-style-type: none"> - Write a works approval assessment report
	<ul style="list-style-type: none"> - Provide recommendations and draft WA statutory document
	<ul style="list-style-type: none"> - Complete draft works approval assessment report and works approval, send for legal review
	<ul style="list-style-type: none"> - Send for peer review
	<ul style="list-style-type: none"> - Receive feedback and update draft works approval assessment report
	<ul style="list-style-type: none"> - Send to applicant for review of conditions
	<ul style="list-style-type: none"> - Receive feedback and finalise draft works approval assessment report
Decision	Decision
Post decision	Media and communications
	<ul style="list-style-type: none"> - Prepare for communication of decision
	<ul style="list-style-type: none"> - Notice of decision
	<ul style="list-style-type: none"> - Publish to EPA's website
	<ul style="list-style-type: none"> - Media release
	<ul style="list-style-type: none"> - Response to community concern
	<ul style="list-style-type: none"> - Community mail out
	<ul style="list-style-type: none"> - Update the webpage
	<ul style="list-style-type: none"> - Closing dedicated webpages
	VCAT review period
	<ul style="list-style-type: none"> - Pre-hearing actions
	<ul style="list-style-type: none"> - VCAT hearing actions
	<ul style="list-style-type: none"> - Post-VCAT hearing actions
	Recording post processing activities
	<ul style="list-style-type: none"> - Completion strategy
	<ul style="list-style-type: none"> - Recording dates in IBIS
	<ul style="list-style-type: none"> - Completion of development licence inspection
	<ul style="list-style-type: none"> - Commissioning
General peer review	General peer review across all steps

Appendix 7 – List of fees

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
Development licence	Application		33	214.53-1313.26	\$49,730.25	\$1,641,098.25	Greater of 1% of the estimated cost or a minimum flat fee of 81.83 fee units (capped at 4500 fee units)	\$18,400.19	\$607,209.27	37%	Same design and fee level
Development licence	Exemption	-	40	81.44	\$7,399.60	\$295,984.00	68.8 fee units on application plus 6.29 fee units per hour for assessments exceeding 10.95 hours up to a maximum of 780.32 fee units.	\$7,399.60	\$295,984.00	100%	New fee
Development/ Pilot project licences	Transfer	-	4	8.58	\$754.58	\$3,018.32	Flat fee - 52.22 fee units	\$754.58	\$3,018.32	100%	Development licence: Same design different fee level Pilot project licence: New fee
Development/ Pilot project licences	Amendment	Start date/ Duration	10	9.58	\$815.27	\$8,152.70	Flat fee - 56.42 fee units	\$815.27	\$8,152.70	100%	New fee

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
Development/ Pilot project licences	Amendment	Terms and conditions	4	57.08	\$5,280.69	\$21,122.76	243.73 fee units on application plus 6.4 fee units per hour for assessments exceeding 38.1 hours up to a maximum of 706.96 fee units.	\$5,280.69	\$21,122.76	100%	New fee
Development/ Pilot project licences	Surrender		Unknown	Unknown	Unknown	Unknown	No fee	-	-	0%	NA
Pilot project licence	Application	-	5	237.91	\$24,658.11	\$123,290.55	1047.39 fee units on application plus 7.18 fee units per hour for assessments exceeding 145.9 hours up to a maximum of 2361.11 fee units.	\$24,658.11	\$123,290.55	100%	New design
Operating licence	Application	-	4	58.43	\$5,512.91	\$22,051.64	84.78 fee units on application plus 6.53 fee units per hour for assessments exceeding 13 hours up to a maximum of 965.35 fee units.	\$5,512.91	\$22,051.64	100%	New fee
Operating licence	Annual	-	680	-	\$13,939.00	\$9,478,241.00	Existing annual fee (capped at 42000 fee units)	\$17,794.11	\$12.1m (based on 2017-18 revenue amount)	128% - nt licences	New fee for A02b, A13a and H05b and Same design and fee level for all other activities
Operating licence	Amendment	Administrative	60	9.43	\$849.55	\$50,973.00	Lesser of 10% of the annual fee	\$849.55	\$50,973.00	100%	Same design

