Reducing the impacts of plastics on the Victorian environment

Join the discussion
1. Purpose of this discussion paper

Why we should talk about plastic pollution

The Andrews Labor Government has committed to ban single-use, lightweight plastic shopping bags. This discussion paper seeks input from all Victorians on how we can design this ban to ensure it is fair and effective. It also broadens the conversation to what else we can do to manage other plastic pollution in Victoria.

Plastic pollution is an urgent environmental problem. Globally, thousands of tonnes of plastic enter our waterways and oceans each year. It has been estimated that ocean surface waters alone could contain over 5 trillion plastic pieces, weighing over 250,000 tonnes.¹

Plastics in the environment break up into smaller and smaller pieces over time. This means that the impacts of plastic pollution are long term, and can become increasingly difficult to manage.

While Victoria has relatively low litter rates, litter from lightweight plastic bags poses a particular problem. Plastic bags are highly mobile and can easily be blown into open spaces and waterways. In the environment, they can pose a danger to marine animals. A study by the University of Queensland found 30 percent of turtles autopsied were found to have plastics, including plastic bags, in their intestinal tract.²

Currently, every Australian state and territory except Victoria and New South Wales have banned or committed to banning single-use lightweight plastic bags. This is also the case in countries such as China, France, Kenya and Bangladesh. Given the significant environmental impacts of plastic bags, it is important Victoria takes action.

What we’ve heard so far

The recent Parliamentary Inquiry into the Environment Protection Amendment (Banning Plastic Bags, Packaging and Microbeads) Bill 2016 attracted nearly 3000 public submissions, the majority of which were supportive of a plastic bag ban. Submissions provided extensive evidence detailing the widespread impacts of plastic pollution on our environment.

Thousands of Victorians have also written to us calling for action to reduce plastic bag use. That includes hundreds of students from schools across the state who have expressed concern about the impacts of plastic pollution and argued for a ban on plastic bags. The Andrews Labor Government welcomes these views.

Your opportunity to participate

We are gathering information to help reduce the environmental impacts of plastic bags and other plastic items – and we want your help. That includes your views on how we can ban lightweight plastic bags fairly and effectively, and on which approaches we should consider to reduce the impacts of other plastic pollution in Victoria.

The government understands there are complex issues to work through in order to deliver real and lasting change. We are committed to engaging with all Victorians on these issues, and this discussion paper is an opportunity for Victorians to help reduce the harm caused by plastics in the environment.

How we will use your ideas

We’ll use your feedback to inform the design of a lightweight plastic bag ban in Victoria, and approaches to address other kinds of plastic pollution.

2. Plastic pollution is a global problem

Tackling plastic pollution is important. But in order to find the best solution, we must make sure that we fully understand the problem.

**Plastic products are useful**

Plastics are an important part of our daily lives. Because most plastics are strong, lightweight, and inexpensive, they have a variety of uses including in packaging, transport, healthcare, construction and electronics. Plastics often have benefits over other types of materials in these sectors. For example, using lightweight plastic to transport goods can reduce fuel consumption, and plastic can provide a hygienic barrier that keeps food fresh longer, reducing food waste.

**Plastic consumption is growing**

As a result of its versatility, global plastic production has undergone rapid and consistent growth (Figure 1). Over the next 20 years, plastic production is expected to double again, and almost quadruple by 2050.³

Figure 1: Growth in global plastic production 1950 - 2014

![Graph showing growth in global plastic production from 1950 to 2014](image)

Note: Production from virgin petroleum-based feedstock only (does not include bio-based, greenhouse gas-based or recycled feedstock).


Around 1.5 million tonnes of plastic were used in Australia in 2012–13, about 65 kilograms of plastic for each Australian. More than one third of this was single-use disposable packaging.⁴

Victoria currently leads the way in plastic recycling, reprocessing almost half of the national total.⁵ But compared to our overall recycling rate of 67 per cent, Victoria’s plastic recycling rate is relatively low. As a state, we recycled just 28 per cent of the 570,000 tonnes of plastic waste that we produced in 2014.⁶

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Many plastic items are used only once before being discarded. If we used fewer single-use plastic items, the material and energy resources used to produce them could be put to better use.

**Plastic pollution is also growing**

Plastic items that are not appropriately disposed of can pollute our environment. And as plastic production increases, plastic pollution is likely to grow. Globally, it is estimated that at least 8 million tonnes of plastic will enter the world’s oceans each year — equivalent to dumping the contents of one garbage truck into the ocean every minute. At current rates, this is expected to increase to two per minute by 2030, and four per minute by 2050.7

In Australia, plastic is the main source of litter in open spaces like beaches, highways and parks.

**Impact of litter and plastic pollution**

Plastic waste represents around 10 per cent of all waste disposed of to landfill in Victoria.8 Reducing the amount of plastic - and in fact, all waste - that we send to landfill would reduce any future need for new or expanded landfills in Victoria. It would also mean that the plastic and the resources used to produce it could be put to better use.

If not managed properly, lightweight plastic, like plastic bags, can be windblown and escape from landfills, becoming litter.9 Right now, cleaning up litter costs the Victorian Government around $80 million each year.10

**Impacts on marine environments**

When it rains, litter is washed from our streets into waterways through our storm water system. Around 95 per cent of beach litter is transported in this way.11 Around 75 per cent of all litter on Australian beaches is plastic. And because plastic does not break down easily, it will continue to accumulate in our oceans.12

Plastic litter can harm marine wildlife of all sizes. Seabirds, turtles and marine mammals are particularly vulnerable to swallowing or becoming tangled in larger items, like plastic bags. Once plastic litter is ingested or entangles an animal, that animal can have great difficulty ridding themselves of this debris. This can lead to reduced mobility, disrupted feeding, suffocation, and death. Any one piece of plastic litter can cause these impacts for multiple animals, because long after a marine animal is killed or escapes, the plastic remains in the marine environment.

