Government of **Western Australia**
Department of **Water and Environmental Regulation**

Stage 2 of

Western Australia's **Plan** for **Plastics**

Implementing a phase-out of single-use plastics

September 2022

WA Plan for Plastics – Stage 2

Implementing a phase-out of single-use plastics

Department of Water and Environmental Regulation

EXECUTIVE SUMMARY

Western Australia's Plan for Plastics was first announced in November 2020. The Plan was released in response to strong community support in Western Australia (WA) for comprehensive action to address the impacts of single-use and disposable plastics. The Plan is consistent with the waste hierarchy by prioritising avoidance of plastic and waste generation and improving the recovery of alternative products.

The Plan includes two stages of regulations to ban the use of specified plastic products.

Stage 1 regulations were gazetted in December 2021 for: disposable plastic straws, plates, bowls, cutlery, stirrers, cups for cold beverages and all foods, thick plastic bags, expanded polystyrene food containers, unlidded take-away food containers and helium balloon releases.

Stage 2 regulations commence in February 2023 for: barrier/produce bags, microbeads, polystyrene packaging, polystyrene cups, coffee cups and lids, cotton buds with plastic shafts, lids for cups/bowls/containers, and oxo-degradable plastics (plastics designed to break up into fragments more rapidly under certain conditions).

It is estimated that Western Australians consume more than 700 million Stage 2 items each year, equating to more than 10 billion items over a 20-year period. Globally the use of disposable plastic has been increasing each decade. These actions have led to plastic being found everywhere as littered items and plastic fragments (called microplastics). The impacts of these plastics are broad reaching and include:

- **environmental harm** – damage to fauna, ecosystems and biodiversity
- **health** – microplastics prevalent in the food chain and in our bodies
- **waste** – poor recycling rates and many items contaminating viable recycling streams
- **resource loss** – plastics designed for limited use and predominantly disposed to landfill
- **climate** – increased plastic production driving growing greenhouse gas emissions.

The Government of Western Australia is committed to implementing change. This consultation document provides a detailed overview of the proposed Stage 2 regulations. This document supports consultation with community and stakeholders, who are invited to provide feedback. Information in this document includes:

- how to submit feedback
- the scale of the issue being addressed
- comparison of actions on plastic in other jurisdictions
- a cost-benefit analysis of policies considered
- the objectives and scope of proposed action
- the potential national market impacts posed by these actions.

The State Government proposes a ban on Stage 2 items as the best approach to achieve positive outcomes across all objectives. Economically, a statewide ban was assessed to generate a $40 million-plus outcome for WA over a 20-year period. These net economic benefits are complemented by the significant environmental benefits of reducing plastic in the environment.

Consultation will close at 5:00pm on 18 November 2022 (WST). Written submissions can be sent to plastic-action@dwer.wa.gov.au or in hardcopy to Prime House, Locked Bag 10, Joondalup DC, WA 6919.

There is an accompanying online survey. Please complete the online survey most relevant to the sector you represent.

GLOSSARY OF ACRONYMS

APCO	Australian Packaging Covenant Organisation
DWER	Department of Water and Environmental Regulation
EPS	Expanded polystyrene
FOGO	Food organics and garden organics
LCA	Lifecycle analysis
LDPE	Low-density polyethylene
NPV	Net Present Value
PE	Polyethylene
PET	Polyethylene terephthalate
PLA, cPLA	Polylactic acid, crystallised polylactic acid
SUP	Single-use plastic

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1. About the consultation

This consultation seeks feedback on the phase-out of single-use plastic items identified in Stage 2 of WA's Plan for Plastics.

The items proposed for phase-out regulations in 2023 are:

- expanded polystyrene packaging
- oxo-degradable plastics (plastics designed to break up more rapidly into fragments under certain conditions)
- barrier/produce bags
- expanded polystyrene cups
- coffee cups and lids
- lids for cups, bowls and containers
- cotton buds with plastic shafts
- microbeads.

These items are hard to recycle, are often littered and contaminate waste streams.

1.1 The survey

The Department of Water and Environmental Regulation (the department) invites you to provide feedback on the proposed phase-out of Stage 2 single-use plastic items by completing an online survey. The survey will close at 5:00pm on 18 November 2022 (WST).

1.2 Making a written submission

Key questions are provided throughout this document as a guide to structure written submissions. A full list of questions is provided in Appendix 2.

Written submissions must be received by 5:00pm (WST) on 18 November 2022. Submissions received after this date may not be considered. Written submissions can be lodged by email (preferred) to plastic-action@dwer.wa.gov.au. Hard copies can be mailed to: Single-Use Plastics Team, Department of Water and Environmental Regulation, Locked Bag 10, Joondalup WA 6919

1.3 Information workshops

The department will host several information workshops throughout the consultation period. These will be accessible online, with some dedicated to regional attendees. Details about these sessions will be posted on the department's website and sent to those who have signed up to be notified about the Stage 2 consultation.

2. INTRODUCTION

2.1 UNDERSTANDING THE PLASTIC PROBLEM AND THE NEED FOR URGENT ACTION

Globally, plastic use from the 1950s to 2017 generated 9 billion tonnes[1] of plastic waste, 79 per cent of which is accumulating in landfills or the environment, with only 9 per cent of this recycled and 12 per cent incinerated[2]. Virgin plastic production is projected to grow from 370 million tonnes per year currently to one billion tonnes per year by 2050[3]. This production will further contribute to climate change as the world strives to decarbonise.

Half of all plastic produced is single-use by design[4], most of which cannot be recycled and ends up in landfill, as litter in the environment or is incinerated.

Australians are ranked as the second-highest generators of single-use plastic waste globally, producing over 59 kg per person per year[5].

There are many known and emerging impacts of plastics, from their production, their use as a product or when in the environment, including:

- environmental harm – damage from plastic litter and fragmented plastics
- health – microplastics in the food chain and in our bodies
- waste – plastic's poor recycling track record
- resource loss – plastics designed for single-use lost to landfill
- climate – growing production feeding growing emissions.

Plastic pollution in the Swan Canning Estuary

The Department of Biodiversity, Conservation and Attractions is the lead agency undertaking a monitoring program to determine the distribution, extent and type of plastic pollution found in surface water and beaches of the Swan Canning Estuary. Sampling occurred on four separate dates between March and December 2021.

A total of 38 beach sites 100 m long were sampled, starting from the water's edge up into the vegetation. On all sampling occasions EPS fragments, whole beads (bean bag filling) and whole items were collected. EPS cups, takeaway food containers, plates and bowls were all collected during the sampling period. Only one sampling site did not contain EPS on any of the four sampling occasions.