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
							or a flat fee of 58.79 fee units				different fee level
Operating licence	Amendment	Terms and conditions	20	56.93	\$5,380.70	\$107,614.00	126.12 fee units on application plus 6.28 fee units per hour for assessments exceeding 20.1 hours up to a maximum of 1119.18 fee units.	\$5,380.70	\$107,614.00	100%	New fee design
Operating licence	Transfer	-	15	8.58	\$754.58	\$11,318.70	Lesser of 10% of the annual fee or a flat fee of 52.22 fee units	\$754.58	\$11,318.70	100%	Same design different fee level
Operating licence	Surrender	-	20	24.49	\$2,196.61	\$43,932.00	Lesser of 10% of the annual fee or a flat fee of 152.01 fee units	\$2,196.61	\$43,932.00	100%	New fee
Operating licence	Exemption	-	Unknown	81.44	\$7,399.60	Unknown	68.8 fee units on application plus 6.29 fee units per hour for assessments exceeding 10.95 hours up to a maximum of 780.32 fee units.	\$7,399.60	Unknown	100%	New fee
Permit	Application	Reportable priority waste transport (temporary)	1	Unknown	\$89.73	\$89.73	Flat fee - 6.21 fee units	\$89.73	\$89.73	100%	New fee design
Permit	Application	Reportable priority waste transport (full permit)	40	3.67	\$358.79	\$14,351.60	Flat fee - 24.83 fee units	\$358.79	\$14,351.60	100%	New fee design

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
Permit	Application	Other - complex (application to Authority)	139	16.60	\$1,727.35	\$240,101.65	Flat fee - 119.54 fee units	\$1,727.35	\$240,101.65	100%	New fee
Permit	Application	Other - simple (application to Authority)	22	9.6	\$990.69	\$21,795.18	Flat fee - 68.56 fee units	\$990.69	\$21,795.18	100%	New fee
Permit	Application	Other - consignment (application to Authority)	416	2.2	\$219.50	\$91,312.00	Flat fee - 15.19 fee units	\$219.50	\$91,312.00	100%	New fee
Permit	Application	On-site wastewater management system	Unknown	8.17	\$748.69	Unknown	25.9 fee units on application plus 6.34 fee units per hour for assessments exceeding 4.1 hours up to a maximum of 69.75 fee units.	\$748.69	Unknown	100%	New fee
Permit	Transfer	Reportable priority waste transport	1	1.4	\$123.89	\$123.89	Flat fee - 8.57 fee units	\$123.89	\$123.89	100%	New fee design
Permit	Transfer	Other - complex (application to Authority)	Unknown	8.58	\$754.58	Unknown	Flat fee - 52.22 fee units	\$754.58	Unknown	100%	New fee
Permit	Amendment	Reportable priority waste	8	1.92-2.5	\$201.00	\$1,608	Flat fee - 13.91 fee units	\$201.00	\$1,608	100%	New fee design.

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
		transport									
Permit	Amendment	Other - complex (application to Authority)	Unknown	9.96	\$847.60	Unknown	25.2 fee units on application plus 6.49 fee units per hour for assessments exceeding 3.9 hours up to a maximum of 322.31 fee units.	\$847.60	Unknown	100%	New fee
Permit	Surrender	Reportable priority waste transport	5	1.17	\$103.05	\$515.25	Flat fee - 7.13 fee units	\$103.05	\$515.25	100%	New fee
Permit	Surrender	Other - complex (application to Authority)	Unknown	6.84	\$680.24	Unknown	Flat fee - 47.08 fee units	\$680.24	Unknown	100%	New fee
Permit	Exemption	Reportable priority waste transport	Unknown	1.91-2.5	\$201.00		Flat fee - 13.91 fee units	\$201.00	Unknown	100%	New fee
Permit	Exemption	Other - complex (application to Authority)	6	8.30	\$857.61	\$5,145.66	45.82 fee units on application plus 7.16 fee units per hour for assessments exceeding 6.4 hours up to a maximum of 73.03 fee units.	\$857.61	\$5,145.66	100%	New fee
Permit	Exemption	On-site wastewater management system	Unknown	8.17	\$748.69	Unknown	25.9 fee units on application plus 6.34 fee units per hour for assessments exceeding 4.1 hours up to a maximum of	\$748.69	Unknown	100%	New fee

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change	
							69.75 fee units.					
Permit	Renewal	Reportable priority waste transport	107	0.5	\$44.58	\$4,770.06	Flat fee - 3.09 fee units	\$44.58	\$4,770.06	100%	New fee design	
Permit	Renewal	Other - complex (application to Authority)	Unknown	3.86	\$412.67	Unknown	Flat fee - 28.56 fee units	\$412.67	Unknown	100%	New fee	
Permit	Exemption (due to holding a valid authorisation to transport reportable priority waste in another jurisdiction)	-	1	1.92-2.5	\$201.00	\$201.00	Flat fee - 13.91 fee units	\$201.00	\$201.00	100%	New fee	
Registration	Application	Reportable priority waste transport	779	2.2	\$207.80	\$161,876.20	Flat fee - 14.38 fee units	\$207.80	\$161,876.20	100%	New fee	
Registration	Application	Other	Unknown	0.29	\$24.31	-	No fee	-	-	0%	NA	
Registration	Renewal	Reportable priority waste transport	2042	0.45	\$37.50	\$76,575.00	Flat fee - 2.60 fee units	\$37.50	\$76,575.00	100%	New fee	
Registration	Renewal	Other	Unknown	0.46	\$38.20	-	No fee	-	-	0%	NA	