Over time, plastic can break down into smaller and smaller particles, known as microplastics. Microplastics can be ingested by small organisms, potentially creating significant health impacts for these organisms.13 Microplastics can also accumulate and disperse other pollutants, such as heavy metals.14 These pollutants

can be ingested by small organisms along with the microplastic particle, and then potentially move up the food chain, causing even further damage.

**What about ‘environmentally friendly’ plastic?**

‘Environmentally friendly’ plastic alternatives to plastic items like bags, coffee cups and cutlery are becoming increasingly common. ‘Environmentally friendly’ plastic products are often labelled as degradable, biodegradable and compostable.

These alternatives are not always as environmentally friendly as they appear. They can present similar entanglement and ingestion risks to marine animals as typical plastic items and, if sent to landfill, can produce methane, a potent greenhouse gas.

### ‘Environmentally friendly’ plastic terminology – an explainer

- **Biodegradable**: Made from natural material (such as corn-starch) which breaks down into organic material and water over time.
- **Compostable**: A subset of biodegradable plastic, made from material assessed to be compostable in a commercial composting environment in accordance with Australian Standards.
- **Degradable**: A plastic bag that can be broken down by chemical or biological processes.

Compostable bags are becoming increasingly useful for collecting food scraps. Confusingly however, many products labelled as ‘compostable’, including bags, only decompose in commercial composters, and cannot be composted at home.

Biodegradable plastics can contaminate plastic waste collected for recycling. As they are not always easily identifiable or easy to separate out, biodegradable plastics can lower the quality of products made with recycled plastics.15

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3. Victoria is already reducing litter, including plastics

Compared with other states and territories, Victoria has relatively low levels of litter. Litter levels have been falling in Victoria for the past six years, including a 27 per cent reduction in Victoria’s litter items over the past year.16

Much of Victoria’s excellent progress in reducing litter levels can be attributed to its coordinated approach to litter, including long term waste infrastructure planning, innovative litter education programs and enforcement of litter laws.

**Infrastructure planning**

Appropriate waste disposal and litter prevention requires the right infrastructure in the right place.

Victoria is the first Australian jurisdiction to establish a long-term, comprehensive waste infrastructure planning framework. The framework is made up of a 30 year Statewide Waste and Resource Recovery Infrastructure Plan, and seven 10 year Regional Waste and Resource Recovery Implementation Plans.

The framework identifies plastic waste as a priority for increased recycling. In 2011-12, Victorians produced around 570,000 tonnes of plastic waste, only around a quarter of which was recycled. The more plastic we can recycle, the less will end up in our environment as litter.

**Education**

Education is a powerful tool for achieving long-term community change. It can empower people to take steps to better manage waste and avoid litter.

The Victorian Waste Education Strategy will reduce litter by building evidence to inform action, and supporting councils and regional Waste and Resource Recovery Groups to manage litter at a local level.

A key action of the strategy is the Victorian Litter Plan. The plan is made up of four programs:

1. **The Victorian Litter Innovation Fund** is a $700,000 grant program that supports innovation in preventing and reducing the impact of litter and illegal dumping. Anyone in Victoria can apply for funding, including councils, business, not-for-profit organisations, social enterprises and schools.

   The program has seen nearly $1.5 million put towards projects to install infrastructure, educate or enforce against litter and illegal dumping and around 120 partnerships have been formed through the program.

2. **Victoria’s Litter Report Card** establishes five priority areas for future investment and action on litter.

   The report card acknowledges that litter issues are best identified and tackled locally – but there are some issues that transcend local boundaries.

   The litter report card identifies the following 5 priorities for Victoria:

   1. Litter in coastal areas and waterways
   2. Illegal dumping
   3. Roadside litter
   4. Cigarette butt litter
   5. Plastic and microplastic litter

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The Victorian Litter Innovation Fund

The Victorian Litter Innovation Fund supports many innovative projects that prevent and reduce the impact of litter and illegal dumping.

Bin Not Bay

This project will support the Australian Marine Mammal Conservation Foundation (AMMCF) to install highly visible, portable, segregated litter and recycling bins next to the Life Saving Victoria safety flags on beaches around Port Phillip Bay.

AMMCF will measure the success of the bins by monitoring and comparing littering rates in areas with and without the new bins.

Be a Hero Campaign

The Be A Hero Campaign will help reduce litter entering Port Phillip Bay. The campaign highlights the diversity of species that exist in Port Phillip Bay through the placement of images on existing infrastructure. The images promote the environmental value that exists within the bay and the incredible species that are affected when litter enters their environment.

3. The Victorian Government has invested over $200,000 in innovative trial programs to tackle some of Victoria’s priority litter issues. These include:

   - Better understanding the sources and impacts of microplastics across the entire Port Phillip Bay catchment.
   - Grants of up to $10,000 to support land managers address litter and illegal dumping in coastal areas and waterways.
   - Training to empower local government officers and other land managers to tackle illegal dumping across Victoria.
   - Tools and resources to measure and track illegal dumping across local government areas, including trialling a GIS mapping tool.

4. The Litter Hotspots program was a four-year program led by the Metropolitan Waste and Resource Recovery Group. It identified key litter hotspots in metropolitan Melbourne and investigated how litter can be reduced in the long term. The program demonstrated that targeted local action, collaborative partnerships and capacity-building activities (like professional networks and training) can help councils and the community to prevent and reduce litter.

The Litter Hotspots program supported research into emerging issues, like microplastic pollution, and development of new cost-effective litter collection technologies. The program achieved some great results, including:
• significant litter reductions of up to 98 per cent at some of the 353 hotspot sites funded across Melbourne
• over 121 tonnes of litter collected so far, including over 1 million cigarette butts

**Enforcement**

Littering is illegal in Victoria. EPA officers, local government officers, police and other enforcement agencies can issue ‘on the spot’ fines for littering and offenders can also end up in court.