Most EPS was found in the wrack line (where items are deposited at high tide) and in vegetation, where it becomes lodged. At one site, in Mosman Park, 80 pieces of EPS per square metre were found. Within the vegetation section at this site, EPS counts were over 500 fragments per square metre (see picture).

When ranked against all other types of litter collected (135 types) during all sampling occasions, unidentified EPS fragments were ranked 1st, whole EPS beads 2nd, identifiable EPS fragments of or whole cups/plates/bowls were ranked 6th and takeaway containers were ranked 19th.

EPS in the wrack line at the Mosman Park site.

2.1.1 Environmental harm – damage from plastic litter

Plastics are entering our land, waterways and marine environments, through both deliberate littering and accidental release. Across the globe an estimated eight million tonnes of plastic leaks into our oceans each year[6], with up to 80 per cent of the plastic litter arriving from land-based sources and half of it is identifiable as single-use plastics[7].

Plastic litter in the marine environment impacts through entanglement, ingestion and chemical contamination, with wildlife considered most at risk being seabirds, turtles and marine mammals[8]. Plastic fragments in the gut of wildlife are fed to their young, can impair their nutritional energy balance and affect their fertility and growth.

Plastic pollution is entering our rivers and estuaries, with increasing plastic concentrations being found in their water and shorelines. Our own Swan Canning Estuary is being studied by the Department of Biodiversity, Conservation and Attractions and the Department of Water and Environmental Regulation. Sampling commenced in 2021 to understand and track the prevalence, sources and potential for impact of plastics.

The economic impact of long-lived plastic litter in the marine environment is also significant. In 2018, it is estimated plastic pollution cost $6-19 billion globally from impacts on tourism, fisheries and aquaculture[9].

2.1.2 Health – Microplastics and plastic additives in the food chain

In addition to the environmental impacts of macroplastic litter, there is increasing concern about fragmented microplastics and plastic chemicals entering food chains and affecting the balance of ecosystems that are already under pressure.

Plastics are found from Antarctica to deep ocean trenches[10]. Rather than decomposing, plastic turns into ever smaller fragments that are long-lived and chemical additives leach out. Scientists are able to identify their presence moving through food chains and entering our bodies. A recent study by the University of Newcastle estimated our average weekly intake of plastics was about 5 g per person, depending on our location, lifestyle and diet[11]. A University of Queensland study[12] looked at a wide variety of store-bought rice and found a multitude of plastic polymers in samples.

Once within our bodies, these micro and nanoplastics migrate into our bloodstream and organs. In pregnant women it has been found to move through the placenta to the foetus[13]. What these tiny particles of plastic do in our bodies is just beginning to be understood. From recent studies we know micro and nanoplastics are:

- capable of causing cellular damage[14] and inflammation[15]
- carry chemical additives such as plasticisers, flame retardants and colorants, some of which are known to disrupt the body's hormonal activity or accumulate in the body[16]
- able to carry chemicals absorbed from the environment such as pesticides[17].

We do not yet know the exposure thresholds that could trigger cellular damage or the degree to which chemical additives leach into our bodies. However, with the findings to date, we should reduce our use of plastics and their leaching into the natural environment.

2.1.3 Plastics and recycling

Single-use plastics are difficult to collect, sort and recycle. They are often consumed away from the home where collection options are limited for takeaway items, are contaminated by food, made from multiple polymer types and mixed materials, include small items unable to be sorted at recycling facilities (such as lids) and are made from polymer types that have little or no value as recycled commodities. Furthermore, current packaging designs and collection, technical and commercial barriers substantially reduce the waste stream sorted for recycling in material recovery facilities.

In Australia, the design and disposal of product packaging has been targeted through the 2025 National Packaging Targets[18]. These voluntary targets, supported by Australian industry and governments, apply to all packaging that is made, used and sold in Australia. The Australian Packaging Covenant Organisation (APCO) facilitates the delivery of the following key targets:

- 100 per cent reusable, recyclable or compostable packaging
- 70 per cent of plastic packaging recycled or composted
- 50 per cent of average recycled content included in packaging (revised from 30 per cent in 2020)
- the phase-out of problematic and unnecessary single-use plastics packaging**.**

In Australia recycling of plastic polymers for packaging is stagnant, with only polyethylene terephthalate (PET) likely to meet plastic recycling APCO targets by 2025. The lack of recycling of plastic is also indicated in a recent study by the Minderoo Foundation[19] where the 100 largest plastic polymer producers were found to use virgin feedstock for 98 per cent of plastic production and only 2 per cent recycled polymers.

APCO concluded “bold interventions in policy, production, education and engagement” were needed to produce systemic change and meet reduction targets[20].

Single-use items are the most common use of plastics, consuming a third of global plastic produced[21]. An estimated 95 per cent of the material value of plastics in packaging is lost, equating to an annual value loss of $80-120 billion globally[22]. Data from 2020 indicates that only 16 per cent of plastic packaging in Australia was recovered and returned to a circular pathway[23]. This linear take-make-waste pathway in Australia leads to a loss of resources valued at about $360 million.

The Ellen MacArthur Foundation has championed circular models that cycle resources through industrial or biological pathways, beginning with products intentionally designed for reuse or refill, dismantling and repair. An increasing number of companies are committing to circularity for plastic products[24]. However, single-use plastic production from virgin plastic is predicted to grow globally by 30 per cent over the next five years[25].

2.1.4 Climate – Growing production feeding growing emissions

The production, recycling and incineration of single-use plastics is a growing source of greenhouse gas emissions, with an estimated 1.8 billion tonnes of greenhouse gases emitted globally from these sources per year[26]. Based on current trends, greenhouse gas emissions from plastics are predicted to climb to 19 per cent of global emissions by 2040[27].

Lifecycle analyses show the reusable alternatives to single-use plastics generate substantially less greenhouse gas emissions as well as other environmental impacts[28].

2.2 Environmental Impacts of Stage 2 items

For the items targeted in Stage 2 regulations, the specific environmental impacts are outlined below.

2.2.1 Fragmentable by design or construction plastics

The fragmentable plastics targeted to be phased out are:

- expanded polystyrene (EPS) packaging – loose fill and moulded for goods packaging under 45 kg
- degradable plastic that accelerates fragmentation under certain conditions in the environment.

Impacts of expanded polystyrene packaging

Polystyrene is a hard, light synthetic resin produced by the polymerisation of styrene. Expanded polystyrene (EPS) is one form it can take. Polystyrene has been in commercial production since the late 1930s and EPS 'foam', rigid containers and films have become commonly used in packaging because of their low production costs and useful thermal and shock-absorbing characteristics.