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
Environmental Audit	Appointment	Assessment	20	18.68	\$2,047.44	\$40,948.80	Flat fee - 141.69 fee units	\$2,047.44	\$40,948.80	100%	Same design different fee level
Environmental Audit	Appointment (in accordance with the provisions of the Commonwealth Mutual Recognition Act 1992)	Assessment	1	13.08	\$1,386.95	\$1,386.95	No fee	-	-	0%	NA
Environmental Audit	Appointment	Administrative and technical support services	22	68.58	\$7,412.77	\$163,080.94	Flat fee - 512.99 fee units	\$7,412.77	\$163,080.94	100%	New fee
Environmental Audit	Reappointment	Assessment	21	23.58	\$2,550.03	\$53,550.63	Flat fee - 176.47 fee units	\$2,550.03	\$53,550.63	100%	Same design different fee level.
Environmental Audit	Reappointment	Administrative and technical support services	21	60.58	\$6,630.83	\$139,247.43	Flat fee - 458.88 fee units	\$6,630.83	\$139,247.43	100%	New fee

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
Environmental Audit	Preliminary risk screen assessment statement		100	1.58-10.08	\$301.43	\$30,143.00	Flat fee - 20.86 fee units	\$301.43	\$30,143.00	100%	New fee
Environmental Audit	Environmental audit statement and report		176	8.88-85.55	\$1,593.26	\$280,413.76	Flat fee - 110.26 fee units	\$1,593.26	\$280,413.76	100%	Same design different fee level
Authority may authorise emergency storage, use etc. of waste	-	Commissioning	30	72.31	\$6,764.64	\$202,939.20	70.77 fee units on application plus 6.47 fee units per hour for assessments exceeding 10.95 hours up to a maximum of 840.99 fee units.	\$6,764.64	\$202,939.20	100%	New fee
Authority may authorise emergency storage, use etc. of waste		Emergency storage of waste	36	7.23	\$695.86	\$25,050.96	No fee	-	-	-	NA
Better environment plans	Submission of proposed better environment plans	-	Unknown	24.88	\$2,495.87	Unknown	103.29 fee units on application plus 6.94 fee units per hour for assessments exceeding 14.9 hours up to a maximum of 593.71 fee units.	\$2,495.87	Unknown	100%	New fee
Better environment plans	Amendment of better environment	-	Unknown	Unknown	Unknown	Unknown	103.29 fee units on application plus 6.94 fee units per hour for assessments exceeding 14.9	Unknown	Unknown	Unknown	New fee

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
	plans						hours up to a maximum of 593.71 fee units.				
Better environment plans	Services to advise or assist a person to prepare a proposed better environment plan	-	Unknown	Unknown	Unknown	Unknown	6.94 fee units per hour up to a maximum of 593.71 fee units.	Unknown	Unknown	Unknown	New fee
Authority may appoint analysts and prescribed roles	-	Accredited consigners	20	5.33	\$510.84	\$10,216.80	Flat fee - 35.35 fee units	\$510.84	\$10,216.80	100%	New fee
Authority may appoint analysts and prescribed roles	-	Motor vehicle testers	3	16.01	\$1,581.04	\$4,743.12	No fee	-	Unknown	0%	NA
Application to vary - or revoke site management order	-	-	Unknown	24.88	\$2,495.87	Unknown	103.29 fee units on application plus 6.94 fee units per hour for assessments exceeding 14.9 hours up to a maximum of 593.71 fee units.	\$2,495.87	Unknown	100%	New fee