Anyone can report littering offences in Victoria. In 2015-16, the Environment Protection Authority (EPA) issued 15,141 fines for littering from a vehicle. Around 86 per cent of litter fines issued by the EPA are for cigarette butts being thrown from vehicles.

The independent inquiry into the EPA recognised that sometimes the range of issues that the EPA responds to means that smaller-scale complaints, like litter, are not always addressed. To address this, a pilot program of Officers for the Protection of the Local Environment will begin in September 2017 and run for fifteen months. The Andrews Labor Government has provided $4.8 million for the pilot, which will embed officers in local councils to address litter and other smaller-scale waste and pollution complaints.

**What’s next?**

The Victorian Budget 2017/18 builds on these programs and activities by committing a further $4.5 million to implement the Victorian Waste Education Strategy. This commitment includes $1.1 million to extend the Victorian Litter Plan to 2020.

We are also working with the Australian Packaging Covenant Organisation to reduce plastic pollution and litter, through better, more sustainable packaging design, and by increasing recycling rates.

Victoria’s approach to litter management acknowledges the important role local government, community groups, not for profits and local residents play in reducing litter. Collaboration between all of these organisations is vital if Victoria is to continue to reduce the impacts of litter.

**Answer this question on Engage Victoria:**

• What else should the Victorian Government do to reduce the impacts of litter at a local level and across our state?
4. Single use plastic bags

Consumption of plastic bags in Victoria
Lightweight plastic bags are commonly provided at supermarket checkouts free-of-charge. They are also used in many convenience stores and takeaway food outlets. Thicker plastic bags are commonly available at retail outlets such as apparel and electronic stores and department stores.

About 1.6 billion lightweight plastic shopping bags, and 133 million thick plastic shopping bags, are used in Victoria each year. As many as 75 per cent of these plastic bags are reused as bin liners or carry bags. Eventually, the majority end up in landfill.

The National Litter Index reports that plastic bags account for less than 1 per cent of Victoria’s litter (both by item count and by volume). Although only a small proportion of plastic bags used in Victoria end up as litter, the impact they have on the environment can be disproportionate. As plastic bags are highly mobile, they can easily be blown into open spaces and waterways. In the environment, they can cause significant harm, particularly to marine life. Research suggests that most plastic bag litter is made up of bags that were supplied for ‘away-from-home’ uses, like carrying takeaway food.

Plastic bags can be a problem in recycling infrastructure
Plastic bags can also cause problems if disposed of in household recycling. Generally, recycling facilities are not equipped to sort plastic bags from other mixed recyclables. Plastic bags can get caught in mechanical sorting machinery and cause machines to break down.

Trials to collect flexible plastic through kerbside recycling
In 2016, four councils (Boroondara, Cardinia, Nillumbik and Hobsons Bay) partnered to launch a project trialling the recovery of flexible plastic waste through their existing kerbside recycling collection service. The Victorian Government supported the project with $300,000 in funding through the Metropolitan Local Government Waste and Resource Recovery Fund. The project was launched in November 2016 and provided residents in these council areas with a convenient process to recycle a wide range of flexible plastics waste including bags, packaging and wrapping. Flexible plastics collected at the kerbside were transported to a facility to be sorted, compacted, baled and sent to a plastic recycler either locally or overseas.

Soft or flexible plastics (plastics that don’t spring back into shape when you crush them) can be placed in dedicated collection bins, which are located at many supermarkets. The plastic collected in these bins can be recycled into products like bench seats for schools and kindergartens. However, collecting and processing soft plastics is costly. Making products from recycled plastics can be more expensive than making them from virgin materials.

As processing technologies develop and costs reduce, there is potential for this sector to grow and for products made from recycled flexible plastics to replace current alternatives such as timber products.

**Which shopping bag should I choose?**

There are many shopping bag options available to customers (Table 1), and each has different benefits and costs to customers and retailers.

<table>
<thead>
<tr>
<th>Type of bag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lightweight plastic shopping bag</strong></td>
<td>• A thin (less than 35 microns) plastic bag with handles.</td>
</tr>
<tr>
<td></td>
<td>• High strength, waterproof and reliable for transporting shopping.</td>
</tr>
<tr>
<td></td>
<td>• Designed for single-use, but commonly reused as bin liners.</td>
</tr>
<tr>
<td></td>
<td>• Widely available in supermarkets and stores for free</td>
</tr>
<tr>
<td></td>
<td>• Often made of high density polyethylene (HDPE).</td>
</tr>
<tr>
<td></td>
<td>• Can be recycled through supermarket collection points.</td>
</tr>
<tr>
<td><strong>Thick plastic shopping bag</strong></td>
<td>• A heavier-weight plastic bag commonly available at many department and boutique stores.</td>
</tr>
<tr>
<td></td>
<td>• High strength, waterproof and reliable for transporting shopping.</td>
</tr>
<tr>
<td></td>
<td>• More durable than lightweight plastic bags.</td>
</tr>
<tr>
<td></td>
<td>• Often made of low density polyethylene (LDPE).</td>
</tr>
<tr>
<td><strong>Paper bag</strong></td>
<td>• Designed for single-use and are less durable than plastic bags.</td>
</tr>
<tr>
<td></td>
<td>• Degradable and therefore have less impact in the litter stream than plastic bags</td>
</tr>
<tr>
<td></td>
<td>• Higher global warming potential than plastic bags if disposed to landfill.</td>
</tr>
<tr>
<td></td>
<td>• Can be recycled through kerbside collection</td>
</tr>
<tr>
<td></td>
<td>• Compostable if shredded</td>
</tr>
<tr>
<td><strong>Green bag</strong></td>
<td>• Made from thick plastic and can be reused many times</td>
</tr>
<tr>
<td></td>
<td>• Commonly sold by supermarkets as an alternative to lightweight plastic shopping bags.</td>
</tr>
<tr>
<td></td>
<td>• Strong and durable, and can hold more than a lightweight plastic shopping bag.</td>
</tr>
<tr>
<td><strong>Cotton bag</strong></td>
<td>• Made from woven cotton.</td>
</tr>
<tr>
<td></td>
<td>• Can be reused many times.</td>
</tr>
<tr>
<td></td>
<td>• Strong, durable, flexible and can hold more than a lightweight plastic shopping bag.</td>
</tr>
</tbody>
</table>


The production and disposal of all types of shopping bags can impact the environment. These impacts include:

- **Material consumption**: the use of raw materials needed to make shopping bags.
- **Climate change**: the production and transportation of shopping bags can cause emission of carbon dioxide and other greenhouse gases. And shopping bags can emit methane as they decompose in landfill.
Energy consumption: energy is used to produce and refine the raw materials needed to make shopping bags, and to manufacture bags.