The environmental impacts of EPS are:

- it is a common source of marine and estuarine litter, including in the Swan Canning Estuary, partially because of its lightweight flyaway properties
- it readily fragments, making it a high-risk source of microplastic pollution
- it is hard to recycle economically and there is a limited number of Australian recyclers, with most kerbside recycling not allowing EPS
- EPS containers are estimated to have lifetimes of hundreds to thousands of years in the environment, posing long-term risks to wildlife
- there is evidence of health impacts from nano-EPS affecting human immune cells, causing inflammation[29].

Alternatives to EPS packaging are now coming into use, especially for low-weight items, and these are discussed later.

Impacts of degradable plastics

Degradable plastics have emerged in recent years in response to concern about long-lived plastics littering the natural environment. Degradable plastics are now in use for a wide number of single-use products such as bin liners, gloves, magazine wraps, dog waste bags, garment covers and agricultural mulch film.

They have been designed with a metal additive to become brittle and break up under certain conditions, such as exposure to light, bacteria and heat. Oxo-degradable plastics are one type of degradable plastic. Landfill degradable is a new type on the market that fragments more readily within landfill-like conditions and exposure to bacteria. Regardless of the trigger conditions to fragment, all these degradable plastics can end up as long-lived littered fragments in the environment.

The environmental impacts of degradable plastics are:

- in the open environment, this plastic creates fragmentable litter, breaking up into long-lived microplastics
- these fragmentable plastics can contaminate waste streams
- there are potential toxic effects of additives leaching out of some degradable plastics[30]
- the degradable label has created confusion for the community and businesses, who believe they are purchasing a product with low environmental impact.

To alleviate these effects, degradable plastics need to be replaced with suitable non-fragmentable alternatives, ideally reusable or Australian Standard-certified compostable options.

2.2.2 Single-use plastic food and beverage items

The targeted food and beverage-related plastics to be phased out are:

- single-use plastic produce/barrier bags
- EPS cups and remaining trays
- single-use plastic coffee and hot beverage cups not certified to the Australian Standards for composting
- single-use plastic lids for cups, bowls and containers banned in Stage 1.

These items persist long term in the environment as fragmented plastics if littered. Keep Australia Beautiful Council identified takeaway food plastics as the highest contributor of plastic litter in its 2019-20 Litter Index for WA[31].

Impacts of produce/barrier bags

Produce or barrier bags are usually found in rolls to be used for carrying loose fruit and vegetables or dry bulk produce. They are ultra-lightweight and typically made from polyethylene.

Lightweight plastic carry bags were phased out from 2018 and all remaining plastic carry bags have been banned from 1 July 2022. An estimated 112 million[32] produce bags are used annually in WA.

The environmental impacts of produce bags are:

- they are a lightweight flyway item with a long lifetime in the environment
- they are designed for single-use with few recycling opportunities, creating a loss of resources at their disposal
- polyethylene waste fragments in soil affect soil aeration, water penetration and nutrient flow
- like carry bags, they cause environmental harm to wildlife through ingestion and entanglement, and can also smother wildlife.

Like single-use plastic carry bags, there are alternative reusable produce bag options as well as single-use compostable paper-fibre alternatives.

Impacts of takeaway coffee cups and lids

In Australia, takeaway coffee cups used to hold hot beverages are typically made of paperboard with a plastic lining. The lining ensures the paperboard cup retains its structural integrity when holding a hot liquid. The plastic lining is commonly made from low-density polyethylene (LDPE) or polylactic acid (PLA) and cannot easily be separated from the paperboard for recycling.

The EPS 'foam' cup is also part of the hot beverage cup market, but in smaller volumes and typically used for soup.

Western Australians are estimated to consume 182 million coffee cups a year[33] and coffee cups were found to be 1 per cent of littered items, amounting to over one million cups in the environment each year. An estimated 68 per cent of takeaway cups are served with lids, equating to over 120 million lids used in WA per year.

The adverse impacts of takeaway coffee cups and lids include:

- they are designed for single-use with few recycling opportunities, creating a loss of resources at their disposal and a high demand for new resources and energy in the manufacture of these items
- their plastic lining creates waste management challenges, restricting recycling and composting options, and they are not accepted in kerbside recycling
- the plastic lining, whether conventional or bioplastic, persists in the environment, as does EPS foam as discussed under EPS packaging
- PLA (an increasingly common material for cup lids) contaminates PET recycling, even in small quantities
- the cup lids are usually made from High Impact Polystyrene (HIPS)♺ which, though potentially recyclable, is not accepted for collection in kerbside recycling. Both lids and cups are typically disposed of together in landfill.

Compostable and reusable cups are available and reusable cup schemes are emerging in metropolitan Perth and regional areas. Single-use non-plastic alternatives to hot cup lids are available, such as paperboard and bagasse, with their use increasing.

Impacts of lids on takeaway foodware and cold beverage and EPS drinkware

Lids on takeaway food and drinkware come in many different varieties, from films on bubble tea cups to PET and polypropylene on common takeaway food containers, high-impact polystyrene lids on cold cups and EPS beverage cups.

The environmental impacts of takeaway food or drinkware lids include:

- takeaway food and drink lids and caps are in the top 10 of ocean litter (6 per cent of the total), which sits higher by volume than industrial packaging[34]
- co-mingled recycling opportunities are affected by plastic takeaway bowls, containers, cups and their lids, often being of different polymer types, small in size and disposed of together, with the vessel being typically contaminated by food
- plastic polymers such as polystyrene, crystallised polylactic acid (cPLA), PLA and other plastic polymer lid types (e.g. plastic films) are not commercially viable to recycle and also persist in the environment when littered
- cPLA and PLA contaminate PET recycling, even in small quantities
- they are designed for single-use, creating a loss of resources at their disposal and a high demand for new resources and energy in the manufacture of this item.

2.2.3 Small personal care plastics

The remaining plastic items targeted for phase-out are principally for personal care use:

- cotton buds with plastic shafts
- microbeads in rinse-off personal care products, aligned with a voluntary phase-out led by Accord Australasia (Accord) through their BeadRecede campaign. These products include cosmetics, deodorants, haircare products, oral hygiene, skincare and cleaning. Plastic polymer types found in products containing microbeads include methyl methacrylate, polymethyl methacrylate, polytetrafluoroethylene, nylon variants, PET, polyethylene, polylactic acid, polypropylene and dimethicone.

Impacts of cotton buds

Single-use cotton buds with plastic shafts or stems have dominated the range of buds on the market, with an estimated five billion single-use plastic cotton buds produced each day globally[35]. As plastic cotton buds have been identified as a high litter item in waterways and marine environments, and their impacts on wildlife are known, product manufacturers have begun replacing them with paper and bamboo alternatives.