Type	Stage	Variation	Volume	Hours in admin. time likely	Average cost	Total cost	Proposed fee	Average fee	Total fee revenue	Cost recovery %	Summary of change
Public access to the Public Register	-	-	Unknown	Unknown	Unknown	Unknown	No fee	-	Unknown	0%	NA
Exemptions	-	-	Unknown	65.23	\$6,748.72	Unknown	45.82 fee units on application plus 7.16 fee units per hour for assessments exceeding 6.4 hours up to a maximum of 888.26 fee units.	\$835.72	Unknown	100%	New fee
Financial assurance	Request for review of amount		15	1508-37.58	\$2,194.38	\$32,915.66	No fee	-	-	100% (Recovered through relevant amendment fees)	New fee
Financial assurance	Request for review of form	-	5	74.33	\$7,938.72	\$39,693.60	227.84 fee units on application plus 10.24 fee units per hour for assessments exceeding 22.25 hours up to a maximum of 1798.14 fee units.	\$7,938.72	\$39,693.60	100%	New fee
Financial assurance	Application for release		12	19.46-46.36	\$3,709.32	\$44,511.84	84.48 fee units on application plus 8.77 fee units per hour for assessments exceeding 9.65 hours up to a maximum of 1147.41 fee units.	\$3,709.32	\$44,511.84	100%	New fee

Appendix 8 – Comparison of proposed and current fees

This table shows changes that arise as a result of fee design change, and those where a change to the fee unit is proposed in response to the review of activities required by EPA to assess each application.