Water use: water is used to produce and refine the raw materials needed to produce shopping bags, and in the bag manufacturing process.

Litter marine impacts: shopping bags that reach the marine environment can cause harm to marine animals through entanglement or ingestion.

It’s important that we understand the environmental impacts of different types of shopping bags so that we can be confident our choice reduces our impact on the environment. The results of a study of impacts of many types of shopping bags, from manufacture to disposal, is shown in Table 2.

Table 2: Environmental impacts of shopping bags

<table>
<thead>
<tr>
<th>Bag type</th>
<th>Material consumption</th>
<th>Climate change</th>
<th>Energy consumption</th>
<th>Water use</th>
<th>Litter marine impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lightweight plastic shopping bag</td>
<td>⋆⋆⋆</td>
<td>⋆</td>
<td>⋆</td>
<td>⋆⋆</td>
<td>⋆⋆⋆⋆⋆⋆</td>
</tr>
<tr>
<td>Thick plastic shopping bag</td>
<td>⋆⋆⋆⋆⋆</td>
<td>⋆</td>
<td>⋆⋆⋆</td>
<td>⋆</td>
<td>⋆⋆⋆⋆⋆⋆</td>
</tr>
<tr>
<td>Paper bag</td>
<td>⋆⋆⋆⋆⋆</td>
<td>⋆⋆⋆⋆</td>
<td>⋆⋆⋆⋆⋆</td>
<td>⋆</td>
<td>⋆⋆⋆</td>
</tr>
<tr>
<td>Green bag</td>
<td>⋆</td>
<td>⋆</td>
<td>⋆</td>
<td>⋆⋆⋆</td>
<td>⋆⋆</td>
</tr>
<tr>
<td>Cotton bag</td>
<td>⋆</td>
<td>⋆</td>
<td>⋆</td>
<td>⋆</td>
<td>⋆⋆⋆⋆⋆</td>
</tr>
</tbody>
</table>

Note: More ⋆ indicates greater relative impact.

It generally takes more resources to produce a reusable bag than a disposable bag. But reusing a bag can improve its environmental performance. If reused enough times, a reusable bag eventually produces less greenhouse gas emissions, and consumes less energy, water, and raw materials per use than a single use bag.21

Some bags have low impacts in one area but high impacts in another. For example, while paper bags may be preferable to lightweight and thick plastic bags from a litter perspective, producing them can consume a significant amount of resources, and emit more greenhouse gases.

The key to reducing the impacts of any type of bag is to reuse it as many times as possible. While switching from lightweight plastic bag to reusable bags can have environmental benefits, these benefits are only realised when reusable bags are reused enough times.

As an example, Table 3 shows how many times alternative bags would need to be used to have the same global warming impacts (that is, total life cycle greenhouse gas emissions) as a lightweight plastic shopping bag that’s either not reused, or reused as a bin liner or to carry things.22

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Reducing the impacts of plastics on the Victorian environment

Join the discussion

Table 3: Number of reuses of alternative bag types required for global warming equivalence with a lightweight plastic bag under different scenarios

<table>
<thead>
<tr>
<th>Alternative bag types</th>
<th>Lightweight bag not reused</th>
<th>Lightweight bags, 40% are used as bin liners</th>
<th>Lightweight bags, 100% are used as bin liners</th>
<th>Lightweight bags, used three times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper bag</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Department store bag</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Green bag</td>
<td>11</td>
<td>14</td>
<td>26</td>
<td>33</td>
</tr>
<tr>
<td>Cotton bag</td>
<td>131</td>
<td>173</td>
<td>327</td>
<td>393</td>
</tr>
</tbody>
</table>


Reducing the impacts of plastic bags

What can governments do to reduce use of plastic bags?

Plastic pollution is a shared responsibility and we can all do our bit to reduce its impacts. Individuals can choose reusable products in place of single-use items. Businesses can take voluntary action to reduce their impacts—for example, Coles and Woolworths recently joined Aldi in phasing out single-use plastic bags at the checkout.

Governments can also encourage industries to take voluntary action. In 2003 the Commonwealth Government worked with businesses to introduce a voluntary code of practice for Australian retailers to reduce plastic bag use. The code reduced plastic bag consumption from 5.95 billion in 2002 to 3.92 billion in 2005.23 The code expired in 2005 and has not been replaced.

There are some things that governments are best placed to do. Some options for government action include:

- banning single-use, lightweight plastic bags
- requiring that retailers charge a levy for single-use plastic bags
- information campaigns to increase awareness of the impacts of plastic pollution and ways to reduce it
- good litter management and infrastructure, like well-placed and clearly labelled bins in public spaces.

While we can always do better, Victoria has good litter management programs already in place. We also have strong education programs like Resource Smart Schools. More than 1300 Victorian schools have joined the program, which teaches students about sustainability including reducing and properly disposing of waste. See [www.resourcesmartschools.vic.gov.au/about/](http://www.resourcesmartschools.vic.gov.au/about/).

Right now we’re looking at how a ban on plastic bags could reduce the impact of plastic pollution in our environments.

What are other countries doing to manage plastic bags?

Worldwide, the impact of plastic shopping bags has received significant attention, and there have been many attempts to reduce their use. More than 30 countries have implemented voluntary or regulatory approaches to reduce the use of lightweight plastic bags.