The cotton buds often arrive in the environment as a sewage debris item, through disposal down toilets. The narrow width of cotton buds enables them to slip through sewage screening mesh. The UK's Great British Beach Clean in 2018 found 22 plastic cotton buds in every 100 m of beach surveyed[36]. In larger Australian cities, the buds are more likely to accumulate in deeper waters as sewage outfall infrastructure is often built further out to sea.

The environmental impacts of plastic-shafted cotton buds include:

- the polypropylene stems of cotton buds have been found to efficiently adsorb persistent organic pollutants while at sea, enabling pollutants to concentrate in stem fragments
- they cause harm to marine wildlife in whole or fragmented forms. Researchers have found cotton bud fragments in seabirds and whole sticks in turtles. Like other plastics, once ingested the fragments may remain trapped in the digestive tract, causing malnutrition and eventual starvation. In addition, they can cause physical damage to an animal's gut on ingestion.[37]

Compostable single-use alternative cotton buds with stems made from paper or bamboo are commonly available. Reusable washable buds are also available.

Impacts of microbeads

Microbeads are tiny, solid, manufactured plastic particles, 5 mm or less in diameter, that are added to a range of consumer products for their abrasive qualities and low cost. They have been added to a wide array of personal care and cleaning products such as scrubs, hair products and toothpaste[38].

Personal wash-off, wipe-off and rinse-off products enter waterways and the marine environment through drains into the sewage, where their small diameter prevents removal.

In 2016 at a meeting of Australian Environment Ministers, an agreement was made for an industry-led voluntary action to phase out plastic microbeads in personal care, cosmetic and cleaning products used in rinse-off applications. A 2017 study found 67 per cent of cosmetic products and 30 per cent of

facial scrubs and creams contained plastic microbeads. Three years since this voluntary ban commenced, a study commissioned by the Commonwealth Department of Agriculture, Water and Environment looked specifically at products under the voluntary ban and found only 0.7 per cent (58 products) of the rinse-off personal care products surveyed contained microbeads[39].

The environmental impacts of microbeads are:

- their small size means they can enter waterways and marine environments more readily and not be removed through litter clean-ups
- they are insoluble in water and are thought to never fully degrade because of cold water temperatures, reduced sunlight and the chemical makeup of the plastic polymers[40]
- they are readily ingested, entering food chains and affecting gut health in marine biota
- the chemical additives within or pollutants attached to the microplastics may pose health risks.

Alternative natural abrasive ingredients are readily available.

3. NEED FOR GOVERNMENT ACTION

Plastic is an inexpensive, light material that can be manufactured to exhibit a wide variety of appealing characteristics like durability, transparency, low thermal conductivity, cushioning strength to protect items on impact and strength when in contact with water. Plastics have become embedded in our society and their properties have seen a proliferation of single-use products and a decline in reuse practices. This has led to serious and growing impacts for our environment, health, waste management systems and achieving a circular economy.

With plastic production on the increase, governments have recognised the urgency of acting through regulation, complementing existing voluntary measures and self-initiated action by businesses and consumers[41].

In WA this began in July 2018 with the State Government introducing the lightweight plastic bag ban, an initiative supported by 84 per cent of the WA community. A subsequent issues paper *Let's not draw the short straw*[42] in 2019 attracted almost 9,500 submissions and identified strong community support for government regulation, alongside sustainable product design and education campaigns. Informed by this community input, the WA Plan for Plastics was developed and released in 2020, announcing a staged approach with regulation as a core strategy. The Stage 2 regulations are expected to come into effect in February 2023, with various phase-in periods of enforcement depending on the type of item. Across Australia and globally, jurisdictions are acting through regulation, education and research.

3.1. OBJECTIVES OF THE WA PLAN FOR PLASTICS

The WA Plan for Plastics builds on the vision of the *Waste Avoidance and Resource Recovery Strategy 2030* for "Western Australia to become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste".

The WA Plan for Plastics promotes actions to reduce the impact of plastics that are consistent with the waste hierarchy which:

- prioritises avoiding single-use plastics
- replaces single-use items with reusable alternatives, wherever possible
- promotes non-plastic single-use alternatives that can be recovered, recycled or composted if it is not possible to use reusable items
- minimises litter or contamination of waste treatment facilities by not using single-use plastics.

As in Stage 1, the Stage 2 of the WA Plan for Plastics aims to address the environmental, health and waste impacts of a range of common single-use plastics through reducing their use and supply in WA. In so doing, the Plan aims to achieve positive, innovative outcomes for consumers, businesses and industry for our collective long-term future.

To achieve this, it is recognised that not only the sale and supply of single-use plastics needs to be addressed but also reuse pathways and waste management of plastics and alternative materials. This ties in with the State Government's goal to transition all local governments in the Perth and Peel regions to food organics and garden organics (FOGO) collections by 2025. While current composting facilities cannot take fibre-based packaging, in order for this to be achieved in the future, waste streams need to be 'cleaned' of contaminating plastics to enable effective treatments.

3.2. AUSTRALIAN AND INTERNATIONAL LANDSCAPE ON PLASTIC REGULATIONS

Many of the items in Stage 2 scope are facing action elsewhere in Australia or internationally. Table 1 shows bans in place, underway or announced for the items in Stage 1 and 2 of the WA Plan for Plastics. Under the National Plastic Plan, APCO is working with industry sectors to develop action plans and roadmaps for industry's phase-out of problematic packaging, including business-to-consumer EPS packaging and fragmentable or degradable plastic packaging[43].

Table 1 - The regulatory landscape in jurisdictions within Australia and the Commonwealth relating to Stage 1 and Stage 2 items in the WA Plan for Plastics

WA (Current)	**Single-use plastic item**	**VIC**	**SA**	**QLD**	**ACT**	**NSW**	**TAS**	**NT**	**Commonwealth** All voluntary & industry led
Stage 1 End of 2021	Bowls		2023-25	Sep 2021	from 2023	Nov 2022	2025	2025	
	Cups for cold drinks & food		2023-25	2024	from 2023	identified			
	Cutlery	Feb 2023	Mar 2021	Sep 2021	July 2021	Nov 2022	2025	2025	
	Helium balloon releases	July 2021	2023-25	2011			2013	2025	
	Plates	Feb 2023	2023-25	Sep 2021	from 2023	Nov 2022	2025	2025	
	EPS food containers	Feb 2023	Mar 2022	Sep 2021	Jul 2021	Nov 2022	2025	2025	Dec 2022
	Stirrers	Feb 2023	Mar 2021	Sep 2021	Jul 2021	Nov 2022	2025	2025	
	Straws	Feb 2023	Mar 2021	Sep 2021	Jul 2022	Nov 2022	2025	2025	
	Thick plastic bags		2023-25	identified	from 2023	identified		2025	
Stage 2 from end of 2022	Barrier/produce bags		2023	2024		identified			
	Microbeads			Sep 2023		Nov-2022		2025	Voluntary ban from 2016
	Oxo-degradable plastics	Feb 2023	Mar 2022	Sep 2024	Jul 2022	identified			APCO roadmap by July 2022
	EPS cups		Mar 2022	Sep 2021		Nov 2022	2025		
	Takeaway coffee cups/lids		2024	identified	identified				
	Cold cup lids		2024	identified	identified	identified			
	Takeaway bowl & container lids		2024	identified		identified			
	Cotton buds with plastic shafts	Feb 2023	2023	Sep 2023	Jul 2022	Nov 2022			
	EPS packaging		Identified	Sep 2023-24				2025	APCO roadmap by July 2022