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Development licence	Transfer	-	Flat fee – 35 fee units	\$505.75	Flat fee - 52.22 fee units	\$754.58	+49.2%
Pilot project licence	Application	-	Flat fee – 60 fee units	\$867	1047.39 fee units on application plus 7.18 fee units per hour for assessments exceeding 145.9 hours up to a maximum of 2361.11 fee units.	\$24,658.11	+2,744.1%
Operating licence	Amendment	Administrative	Lesser of 10% of the annual fee or a flat fee of 85 fee units.	\$1,228.25	Lesser of 10% of the annual fee or a flat fee of 58.79 fee units	\$849.55	-30.8%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Operating licence	Amendment	Terms and conditions	Lesser of 10% of the annual fee or a flat fee of 85 fee units.	\$1,228.25	126.12 fee units on application plus 6.28 fee units per hour for assessments exceeding 20.1 hours up to a maximum of 1119.18 fee units.	\$5,380.70	+338.1%
Operating licence	Transfer	-	Lesser of 10% of the annual fee or a flat fee of 35 fee units	\$505.75	Lesser of 10% of the annual fee or a flat fee of 52.22 fee units	\$754.58	+49.2%
Permit	Application	Reportable priority waste transport (temporary permit) [less than 1.5 tonnes (R100, K100, K120, K200, T130)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	10.3 fee units: \$148.84	Flat fee - 6.21 fee units	\$89.73	-39.7%
Permit	Application	Reportable priority waste transport (temporary permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (R100, K100, K120, K200, T130)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	10.3 fee units: \$148.84	Flat fee - 6.21 fee units	\$89.73	-39.7%
Permit	Application	Reportable priority waste transport (temporary permit) [30 tonnes or more (R100, K100, K120, K200, T130)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	25.75 fee units: \$372.09	Flat fee - 6.21 fee units	\$89.73	-75.9%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Application	Reportable priority waste transport (temporary permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (all other waste codes)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	10.3 fee units: \$148.84	Flat fee - 6.21 fee units	\$89.73	-39.7%
Permit	Application	Reportable priority waste transport (temporary permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (all other waste codes)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	12.25 fee units: \$177.01	Flat fee - 6.21 fee units	\$89.73	-49.3%
Permit	Application	Reportable priority waste transport (temporary permit) [30 tonnes or more (all other waste codes)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	35.5 fee units: \$512.98	Flat fee - 6.21 fee units	\$89.73	-82.5%
Permit	Application	Reportable priority waste transport (temporary permit) [less than 1.5 tonnes (G100-G160, E100-E130)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	10.3 fee units: \$148.84	Flat fee - 6.21 fee units	\$89.73	-39.7%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Application	Reportable priority waste transport (temporary permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (G100-G160, E100-E130)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	14.69 fee units, \$212.27	Flat fee - 6.21 fee units	\$89.73	-57.7%
Permit	Application	Reportable priority waste transport (temporary permit) [30 tonnes or more (G100-G160, E100-E130)]	Greater of 25% of the application fee or a flat fee of 10.3 fee units.	40.44 fee units, \$584.36	Flat fee - 6.21 fee units	\$89.73	-84.6%
Permit	Application.	Reportable priority waste transport (full permit) [less than 1.5 tonnes (R100, K100, K120, K200, T130)]	Flat fee – 19.5 fee units	\$281.78	Flat fee - 24.83 fee units	\$358.79	+27.3%
Permit	Application.	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (R100, K100, K120, K200, T130)]	Flat fee – 39.25 fee units	\$567.16	Flat fee - 24.83 fee units	\$358.79	-36.7%
Permit	Application.	Reportable priority waste transport (full permit) [30 tonnes or more (R100, K100, K120, K200, T130)]	Flat fee – 103 fee units	\$1,488.35	Flat fee - 24.83 fee units	\$358.79	-75.9%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Application.	Reportable priority waste transport (full permit) [less than 1.5 tonnes (all other waste codes)]	Flat fee – 29.5 fee units	\$426.28	Flat fee - 24.83 fee units	\$358.79	-15.8%
Permit	Application.	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (all other waste codes)]	Flat fee – 49 fee units	\$708.05	Flat fee - 24.83 fee units	\$358.79	-49.3%
Permit	Application.	Reportable priority waste transport (full permit) [30 tonnes or more (all other waste codes)]	Flat fee – 142 fee units	\$2,051.90	Flat fee - 24.83 fee units	\$358.79	-82.5%
Permit	Application.	Reportable priority waste transport (full permit) [less than 1.5 tonnes (G100-G160, E100-E130)]	Flat fee – 34.25 fee units	\$494.91	Flat fee - 24.83 fee units	\$358.79	-27.5%
Permit	Application.	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (G100-G160, E100-E130)]	Flat fee – 58.75 fee units	\$848.94	Flat fee - 24.83 fee units	\$358.79	-57.7%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Application.	Reportable priority waste transport (full permit) [30 tonnes or more (G100-G160, E100-E130)]	Flat fee – 161.75 fee units	\$2,337.29	Flat fee - 24.83 fee units	\$358.79	-84.6%
Permit	Transfer	Reportable priority waste transport (full permit) [less than 1.5 tonnes (R100, K100, K120, K200, T130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 8.57 fee units	\$123.89	66.5%
Permit	Transfer	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (R100, K100, K120, K200, T130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 8.57 fee units	\$123.89	66.5%
Permit	Transfer	Reportable priority waste transport (full permit) [30 tonnes or more (R100, K100, K120, K200, T130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	10.3 fee units: \$148.84	Flat fee - 8.57 fee units	\$123.89	-16.8%
Permit	Transfer	Reportable priority waste transport (full permit) [less than 1.5 tonnes (all other waste codes)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 8.57 fee units	\$123.89	66.5%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Transfer	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (all other waste codes)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 8.57 fee units	\$123.89	66.5%
Permit	Transfer	Reportable priority waste transport (full permit) [30 tonnes or more (all other waste codes)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	14.2 fee units: \$205.19	Flat fee - 8.57 fee units	\$123.89	-39.6%
Permit	Transfer	Reportable priority waste transport (full permit) [less than 1.5 tonnes (G100-G160, E100-E130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 8.57 fee units	\$123.89	66.5%
Permit	Transfer	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (G100-G160, E100-E130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.88 fee units: \$84.97	Flat fee - 8.57 fee units	\$123.89	45.8%
Permit	Transfer	Reportable priority waste transport (full permit) [30 tonnes or more (G100-G160, E100-E130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	16.18 fee units: \$233.80	Flat fee - 8.57 fee units	\$123.89	-47.0%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Amendment	Reportable priority waste transport (full permit) [less than 1.5 tonnes (R100, K100, K120, K200, T130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 13.91 fee units	\$201.00	+170.1%
Permit	Amendment	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (R100, K100, K120, K200, T130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 13.91 fee units	\$201.00	+170.1%
Permit	Amendment	Reportable priority waste transport (full permit) [30 tonnes or more (R100, K100, K120, K200, T130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	10.3 fee units: \$148.84	Flat fee - 13.91 fee units	\$201.00	+35.0%
Permit	Amendment	Reportable priority waste transport (full permit) [less than 1.5 tonnes (all other waste codes)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 13.91 fee units	\$201.00	+170.1%
Permit	Amendment	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (all other waste codes)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 13.91 fee units	\$201.00	+170.1%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Amendment	Reportable priority waste transport (full permit) [30 tonnes or more (all other waste codes)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	14.2 fee units: \$205.19	Flat fee - 13.91 fee units	\$201.00	-2.0%
Permit	Amendment	Reportable priority waste transport (full permit) [less than 1.5 tonnes (G100-G160, E100-E130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.15 fee units: \$74.42	Flat fee - 13.91 fee units	\$201.00	+170.1%
Permit	Amendment	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (G100-G160, E100-E130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	5.88 fee units: \$84.97	Flat fee - 13.91 fee units	\$201.00	+136.6%
Permit	Amendment	Reportable priority waste transport (full permit) [30 tonnes or more (G100-G160, E100-E130)]	Greater of 10% of the application fee or a flat fee of 5.15 fee units.	16.18 fee units: \$233.80	Flat fee - 13.91 fee units	\$201.00	-14.0%
Permit	Renewal	Reportable priority waste transport (full permit) [less than 1.5 tonnes (R100, K100, K120, K200, T130)]	Flat fee – 19.5 fee units	\$281.78	Flat fee – 3.09 fee units	\$44.58	-84.2%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Renewal	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (R100, K100, K120, K200, T130)]	Flat fee – 39.25 fee units	\$567.16	Flat fee – 3.09 fee units	\$44.58	-92.1%
Permit	Renewal	Reportable priority waste transport (full permit) [30 tonnes or more (R100, K100, K120, K200, T130)]	Flat fee – 103 fee units	\$1,488.35	Flat fee – 3.09 fee units	\$44.58	-97.0%
Permit	Renewal	Reportable priority waste transport (full permit) [less than 1.5 tonnes (all other waste codes)]	Flat fee – 29.5 fee units	\$426.28	Flat fee – 3.09 fee units	\$44.58	-89.5%
Permit	Renewal	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (all other waste codes)]	Flat fee – 49 fee units	\$708.05	Flat fee – 3.09 fee units	\$44.58	-93.7%
Permit	Renewal	Reportable priority waste transport (full permit) [30 tonnes or more (all other waste codes)]	Flat fee – 142 fee units	\$2,051.90	Flat fee – 3.09 fee units	\$44.58	-97.8%