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Countries such as Bangladesh, South Africa, China, Ethiopia, Eritrea, France, Italy, Kenya, Morocco and Tanzania have banned plastic bag use. England, Ireland, Wales, Denmark and Germany have used point-of-sales charges to reduce plastic bag use.

Though there is no national plastic bag ban or charge in the USA, over 100 local counties and municipalities have plastic bag bans or charges, and California has a state ban on plastic bags.

What have other states done about plastic bags?

In Australia the most widely used policy measure to address plastic bag use is to ban lightweight plastic bags. In May 2009, South Australia legislated a ban that prevented retailers from providing lightweight plastic bags. The ban did not apply to barrier bags (used to protect contents, e.g. fruit and vegetable bags) and thicker plastic bags typically used in department stores. The Northern Territory implemented an identical ban in September 2011, followed by the ACT in November 2011 and Tasmania in November 2013. Recently, the Queensland and Western Australian governments have also committed to ban plastic bags.

Currently, plastic bag bans in Australia do not apply to biodegradable bags where they meet the Australian Standard for compostability. However, the Queensland Government has indicated it is likely to also ban biodegradable or degradable single-use lightweight shopping bags.

In July 2017, all Australian environment ministers, including the Victorian Minister for the Environment, agreed to work together to explore options to reduce thicker plastic shopping bags, potentially under a voluntary code of practice.

What can we learn from Australian and international jurisdictions that have implemented bans?

Plastic bag bans initially produce good results

Reviews of plastic bag bans that have been implemented across Australia indicate that, initially, bans have reduced the incidence of plastic bag litter, and increased the proportion of shoppers that brought their own shopping bags.

The 2012/13 National Litter Index reported that plastic bag litter in South Australia had fallen by almost 50 per cent compared to pre-ban levels. South Australia reported that the ban created a change in the behaviour of consumers – bringing reusable bags when shopping is now considered the norm.

The Northern Territory Government reported a 53 per cent reduction in plastic bag litter in the two years following the introduction of its ban.24 Shoppers in the Northern Territory were supportive of the ban, because they recognised the environmental benefits and experienced minimal inconvenience. Consumer surveys found that use of reusable shopping bags increased following the ban.

In Tasmania, reductions in both lightweight and thick plastic shopping bag litter were reported following the introduction of a plastic bag ban.25 The ACT’s plastic shopping bag ban was also successful in reducing plastic bag waste, both in material going to landfill and in the incidence of plastic bags as litter.

Plastic bag bans sometimes have unintended consequences

In some states, lightweight plastic bag bans have resulted in significant increases in purchases of plastic bin liners, and increased use of thicker plastic bags. Some retailers have indicated that if plastic bags were banned they would switch to paper bags instead, which would carry different, perhaps greater, environmental impacts.26

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In South Australia, the share of households purchasing bin liners increased from 15 per cent to 80 per cent following the banning of plastic bags. Consumer surveys in Northern Territory also found that use of bin liners increased following the ban. The ACT reported an increase in sales of thick plastic shopping bags, alongside a levelling out of bin liner sales. This could indicate that households are substituting excess thicker bags for bin liners.

The positive effects of plastic bag bans are not always long-lived

In South Australia, plastic bag litter appears to be increasing, with 2015/16 plastic bag litter results approaching pre-ban levels. The most recent National Litter Index report suggests that plastic bag litter in Northern Territory may actually be increasing compared to pre-ban levels. These results are similar to Ireland’s experience. Ireland introduced a levy on plastic bags in 2002, which was initially considered a success. More recently, however, the effects appear to be waning, with per capita plastic bag use increasing by around 30 per cent since the levy was introduced.

Victoria will need to carefully design and monitor our lightweight plastic bag ban in order to avoid unintended consequences, and ensure that positive results are maintained over the long term.

What could a ban look like in Victoria?

Retailers have told us that consistency with other states is important

A consistent approach to plastic bags across Australia provides certainty to shoppers, and makes it easier for retailers to comply. All Australian jurisdictions that currently have policies in place have chosen to legislate a plastic bag ban, with some differences in approach. We'll need to consider all of these approaches to find the best fit for Victoria.

Retailers are demonstrating that they can work constructively on voluntary arrangements to reduce plastic pollution. In 2016 retailers committed to a voluntary phase out of microbeads from personal care and cleaning products, and early reports suggest real progress has been made.

Coles and Woolworths also recently announced that they will phase out lightweight plastic bags by the middle of 2018. Supermarkets are thought to provide around 55 per cent of all lightweight plastic shopping bags in Australia. Woolworths Group has confirmed that it gives out more than 3.2 billion lightweight plastic bags in Australia each year. It means any Victorian ban on lightweight plastic bags would need to consider how to respond to the Coles and Woolworths announcements.
Advantages to banning plastic bags

There are advantages in using a ban as a tool to manage plastic bags. It has advantages over a charge to purchase plastic bags because a ban is likely to be easier for retailers to comply with and for government to administer. It may also be clearer for consumers and retailers.

The impact of a plastic bag ban depends on what type of bags the ban includes, and how we go about imposing it. When assessing a ban’s effectiveness, it's important to remember that short- and long-term effects can vary significantly.

Our preliminary analysis suggests that banning plastic bags, whether it is just lightweight plastic bags or also heavyweight, will have overall economic benefits to the state (see Table 4). That’s because the cost to society and the environment of consumers purchasing resuable bags and reusing them is less than retailers purchasing light and heavy weight plastic bags that are not reused. Although there would be upfront costs to a ban (for example to purchase alternative shopping bags), this cost would be offset over time by avoided costs of single use plastic bags, and by benefits to the community and environment from avoided litter.

If we take no action, it is estimated that over 10 years, annual consumption of lightweight plastic bags would increase from 1.6 billion to 1.9 billion, and consumption of heavier weight bags would increase from 130 million to 133 million. Before committing to any one course of action, we’ll undertake an even more comprehensive analysis of the likely costs and benefits of different options.