Similar ban identified and active
Partial or similar ban identified and under development
Item identified for future ban

In addition there are some local government by-laws regulating use of these items such as City of Hobart by-laws have banned cutlery, straws, containers and coffee cups and their plastic lids in businesses selling takeaway food.[44]

Internationally, the Stage 2 items are being addressed through regulatory action around the world including:

- New Zealand has committed to phasing out **EPS food and beverage packaging**, **oxo- and photo-degradable plastic** products and **plastic-stemmed cotton buds** by October 2022 and barrier bags by mid-2023. It has also proposed a ban on all **EPS packaging** by 2025 and on single-use plastic **cold cups and their lids**, made from or lined with hard to recycle plastics 3, 4, 6 and 7. [45]
- France has banned **plastic produce bags** for unprocessed fruit and vegetables (loose or pre-packaged by the retailer) under 1.5 kg from January 2022 under circular economy legislation[46]. The ban in 2022 applies to 30 specific fruit and vegetables, and the ban will extend to more fragile or soft-ripe produce up to 2026. **Plastic single-use cups** including **EPS cups** and **cotton buds** were banned in 2020[47].
- The European Parliament in 2019 adopted a single-use plastic directive to its member nations to ban **plastic shafted cotton buds**, **EPS cups** and all products made of **oxo-degradable plastic**.[48]
- Ireland is legislating a 20 cent levy on **single-use coffee cups**, in keeping with their approach on carry bags, and total ban on disposable cup use by sit-in customers at cafes or restaurants (as part of Circular Economy Bill). Recent polls have shown strong community support for a levy.
- In 2015 the US Congress passed the Microbead-Free Waters Act prohibiting the manufacturing, packaging and distribution of rinse-off cosmetics containing plastic **microbeads**[49].
- The European Parliament is currently consulting on microplastics, including microbeads, following a proposal by the European Chemicals Agency (ECHA) to restrict all intentionally added microplastics, including **microbeads** and biodegradable microplastics, to consumer or professional products.[50]
- The UK government has passed a Plastic Packaging Tax which caps the manufacture and import of single-use and supply chain packaging, including **EPS packaging** and **oxo-degradable plastic** packaging and taxes those with less than 30 per cent recycled content. The tax came into force in April 2022.[51]
- The Scottish and UK Parliaments passed bans in 2019 and 2020 respectively on plastic-shafted **cotton buds**[52].

In addressing Stage 2 items, the State Government is acting on problematic plastics targeted by other leading states and nations to address plastic pollution and circular economy goals. This combined action alerts overseas and local manufacturers and suppliers to the need to adopt alternative materials and product design as well as reuse and recycling practices.

3.3 Policy tools for government

To reduce the availability and use of single-use items, a range of tools can be employed by government with varying impacts and costs. The common policies and those assessed in further detail for Stage 2 items are:

- education and behaviour change campaigns, targeting the item and behaviours associated with its use
- government incentives paid to manufacturers or distributors to promote sustainable alternatives to plastic products
- introduction of a levy on distributors, raising the cost of a targeted item for the distributor and potentially passed on to retailers and consumers to deter its use
- a statewide ban on sale and supply of items
- voluntary agreements with retailers to encourage transition to use of non-plastic products.

The next two chapters assesses the single-use plastic items against the alternative items across their lifecycle in terms of environmental impact and in a cost-benefit analysis comparing the effectiveness of different policies to achieve the objectives of the WA Plan for Plastics, while minimising economic impact on consumers and businesses.

4. COST-BENEFIT ANALYSIS OF POLICY OPTIONS

A cost-benefit analysis (CBA) was undertaken of Stage 2 items to assess the net economic impact for WA. The analysis tested multiple policies as compared with a status quo base case (no change).

Not all Stage 2 items have been assessed using the same methodology, as detailed in the summary for each item in Section 5. Availability of data has influenced the results and sensitivities tested. For example, modelling costs and benefits of barrier bags, when replaced with readily available reusable alternatives such as bring-your-own (BYO) fabric bags or disposable options such as paper bags, requires different assessment to a policy change of microbeads in rinse-off products which has already seen national policy influence consumption.

The CBA assessment period is 20 years to allow for short- and long-term adaptations to policy.

Evaluation of policy interventions is provided both in monetary terms and by assessing changes to total plastic consumption that can reduce total litter and reduce management impacts and costs.

Results of the assessment are provided as a net present value (NPV) in 2022 dollar values following consideration of all costs and benefits. When the cumulative costs exceed the cumulative benefits, the NPV is referred to as 'NPV negative' or displays a negative figure. When the cumulative costs equal the cumulative benefits, an NPV reflects 'cost neutrality'. When the cumulative benefits exceed the cumulative costs, an NPV is referred to as 'NPV positive'. All NPV calculations have been scaled via a discount rate of the weighted average cost of capital of 3 per cent.

Environmental benefit was considered in the NPV analysis (through the social cost of plastic and willingness to pay) and by quantifying the impact on total consumption. The change in consumption acts as a proxy for reduced eventual environmental harm from plastic pollution.

4.1 ASSESSMENT SCOPE

The cost-benefit analysis mirrors the scope of Stage 2 items.

The policy approaches considered as part of the cost-benefit assessment include:

- status quo (no change)
- education and behaviour change campaigns
- government incentives to promote sustainable alternatives to plastic products
- introduction of a levy on distributors
- a statewide ban
- voluntary agreements with retailers to encourage use of non-plastic products.

Further detail of policy approaches is provided in Section 4. The policies assessed for each item were selected as the most feasible to implement in WA.

An overview of the scope of each item in the CBA and the policies tested are provided in Table 2.