Type	Stage	Variation or activity	Current fee	Average fee (current)	New fee	Average fee (new)	Percentage change
Permit	Renewal	Reportable priority waste transport (full permit) [less than 1.5 tonnes (G100-G160, E100-E130)]	Flat fee – 34.25 fee units	\$494.91	Flat fee – 3.09 fee units	\$44.58	-91.0%
Permit	Renewal	Reportable priority waste transport (full permit) [equal to or more than 1.5 tonnes but less than 30 tonnes (G100-G160, E100-E130)]	Flat fee – 58.75 fee units	\$848.94	Flat fee – 3.09 fee units	\$44.58	-94.7%
Permit	Renewal	Reportable priority waste transport (full permit) [30 tonnes or more (G100-G160, E100-E130)]	Flat fee – 161.75 fee units	\$2,337.29	Flat fee – 3.09 fee units	\$44.58	-98.1%
Environmental Audit	Appointment	Assessment	Flat fee - 170 fee units	\$2,456.50	Flat fee - 141.69 fee units	\$2,047.44	-16.7%
Environmental Audit	Reappointment	Assessment	Flat fee - 170 fee units	\$2,456.50	Flat fee - 176.47 fee units	\$2,550.03	+3.8%
Environmental Audit	Environmental audit statement and report		Flat fee - 131.1 fee units	\$1,894.40	Flat fee - 110.26 fee units	\$1,593.26	-15.9%

Appendix 9 – Fee assumptions

Cost base assumptions

EPA has completed process maps for most of the permissions and processes discussed in this document. The process maps supplied by the EPA outline:

- The steps involved in processing a permission or other EPA authorisation
- The volume of permissions/processes actioned
- The length of time taken (the minimum, likely, and maximum) to complete each step (in either hours or minutes)
- The seniority (VPS level) of the individuals involved in carrying out each step (in the percentage of time each level staff spends on the time taken for that step).

In combination, this information provides an estimate for the EPA's costs: both per each permission granted/process completed and in total.

VPS wage levels are based on midpoints as of 1 July, 2018 (Victorian Public Service Enterprise Agreement 2016-Schedule B). On top of wage rates, on-costs (based on DTF's Guide to assessing and calculating costs) are calculated at an additional 16.5%, and overheads costs at an additional 50%, resulting in a total wage multiplier of 1.75.

VPS wages and calculated hourly rates

	Salary midpoint (per year)	Hourly rate
VPS 3	\$74,200	\$83.34
VPS 4	\$88,132	\$98.99
VPS 5	\$105,276	\$118.25
VPS 6	\$136,626	\$153.46
VPS 7	\$187,303	\$210.39

Fees option modelling assumptions

Using the data from the process maps, EPA also calculated the fee (either a flat fee or variable fee structure) that would need to be charged for each permission/process to ensure full cost recovery. The fees presented here are based on EPA's calculations or underlying assumptions.