Table 4: Preliminary cost-benefit analysis for options to reduce plastic bag use in Victoria.

<table>
<thead>
<tr>
<th>Option</th>
<th>Economic impact over 5 years</th>
<th>Economic impact over 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banning lightweight shopping bags and biodegradable bags</td>
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<td>+ $2 million</td>
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<tr>
<td>Banning lightweight shopping bags and introducing a voluntary code</td>
<td>- $1.8 million</td>
<td>+ 15.3 million</td>
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<td>practice for heavier weight bags</td>
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<tr>
<td>Banning all plastic bags (light and heavy weight)</td>
<td>+ $28.5 million</td>
<td>+ $64.4 million</td>
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If we are to ban lightweight plastic bags in Victoria, it’s important that in addition to evaluating the costs and benefits, we also consider what types of bags might need to be exempt from the ban. Sometimes plastic bags are needed for hygiene, medical, or security purposes. There might also be some types of businesses who need to be exempt from a ban. We can be guided by other plastic bag bans in Australia, all of which have some exemptions. We are also keen to hear from Victorians about other types of bags that we should exempt.

Answer these questions on Engage Victoria:

• Do you support a ban on single-use lightweight plastic shopping bags?
• Should a ban include thick plastic shopping bags?
• Should a ban include plastic bags that break down over time such as biodegradable, degradable or compostable bags?

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• If lightweight plastic bags were banned, we will need to consider exemptions for some purposes, such as medical or security activities. Are there any types of business, organisations or activities that you think should be exempt from a plastic bag ban?
• If lightweight plastic shopping bags were banned, what alternatives would you prefer to use?
5. Other sources of plastic pollution in Victoria

Food and beverage packaging

Drink containers and coffee cups

In 2014, 530 billion plastic bottles were produced globally. This number is expected to increase to nearly 650 billion by 2019.\(^{36}\) Although plastic drink containers, such as water and soft drink bottles, can easily be recycled through household recycling services or public recycling bins, they make up nearly a quarter of Victoria’s litter when measured by volume.

It is estimated that Australians use 1 billion disposable coffee cups each year.\(^{37}\) Coffee cups make up a significant proportion of Victoria’s litter by volume. Most coffee cups are a mix of paper and plastic, and although all recycling services will accept the plastic lids, only a few currently recycle the cups. This is because the plastic lining is difficult to separate from the paper cup, and often creates quality issues, like discolouration, in recycled paper products.\(^{38}\)

Plastic straws and utensils

Small plastic items, like straws, are more likely to end up as litter. Their small size means that they can easily escape waste collection systems, and that they are difficult to recapture, once lost\(^ {39}\). Even when plastic straws are collected by the waste management system, it is rarely technically possible or economically viable to recycle them.

In the USA, it is reported that 500 million straws are used per day – that’s 1.6 straws per person per day\(^ {40}\). Straws are the second most littered item at Victorian beaches, and one of the most littered items across the state\(^ {41}\). Because plastic straws are lightweight, they can easily make their way into waterways and oceans.

Plastic utensils are often used for convenience at takeaway food outlets. Because they cannot easily be sorted at recycling facilities, plastic utensils are usually disposed of to landfill.\(^ {42}\) Switching to reusable utensils, wherever possible, can help avoid this outcome and reduce the environmental impact of producing these items.

Fruit and vegetable packaging

Fruit and vegetables packaged in plastic is becoming increasingly popular and more convenient for consumers. Fruit and vegetables are usually packaged in flexible plastics, which in most council areas can only be recycled using collection bins at supermarkets.

In some cases, plastic can provide a hygienic barrier that keeps food fresh longer, reducing the amount of wasted food.\(^ {43}\) Therefore, approaches to reduce the use of plastic fruit and vegetable packaging would need to be designed to avoid unintended consequences, like increased food waste.

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Commonly littered plastic items

Cigarette butts

Cigarette butts are by far the most littered item in Victoria when measured by count, although due to their small size they make up only a fraction of our litter by volume. Although we don’t commonly think of them as plastic, cigarette butts mostly consist of a type of plastic called cellulose acetate, with a thin paper coating. When butts are thrown away, wind and rain can easily transport them through the stormwater system to waterways and oceans, where they can break down into small plastic fibres. The hazardous chemicals in cigarette butts can leach into aquatic ecosystems, degrading water quality and threatening marine life. Birds and aquatic animals sometimes mistake cigarette butts for food and ingest them, causing serious digestive problems that can even lead to death.

Balloons

When used outdoors, balloons and their attachments (including ribbons and balloon clips) can escape into the environment. Seabirds and other marine wildlife can mistake balloon fragments and clips for food, and become tangled in ribbons. Balloons can travel a long way. Surveys on Australia’s remote Lord Howe Island consistently find balloons and their attachments as some of the items most commonly ingested by seabirds. Zoos Victoria is campaigning to reduce the amount of balloon pollution, encouraging us to swap bubbles for balloons at outdoor celebrations. So far more than 40,000 people have promised to replace balloons with bubbles, or other wildlife-friendly alternatives.

Because of the potential for balloons to cause harm to wildlife and the environment, the Environment Protection Authority discourages their release at all public events.

Answer this question on Engage Victoria:

• What other options should the government consider to reduce plastic packaging in Victoria?

Microplastics

Microplastics are small plastic pieces less than 5 millimetres in diameter. Some microplastics are created when larger plastic litter breaks down in the environment. Others are deliberately manufactured, like microbeads (found in personal care and cleaning products) and nurdles (small plastic pellets used to manufacture plastic products). On average, Australia’s oceans already contain 4000 microplastic pieces per square kilometre.

Some research suggests that many marine animals cannot distinguish between their usual food source and microplastics. Microplastics remain in animals’ stomachs once ingested, reducing their capacity to

consume food and potentially causing starvation. Microplastics can also spread contamination and pollutants in the environment.  