Table 2 – Overview of policies assessed for each Stage 2 item

Item	Description	Policies assessed
Cotton buds with plastic shafts	Small wad of cotton wool on a short, thin stick – often used for cosmetic and cleaning processes. The proposed regulations would not apply to non-plastic shafted cotton buds.	All
Barrier/produce bags	Plastic bags commonly used in food and grocery stores to carry perishable food or nuts.	All
Coffee cups and lids	Plastic and plastic-lined disposable coffee cups (hot liquids), and lids made from plastic. Does not include lined paperboard cups certified to an Australian composting standard.	All
Cup and bowl lids	Plastic lids for cups and bowls, used for all beverages and foods. Container lids not included in assessment.	All
EPS cups	Cups made from expanded polystyrene.	All
Microbeads	Small, solid manufactured plastic particles with an upper size limit of 5 mm in diameter that are water-insoluble, with typical diameters of about 100–300 microns (µm). Applies only to rinse-off products such as face and body scrubs, toothpaste, and cleaning products.	Not assessed
Expanded polystyrene (EPS) packaging	EPS used in loose-fill packaging (void packaging), food, beverage and retail fresh produce (serving trays not captured previously such as for meat, seafood and fresh produce packaging), moulded EPS used for light product protection (below 45 kg).	Status quo, education campaigns and statewide ban.
Oxo-degradable plastics	Plastic products designed to include an additive that accelerates fragmentation of the product under certain conditions (such as light, bacteria, heat or landfill). Applies to all applications of these plastics, including dog waste bags, garment bags and magazine covers. Assessment only includes oxo-degradable bin liners and dog waste bags.	Status quo, education campaigns, statewide ban, and voluntary agreements.

Cost-benefit impacts have been quantified where possible at a macro (statewide) and micro (sector/distributional) level. The following sub-sectors were included as part of distributional impact assessment:

- State Government
- local government
- Australian-based manufacturers/distributors/suppliers
- retailers (including hospitality)
- community (meaning WA residents)
- environment.

The costs and benefits provided in Table 3 were included in the analysis and drive the outcomes of modelling.

Table 3 – Summary of costs and benefits considered

Description	Cost	Benefit	Impacted group
Purchase price of disposable plastic items and plastic-free or low-plastic alternatives.	✓		Individuals or groups of individuals
Cost recovery of disposable plastic items, and plastic-free or low-plastic alternatives.		✓	Retailers
Profit margins for sale of disposable plastic items and their alternatives		✓	Distributors/retailers
Goods and Services tax (GST) on overall sales		✓	State Government
Waste disposal costs	✓		Local government
Implementing legislative change	✓		State Government
Monitoring and compliance costs	✓		State Government/ distributors/retailers
Implementing education campaigns	✓		State Government
Levy imposed on disposable plastic items	✓		Distributors
Cost of market shift to plastic-free or low-plastic alternatives	✓		Distributors
Income from payment of levy on disposable plastic items		✓	State Government
Social cost of plastic*	✓		Environment
Willingness to pay (WTP) for reduced litter **		✓	Environment

* The social cost of plastic is a financial cost applied as a proxy to quantify a range of social impacts experienced by plastic such as litter, loss of amenity and biodiversity. In reality, this figure is likely to be a conservative underestimate of real impacts.

** This is a financial assessment of individuals' willingness to pay (WTP) to have a reduction in litter. Generally, the WTP is higher than the cost to clean up litter.

4.2 Core assumptions

Economic assessment takes into account the following core factors as part of assessing policy intervention on Stage 2 plastics:

- Policy intervention assessment is based on a commencement date of July 2023.
- The assessment does not consider the full life-cycle costs and benefits of disposable and reusable alternatives. The assessment quantifies direct impacts to sectors, with indirect (and therefore inexact) impacts not included. Examples of indirect impacts are:
    - costs associated with multi-use items (e.g. ceramic cups) including purchase price of the items, replacement of lost or damaged items, water, electricity and human resources required to collect and wash these items, and the associated environmental cost of any of these steps
    - other supply chain impacts, such as manufacturers of disposable plastic items redesigning/redeveloping their products to meet the requirements of the policy (including research and development costs, legal fees associated with commercial engagement with suppliers etc.)
    - potential impacts on specific industries such as tourism impacted by changes to litter or small businesses impacted by reduced sales in the event that customers do not want to pay for a reusable or more expensive plastic-free or low-plastic alternative

- long-term impacts of litter (such as impacts to biodiversity or degradation of ecosystems) are not included in this CBA assessment. However, the fact that littered plastics can persist in the environment for decades or longer is considered in policy development, since littered plastics can produce considerable long-term impact and costs.

- Quantifying the environmental benefits and costs of each policy intervention is derived from the variables of 'willingness to pay' and the 'social cost of plastic'.

> The **social cost of plastic** is a proxy for the costs associated with plastic existing in the environment (e.g. impacts to biodiversity, cost of clean-up events, or by loss of tourism as a result of litter). It is calculated as a fee per tonne of material. This figure can range from $185 to $2,000/tonne and is provided as a preliminary indicator. The fee used in this analysis is $185/tonne.
>
> In this assessment this calculation can further misrepresent costs attributed to the environment sector as non-plastic alternatives are often heavier than plastic products, resulting in a greater tonnage (and therefore cost). Accordingly the benefit of a shift away from plastic is not accurately reflected in monetary terms for the environment and is instead complemented with calculations of how a policy may reduce plastic consumption.
>
> The **willingness to pay (WTP)** is a financial assessment of individuals' willingness to pay to have a reduction in litter. Generally, the WTP is higher than the cost to clean up litter.

- Consumption data has been scaled using behavioural survey data to account for the influence of existing plastic policies at a state and national level (e.g. marginal change to year-on-year consumption per capita as behaviour of consumers changes). These reductions are partly offset by an increasing population.

- Consumption modelling incorporated expected behaviour changes such as businesses switching to other disposable alternatives and consumers making changes to their consumption patterns.

- Manufacturing of Stage 2 products in WA is assumed to be low to negligible. Cost and benefits are therefore assigned to distributors/suppliers.

- An assumption of 100 per cent disposal to landfill has been made across all policy options for disposable items. Waste-to-energy processes or benefits from composting processes are not considered in this assessment.

- The assessment does not include quantified results in terms of impact on cardon dioxide (CO_2 or an equivalent) emissions. Further, no sensitivity has been modelled for differentiated fuel cost arising from paper items being heavier than plastic items, which will have a carbon impact.

- COVID-19 consumption changes are not accounted for in this assessment as they are anticipated to be short-term behavioural shifts which are mostly unquantified. This is supported by Department of Health advice stating there is no health benefit to using disposable products instead of reusable items.

- The cost or benefit of individual components is allocated to one stakeholder only, i.e. the cost of a levy imposed on distributors is allocated to distributors while the benefit of a levy is

allocated to the State Government. It is acknowledged that any increased cost for distributors may be passed on to retailers and ultimately end users (residents).

- Litter rates are assumed to vary from 1–15 per cent depending on the product type.