Development licence applications are an exception as EPA did not intend to fully recover costs for this permission. The calculation of the fee for Option 1a in section [Error! Reference source not found.](#) is based on the last three years of available data (2015-16 through 2017-18) on the works value of works approval applications. Likewise, the calculation of the cost recovery level for Option 1b was also based on this data.

Appendix 10 – Changes to soil management

This section outlines how the new proposed new waste framework will impact soil management requirements in Victoria.

Soil management is worthy of specific mention with respect to regulations across the six key areas of waste, as there are numerous changes proposed and nuances in relation to soil management when compared to other waste materials. The main changes are outlined below:

- Restrictions on the movement of waste soil are tied to the definition of a 'site'. The definition of a 'site' – where 'on-site' would be given the meaning of a location with the same land title; 'offsite' would be a location on a different title. Site definitions can be restrictive where large projects spanning multiple titles occur.
- A proposed definition for a 'project site' would allow for an area to be defined by a gazetted planning scheme amendment (such as a railway corridor or development precinct). A 'project site' will offer procedural clarity where low level contaminated soil may be safely contained on a site within engineered structures.
- Fill material (considered safe for use) would be classified as industrial waste, and therefore need to meet lawful place requirements. Currently there are no restrictions on the movement of material classed as 'fill'.
- Lawful place requirements extending to on-site waste soil management. It is proposed the regulations will stipulate which on-site waste soil management practices are deemed 'authorised to receive' (e.g. temporary storage on-site and containment of soil waste on-site below threshold).
- A new category for landfill disposal (i.e. Category D), which would be for soil that has low-level contamination. Where containment and management of the contamination can be undertaken at a landfill with alternate engineering structures.
- Duty holders would only be allowed to blend contaminated soil waste (to change the categorisation or classification of that waste) if it is in accordance with an EPA-issued designation.

The additional costs and benefits of soil management changes are assessed in each of the six areas of Chapter 9, as appropriate.

Appendix 11 – Human rights certificates

Subordinate Legislation Act 1994

Draft Human Rights Certificate

(Section 12A)

Environment Protection Regulations 2020

I, Lily D'Ambrosio, Minister for Energy, Environment and Climate Change, and Minister responsible for administering the **Environment Protection Act 2017** certify under section 12A(2) of the **Subordinate Legislation Act 1994** that, in my opinion, the proposed Environment Protection Regulations 2020 may limit human rights set out in the **Charter of Human Rights and Responsibilities Act 2006** as follows.

The Environment Protection Regulations give effect to the **Environment Protection Act 2017** by imposing obligations in relation to environmental protection, pollution incidents, contaminated land and waste; specifying matters in relation to litter, water, air, land, noise and vehicle emissions; and banning thin single-use plastic shopping bags.

Freedom of expression

Section 15(2) of the Charter provides that every person has the right to freedom of expression, which includes the freedom to seek, receive and impart information and ideas of all kinds, whether by way of art or in another medium chosen by them. Section 15(3) provides that special duties and responsibilities are attached to the right to freedom of expression and that the right may be subject to lawful restrictions reasonably necessary to respect the rights of other persons and for the protection of national security, public order, public health or public morality. If one of these internal qualifications applies, the right will not be limited. The Regulations contain some provisions that interfere with this right and other rights; however, in my view they do not actually limit these rights and, if they do, the limitations are reasonable and justifiable.

Unreasonable noise

Part 5.3 of the Regulations addresses noise pollution and prescribes items and times during which noise resulting from the use of those items in residential premises is taken to be 'unreasonable' for the purpose of s3(1) of the **Environment Protection Act 2017** (and therefore an offence). For example, a lawn mower may not be used before 7am and after 8pm on weekdays, or before 9am and after 8pm on weekends and public holidays; and a domestic air conditioner may not be used before 7am and after 11pm on weekdays, and before 9am and

after 11pm on weekends and public holidays (except when a heat health alert is in effect, in which case the prohibited times do not apply). Further, the use of a musical instrument, radio or television on residential premises before 7am and after 10pm on Monday to Thursday, before 7am and after 11pm on Fridays, before 9am and after 11pm on Saturdays and public holidays, and before 9am and after 10pm on Sundays will be an offence if the noise can be heard in a habitable room in any other residential premises. Part 5.3 also places certain restrictions on noise levels and operating time periods for entertainment venues. The Regulations (regulation 16 and Schedule 1, item 77 (L06 - Conducting more than six outdoor concerts)) also require an EPA permit to conduct more than six outdoor entertainment events at an outdoor entertainment venue in a financial year.