**Microbeads**

Microbeads are small plastic particles that are found in some cosmetics, personal care and cleaning products, where they act as abrasives or exfoliants (Figure 1). Just one use of a face scrub that contains microbeads can release between 4594 and 94,500 microbeads to the environment. Microbeads are designed to be rinsed off and washed down the drain, but are not captured by most wastewater treatment systems. So, they often end up in lakes, rivers and oceans. Because they are so small and easily dispersed, it is nearly impossible to recover them from the environment.

*Figure 1: Close-up of microbeads as they appear in some beauty products*

Given the national and global nature of markets for these products, a national approach is desirable. State, territory and federal environment ministers have committed to eliminating the use of microbeads in personal care, cosmetic and cleaning products sold in Australia by July 2018. This is being pursued through a voluntary industry phase-out. Early reports indicate that the phase-out is progressing well. Of the 52 companies known to supply products containing microbeads in Australia, 42 (or 80 per cent) are already phasing out microbeads, or have plans in place to do so by 1 July 2018.

All Australian environment ministers have agreed to implement a national ban if by mid-2018 a voluntary approach proves unsuccessful. The Andrews Labor Government is committed to strong, national action to eliminate microbeads, and will advocate for a national ban if the voluntary approach is not effective in eliminating microbeads in Australia.

**Microfibres**

Synthetic fabrics, like polyester and acrylic, are commonly used to make clothing and many other everyday products. When these fabrics are washed, they shed plastic fibres, which are too small (less than 1mm) to be filtered out by wastewater treatment processes. Studies have shown that a single garment can produce more than 1900 fibres per wash. These fibres often end up in our waterways and oceans, where they are...
sometimes consumed by marine wildlife, and add to the general plastic load in the ocean.\textsuperscript{54} This is a complex, emerging issue that is likely to require further research into how best to reduce these impacts.\textsuperscript{55}

**Nurdles (plastic pellets)**

Nurdles are small plastic pellets (about the size of a lentil) that are the raw material used in some plastics manufacturing. They can enter the environment through accidental spills during transportation or manufacturing. Because nurdles are small and light, they are easily distributed by ocean currents. They are commonly found in large quantities in river systems and oceans around the world. Recently, Tangaroa Blue investigated the prevalence of nurdles in metropolitan Melbourne, surveying sites at factories and in the Port Phillip Bay catchment. Nurdles were found at every site, with concentrations at some suburban beach sites exceeding 200 nurdles per square metre.\textsuperscript{56}

Animals like fish, turtles and seabirds can mistake nurdles for food. When ingested, nurdles can obstruct an animal’s digestive systems, reducing their food consumption. Nurdles can easily take up toxins from the environment, making them potentially toxic to marine life.\textsuperscript{57}

As part of the Metropolitan Waste and Resource Recovery Group’s Litter Hotspots Program, Tangaroa Blue is working to reduce plastic pellets entering Port Phillip Bay. It is looking at the entire supply chain and working with companies to improve practices.\textsuperscript{58}

**How microplastics are distributed**

Microplastics, especially microbeads and microfibres, are often transported by stormwater and sewage.\textsuperscript{59} Because microplastics are so small, they often pass through filters designed to trap pollution in stormwater and sewage. There is an opportunity to investigate how different waste-water treatment options can reduce microplastic pollution. Research indicates that some treatment methods could reduce concentrations of microplastics.\textsuperscript{60}

\begin{itemize}
  \item Boddy, J. (2017) *Are we eating our fleece jackets? Microfibers are migrating into field and food.* Retrieved from: http://www.npr.org/sections/thesalt/2017/02/06/511843443/are-we-eating-our-fleece-jackets-microfibers-are-migrating-into-field-and-food
  \item European Commission, *Study suggests anaerobic digestion may reduce microplastics in sewage sludge.* Retrieved from: http://ec.europa.eu/environment/integration/research/newsalert/pdf/study_suggests_anaerobic_digestion_may_reduce_microplastics_sewage_sludge_4931a3_en.pdf
\end{itemize}
6. Reducing the impacts of plastic pollution

What is happening in other parts of Australia and overseas?

**Government action**

All Australian jurisdictions run programs to reduce and manage litter. Our progress is reported each year by the National Litter Index, a comprehensive Australia-wide litter survey.

Internationally, France passed legislation in 2016 to reduce the environmental impacts of single use plastic tableware (plates, cups, and cutlery). The legislation comes into effect in 2020, and will require disposable tableware to be compostable at home, and composed of at least 50 per cent biologically-sourced material.

**International collaboration**

At the Fifth International Marine Debris Conference in 2011, delegates came together to develop the *Honolulu Strategy*. The strategy provides a framework for global efforts to reduce the impacts of marine debris.

In 2012, the United Nations Environment Programme launched the *Global Partnership on Marine Litter*, a voluntary partnership for international governments, other organisations, and individuals to reduce the impacts of marine litter.

**Container deposit schemes**

There is growing support across Australia and the world for governments to introduce container deposit schemes to reduce litter and increase recycling. Container deposit schemes require that a deposit is paid upon purchase of certain drink containers. The deposit is then refunded when that container is returned for recycling.

Container deposit schemes have been introduced in more than 20 countries across the globe at local, regional, or national scales. In Australia, South Australia and the Northern Territory have container deposit schemes in place. New South Wales, Queensland, Western Australian and the Australian Capital Territory have committed to introduce a container deposit scheme in the near future.

Container deposit schemes have been shown to be effective in increasing container recycling and reducing litter. But, any new scheme needs to be a good fit for Victoria and its benefits need to outweigh the costs.

For example, an extensive analysis of the costs and benefits of introducing a national container deposit scheme, released in 2014, found that a container deposit scheme is by far the least cost-effective option for reducing packaging waste. Some local councils tell us that a container deposit scheme could make the business of kerbside recycling collection – which collects a wide range of products, not just containers – less viable. Containers already recycled through waste collection would be diverted, while kerbside collection would need to continue to collect other products.