4.3 Consumption

Surveying has quantified annual consumption for Stage 2 items (current to the 2020–21 financial year period), as provided in Table 4. Surveys included interviews with major suppliers (top-down estimates), as well as retail sales data reviews (bottom-up). When considering consumption data, error margins exist for quantifying activity rates; however, this data is indicative of probable activity in WA. Different scenarios of consumption are assessed as part of sensitivity analysis in Section 4.13.

Table 4 – Summary of consumption of Stage 2 items

Item	Consumption capita/year	Average product weight (grams)	WA annual consumption (No. items)	WA annual consumption – weight (tonnes)
Coffee cups	68	7	182,348,800	1,286
Coffee cup lids	46	3	123,353,600	407
Barrier bags	42	3	112,627,200	304
Cotton buds	29	11	77,766,400	855
Cup and bowl lids	49	3	130,862,080	387
EPS cups	7	3	18,503,040	52
EPS packaging	18	29	48,780,671	1,966
Oxo-degradable plastics	8	28	20,916,480	584

This data shows considerable consumption of disposable products within WA, with more than 14 billion Stage 2 items consumed across the 20-year assessment period.

Because of the nature of plastic microbeads in products, consumption information does not follow the format above. A survey of 8,100 rinse-off products in 2020 identified 0.7 per cent of products within the Stage 2 Plan for Plastics regulatory scope contained microbeads[53]

4.4 Barrier bags

Assessment of policy intervention on plastic barrier bags required consideration of additional assumptions including:

- alternatives for plastic barrier bags are assumed to be predominantly cardboard/paper
- the weight of non-plastic alternatives is about double that of a plastic barrier bag
- the cost of non-plastic alternatives is greater than plastic barrier bags
- the vast majority of consumers would adopt a disposable plastic-free or approved low-plastic alternative to barrier bags, with some opting to avoid them altogether
- resealable bags and other pre-packaged produce are excluded from assessment
- food spoilage or decreases in produce life after purchase as part of policy intervention are assumed to not be significant.

Table 5 presents the distributional breakdown of total NPV ($ millions) for barrier bags.

Table 5 – Distributional assessment for barrier bags ($ millions)

Policy	State Gov't	Local Gov't	Distributors	Retailers	Community	Environment	NPV
Status quo	2.23	0.00	1.91	31.32	-33.24	0.00	**2.23**
Education/ behaviour change	-2.90	-0.04	1.95	29.46	-33.85	-1.52	**-6.89**
Incentivise alternatives	-3.92	-0.12	-1.15	30.36	-33.86	-4.10	**-12.79**
Distributor levy	205.15	-0.03	-233.87	31.89	-33.84	-1.01	**-31.70**
Statewide ban	-2.89	-0.10	1.46	23.90	-25.36	-3.09	**-6.07**
Voluntary agreements	-0.53	-0.02	1.64	16.11	-28.49	-0.29	**-11.58**

The results show that each policy intervention produces a negative NPV, with a statewide ban providing the most economically favourable policy intervention (-$6.07 million). The majority of costs are experienced by consumers where costs of alternatives are passed on by retailers.

Table 6 shows the total costs, benefits, net impact, 20-year NPV and ratio of costs and benefits (CBR) of policy intervention on barrier bags.

Table 6 – NPV overview for barrier bags ($ millions)

Policy	Cost impact*	Benefit impact*	Net impact*	NPV – 20 years	NPV to base case	CBR
Status quo	-43.44	46.36	2.92	2.23	0.00	1.07
Education/ behaviour change	-52.92	44.77	-8.15	-6.89	-9.12	0.85
Incentivise alternatives	-56.34	40.68	-15.65	-12.79	-15.02	0.72
Distributor levy	-377.09	338.11	-38.99	-31.70	-33.93	0.90
Statewide ban	-35.49	28.53	-6.96	-6.07	-8.30	0.80
Voluntary agreements	-53.06	38.35	-14.70	-11.58	-13.81	0.72

* Values not discounted to current present value.

As with the distributional breakdown, all policy interventions deliver a net negative impact. A statewide ban presents the third greatest CBR when compared with the status quo, with education presenting a stronger CBR.

Table 7 presents the change to plastic barrier bag consumption across each policy.

Table 7 – Estimated policy impact on plastic consumption for barrier bags (tonnes)

Policy	Plastic consumption (tonnes)
Status quo	297.6
Education and behaviour change campaign	261.0
Incentivise sustainable alternatives	187.2
Introduction of levy on distributors	276.3
Statewide ban	20.0
Voluntary agreements with retailers	187.2

A statewide ban is forecast to produce the greatest reduction on consumption and therefore reduced opportunity for litter generation.

A statewide ban is assessed as the preferred balance of environmental and economic outcomes.

4.5 Cotton buds with plastic shafts

Assessment of policy intervention on cotton buds with plastic stems required consideration of additional assumptions including:

- alternatives for cotton buds with plastic shafts are assumed to be predominantly cardboard/paper
- the weight of a paper-stemmed cotton bud is about three times that of a plastic-stemmed product
- the cost of paper-stemmed cotton bud is up to six times greater than a plastic-stemmed product
- the stems of paper-stemmed cotton buds are assumed to be 100 per cent paper
- reusable cotton buds are expected to slowly increase in popularity over time; however, longer-term costs and benefits are not included in this assessment and, as such, reusable products act as a direct replacement/avoidance for waste and consumption
- market reaction to policy intervention is assumed to be a switch to disposable paper-stemmed products.

Table 8 presents the distributional breakdown of total NPV ($ millions) for cotton buds.

Table 8 – Distributional assessment for cotton buds ($ millions)

Policy	State Gov't	Local Gov't	Distributors	Retailers	Community	Environment	NPV
Status quo	11.39	0.00	-10.63	5.74	-6.09	0.00	**0.41**
Education/ behaviour change	-3.60	0.00	0.37	4.02	-6.40	-2.60	**-8.21**
Incentivise alternatives	-4.63	-0.01	-2.14	5.57	-7.27	-9.08	**-17.56**
Distributor levy	-11.06	0.00	-10.38	5.86	-6.21	-1.30	**-23.10**
Statewide ban	-4.12	-0.01	0.39	6.45	-6.85	-12.65	**-16.78**
Voluntary agreements	-2.98	0.00	1.26	-5.32	-5.75	-2.95	**-15.74**

The distributional assessment shows that the strongest NPV for policy intervention on cotton buds is from an education campaign when compared with the status quo 'do nothing' option. This is because of the higher cost and weight of paper-stemmed cotton buds, where results favour policies that have less meaningful impact on consumption. The majority of costs are forecast to be born by both the State Government and consumers.