These provisions may interfere with the right to freedom of expression to the extent that they restrict artistic expression or limit a person's ability to receive or impart ideas and information. They may also interfere with the right not to have one's privacy, family, home or correspondence unlawfully or arbitrarily interfered with; the right to equality (to the extent that some of the restrictions may disadvantage people with disabilities, for example, with respect to heating and cooling equipment); the right to freedom of religion and belief, as well as cultural rights (for example, with respect to the restrictions on the use of instruments and sound systems).

In my view, these rights are not limited by the Regulations or, if they are limited, are limited in a reasonable and justifiable way under s 7(2) of the Charter. The purpose of the prescribed restrictions is to protect people from the adverse health and amenity impacts of being exposed to unreasonable noise in their home (for example, sleep disturbances and associated physical and mental health impacts). The right to freedom of expression is not limited because the restrictions are reasonably necessary to protect the rights of other persons and public health more broadly, and therefore fall within the internal qualification on the right to freedom of expression as set out in s 15(3) of the Charter. Similarly, the right to privacy is not limited because the restrictions are lawful and not arbitrary. To the extent that the rights to equality, freedom of religion and cultural rights may be limited by the prescribed restrictions, in my view any such limitations are reasonable and justified. As set out above, the purpose of the restrictions is to protect people from the adverse health and amenity impacts of unreasonable noise. The restrictions are directly relevant and proportionate to this purpose, and are based on a range of data regarding the nature and scale of the residential noise problem in Victoria. Further, there are no less restrictive means reasonably available to achieve this purpose. Accordingly, I consider that the regulations with respect to noise pollution are compatible with the rights set out in the Charter.

Unsolicited documents

Division 1 of Part 4.1 makes it an offence to deposit an unsolicited document in, on or at, or affix it to, premises or a place if it is not deposited or affixed in a receptacle or location suitable for the deposit of documents, or if it is deposited in a receptacle that is visibly marked "No Advertising Material" or "No Junk Mail". An 'unsolicited document' does not include material with a political purpose, but may include advertising material and posters. To the extent that

these provisions may interfere with a person's ability to impart ideas, they may limit the right to freedom of expression. Further, depending on the nature of the material, the provisions may engage the right to freedom of religion and belief.

In my view, any limitation occasioned by the restrictions on depositing unsolicited documents is reasonable and justified under s 7(2) of the Charter in light of the purpose of these provisions to reduce unnecessary litter and consequently protect the environment and public health, and the fact that there are no less restrictive means reasonably available to achieve the purpose.

Subordinate Legislation Act 1994

Draft Human Rights Certificate

(Section 12A)

Environment Protection Transitional Regulations 2019

I, Lily D'Ambrosio, Minister for Energy, Environment and Climate Change, and Minister responsible for administering the **Environment Protection Act 2017** certify under section 12A(2) of the **Subordinate Legislation Act 1994** that, in my opinion, the proposed Environment Protection Transitional Regulations 2019 does not limit any human right set out in the **Charter of Human Rights and Responsibilities Act 2006**.

Limitation of our work

General use restriction

This report is prepared solely for the use of Environment Protection Authority Victoria and the Department of Environment, Land, Water and Planning. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose of assessing the impact of draft Environment Protection Regulations 2019. You should not refer to or use our name or the advice for any other purpose.

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see www.deloitte.com/au/about for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms.

The entity named herein is a legally separate and independent entity. In providing this document, the author only acts in the named capacity and does not act in any other capacity. Nothing in this document, nor any related attachments or communications or services, have any capacity to bind any other entity under the 'Deloitte' network of member firms (including those operating in Australia).

About Deloitte

Deloitte provides audit, tax, consulting, and financial advisory services to public and private clients spanning multiple industries. With a globally connected network of member firms in more than 150 countries, Deloitte brings world-class capabilities and high-quality service to clients, delivering the insights they need to address their most complex business challenges. Deloitte's approximately 244,000 professionals are committed to becoming the standard of excellence.

About Deloitte Australia

In Australia, the member firm is the Australian partnership of Deloitte Touche Tohmatsu. As one of Australia's leading professional services firms, Deloitte Touche Tohmatsu and its affiliates provide audit, tax, consulting, and financial advisory services through approximately 7,000 people across the country. Focused on the creation of value and growth, and known as an employer of choice for innovative human resources programs, we are dedicated to helping our clients and our people excel. For more information, please visit our web site at www.deloitte.com.au.

Liability limited by a scheme approved under Professional Standards Legislation.

Member of Deloitte Touche Tohmatsu Limited

© 2019 Deloitte Access Economics Pty Ltd