We will continue to monitor other states’ progress as they develop their approach to container recycling to understand the benefits and costs of their models, including whether they should be considered for Victoria.

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Community action

In Australia there is a diverse range of community action to reduce the impact of plastic pollution:

- **Plastic Free July** challenges participants to refuse single use plastics during July. Plastic Free July has rapidly expanded since its 2011 beginnings as a small-scale local initiative in Western Australia. In 2016 more than 1 million people took part worldwide.

- **Boomerang bags** is a grassroots movement that encourages communities to make and distribute bags from recycled materials, as an alternative to single use plastic bags.

- **Take 3 for the sea** is a movement that asks us all to take three pieces of rubbish with us when we leave the beach, a waterway, or anywhere!

- **Beach Patrol** is an organised network of volunteer beach cleaning groups that operate mainly within metropolitan Melbourne.

Innovation and technology

Companies and entrepreneurs across the globe are responding to our plastic pollution problem by coming up with innovative alternatives for single use plastic items, such as:

- **Bakeys**: an Indian company that produces edible and compostable cutlery, as an alternative to single use plastic or wood.

- **Ooho**: an edible, biodegradable alternative to plastic water bottles. Ooho can also be used to contain a wide range of other liquids, from soft drinks to cosmetics, and is cheaper than plastic.

Options for further action on plastic pollution

Taking action to reduce plastic pollution

One of the most effective ways to reduce plastic pollution is to take individual action. We can avoid single-use plastic items by replacing them with reusable alternatives.

We can also support companies that produce or supply plastic free alternatives. Buying products without excess packaging helps to reduce plastic waste, and sends a strong signal to retailers. We can use online information services like Beat the Microbead (www.beaththemicrobead.org) to avoid purchasing personal care or cleaning products that contain microbeads.

Voluntary action has a real impact. Plastic bag use in Australia reduced by 34 per cent from 2002 to 2005, following a range of government and community initiatives to encourage shoppers to refuse plastic bags, including a voluntary code of practice for retailers.63

Recycling is another way we can help the environment. Household rubbish bins often contain items that could have been recycled, and our recycling bins are often contaminated with non-recyclable items that cause problems during sorting and increase the costs of recycling services. Recycling services differ from council to council, so always check what is collected in your council area before putting out your recycling.

Expanding our litter programs

Victoria has several highly successful litter programs that target plastic pollution and broader litter issues. We could expand our current litter programs and consider new, innovative ways of specifically targeting plastic pollution. The information we have available suggests that programs to reduce plastic bag litter are most...
Reducing the impacts of plastics on the Victorian environment

Join the discussion

Providing more education on plastic pollution

Education can be an effective way of changing behaviour. Many organisations, including community groups and councils, already run education campaigns about the harmful impacts of litter and microplastic pollution. Victoria has a waste education strategy that guides our work. It establishes litter prevention as a priority area and highlights the importance of local planning for litter prevention. It also identifies resource recovery as a priority area for education, with an emphasis on helping households and businesses to recycle more.

Collecting more data on plastic pollution

The Andrews Labor Government is strongly committed to evidence-based policy. Collecting data about the sources, fates and impacts of plastic pollution in Victoria will allow us to act more effectively to reduce its impact.

Developing markets for recycled plastics

Developing stronger markets for recycled plastics will increase the value of plastic waste, driving it out of the waste stream and into reprocessing facilities. The Victorian Market Development Strategy for Recovered Resources, released in 2016, explains how the government plans to develop the market for recycled products. The strategy identifies developing markets for flexible plastics as one of Victoria’s five-year priorities.

Encouraging innovation to produce alternatives to plastic

Supporting research and development into more environmentally friendly alternatives to single-use plastic items could reduce the amount of waste that we produce.

Answer these questions on Engage Victoria:

- How can Victorians be encouraged to further reduce the impacts of litter in their communities?
- What other plastic pollution issues should government, business and communities work together to address?
- What strategies to address plastic pollution do you think would be most effective?

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7. Please join the discussion

Join the discussion on Engage Victoria

Households, business, community groups and governments – let’s all work together

Dealing with plastic pollution is a difficult task. Reducing plastic bag use in Victoria is a good starting point and complements Victoria’s current work to reduce litter.

This is a great opportunity to share your views about plastic pollution, and how we can ban lightweight plastic bags in Victoria. Your feedback will assist the government in developing a plan to better manage plastic bags in our state.

Survey questions

Answer these questions on Engage Victoria:

1. Do you support a ban on single-use lightweight plastic shopping bags?
2. Should a ban include thick plastic shopping bags?
3. Should a ban include plastic bags that break down over time such as biodegradable, degradable or compostable bags?
4. If lightweight plastic bags were banned, we will need to consider exemptions for some purposes, like medical or security activities. Are there any types of businesses, organisations or activities that you think should be exempt from a plastic bag ban?
5. If lightweight plastic shopping bags were banned, what alternative bags would you prefer to use?
6. What other options should the government consider to reduce plastic packaging in Victoria?
7. What else should the Victorian Government do to reduce the impacts of litter at a local level and across our state?
8. How can Victorians be encouraged to further reduce the impacts of litter in their communities?
9. What other plastic pollution issues should government, business and communities work together to address?
10. What strategies to address plastic pollution do you think would be most effective?
Next steps

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<td>Department of Environment, Land Water and Planning</td>
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Key dates

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<tr>
<td>25 January 2018</td>
<td>Consultation process closes</td>
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<tr>
<td>February 2018</td>
<td>Collation and analysis of submissions</td>
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<tr>
<td>March 2018</td>
<td>Feedback published</td>
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Contact us

For more information, contact the Waste and Resource Recovery team at the Department of Environment, Land, Water and Planning via our email: [wastepolicy@delwp.vic.gov.au](mailto:wastepolicy@delwp.vic.gov.au).


Reducing the impacts of plastics on the Victorian environment 29

Join the discussion

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