Table 9 shows the total costs, benefits, net impact, 20-year NPV and ratio of costs and benefits (CBR) of policy intervention on cotton buds.

Table 9 – NPV overview for cotton buds ($ millions)

Policy	Cost impact*	Benefit impact*	Net impact*	NPV – 20 years	NPV to base case	CBR
Status quo	-22.25	22.79	0.53	0.41	0.00	1.02
Education/ behaviour change	-15.55	5.36	-10.19	-8.21	-8.62	0.34
Incentivise alternatives	-19.92	-2.34	-22.26	-17.56	-17.97	0.12
Distributor levy	-48.07	20.18	-27.89	-23.10	-23.51	0.42
Statewide ban	-13.72	-7.27	-20.99	-16.78	-17.18	0.53
Voluntary agreements	-22.90	2.58	-20.32	-15.74	-16.15	0.11

* Values not discounted to current present value.

As with the distributional breakdown, all policy interventions deliver a net negative impact; however, the statewide ban presents the most beneficial cost-benefit ratio when compared with other policies.

Table 10 presents the change to plastic consumption across each policy intervention on plastic-stemmed cotton buds.

Table 10 – Estimated policy impact on plastic consumption for cotton buds (tonnes)

Policy	Plastic consumption (tonnes)
Status quo	8.0
Education and behaviour change campaign	7.0
Incentivise sustainable alternatives	5.0
Introduction of levy on distributors	7.4
Statewide ban	0.5
Voluntary agreements with retailers	5.0

A statewide ban has the greatest reduction on consumption, albeit with relatively small consumption in the first place (status quo of 8 tonnes per annum).

Assessment of the preferred position of a statewide ban poses a higher than expected cost-benefit ratio; however, this may reduce as additional supply enters the market. This is further evidenced by recent commitments by major supermarkets to shift away from plastic-stemmed products, which may be an existing commitment to switch from plastic-stemmed products by retailers that represent 76 per cent of total sales in Australia[1].

4.6 Coffee cups/lids

Assessment of policy intervention on coffee cups and lids required consideration of additional assumptions including:

- alternatives for coffee cups are assumed to be predominantly disposable paperboard-lined cups certified to Australian composting standards
- alternatives for coffee cup lids are assumed to be either made from paper or bagasse
- the weight of a plastic coffee cup is assumed to be about the same as a low-plastic paperboard alternative
- the weight of plastic coffee cup lids are assumed to be 50–60 per cent lighter than non-plastic alternatives
- the cost of low-plastic coffee cups is assumed to be 30 per cent higher than plastic products.

[1] Supermarket statistics 2022 | Finder

Table 11 presents the distributional breakdown of total NPV ($ millions) for coffee cups and lids.

Table 11 – Distributional assessment for coffee cups/lids ($ millions)

Policy	State Gov't	Local Gov't	Distributors	Retailers	Community	Environment	NPV
Status quo	28.41	-3.09	24.20	396.01	-420.21	-1.49	**23.83**
Education/ behaviour change	23.36	-3.12	24.32	395.46	-422.22	-2.16	**15.64**
Incentivise alternatives	21.67	-3.13	20.66	387.05	-412.34	-2.93	**10.96**
Distributor levy	1376.53	-3.13	-1413.61	399.78	-424.22	-2.04	**-66.68**
Statewide ban	14.11	-2.12	16.00	261.85	-277.85	6.56	**18.56**
Voluntary agreements	21.26	-2.63	20.22	320.09	-351.05	1.74	**9.62**

The distributional assessment shows the do nothing or 'status quo' policy option presents the highest NPV over the 20-year assessment period. This is because there are no new costs introduced to any of the stakeholder groups. By comparison the preferred policy option of a statewide ban is the most economically favourable policy intervention, resulting in an NPV of +$18.56 million. The results for a levy, assuming costs are added to both the cup and lid component, result in considerably higher costs.

Table *12* shows the total costs, benefits, net impact, 20-year NPV and ratio of costs and benefits (CBR) of policy intervention on coffee cups and lids.

Table 12 – NPV overview for coffee cups/lids ($ millions)

Policy	Cost impact*	Benefit impact*	Net impact*	NPV – 20 years	NPV to base case	CBR
Status quo	-556.04	587.30	31.26	23.83	0.00	1.06
Education/ behaviour change	-563.32	584.53	21.21	15.64	-8.19	1.04
Incentivise alternatives	-550.18	565.31	15.13	10.96	-12.87	1.03
Distributor levy	-2459.01	2374.42	-84.59	-66.68	-90.52	0.97
Statewide ban	-347.42	371.67	24.25	18.56	-5.27	1.07
Voluntary agreements	-473.39	486.19	12.80	9.62	-14.21	1.03

* Values not discounted to current present value.

When compared with the status quo, a statewide ban provides the most favourable cost-benefit ratio.

Table 13 presents the change to plastic consumption across each policy intervention on coffee cups and lids.

Table 13 – Estimated policy impact on plastic consumption for coffee cups/lids (tonnes)

Policy	Plastic consumption (tonnes)
Status quo	680
Education and behaviour change campaign	596
Incentivise sustainable alternatives	427
Introduction of levy on distributors	632
Statewide ban	43
Voluntary agreements with retailers	427

A statewide ban has the greatest reduction on consumption.

The statewide ban is assessed as the preferred balance of economic and environmental outcomes.

4.7 Lids for cups, bowls and containers

Assessment of policy intervention on lids required consideration of additional assumptions including:

- lids for containers were not included in the assessment
- adoption of alternatives for cup lids was assumed to split between fibre-based options made from paper or bagasse
- adoption of alternative bowl lids was assumed to shift to exempt lined paperboard alternatives (70 per cent), with the remaining amount (30 per cent) assumed to supply/use a fibre-based option made from paper or bagasse
- the weight and cost of alternatives are assumed to be greater than plastic lids.

Table 14 presents the distributional breakdown of total NPV ($ millions) for lids.

Table 14 – Distributional assessment for lids ($ millions)

Policy	State Gov't	Local Gov't	Distributors	Retailers	Community	Environment	NPV
Status quo	6.44	-0.44	5.49	89.76	-95.25	-1.09	**4.92**
Education/ behaviour change	2.18	-0.48	5.65	90.06	-98.14	-2.93	**-3.66**
Incentivise alternatives	0.58	-0.55	2.67	92.79	-100.10	-5.86	**-10.48**
Distributor levy	77.50	-0.47	-91.60	92.07	-97.69	-2.37	**-22.56**
Statewide ban	-0.50	-0.38	3.48	57.00	-60.49	4.30	**3.42**
Voluntary agreements	3.19	-0.43	4.80	67.75	-83.29	0.18	**-7.80**

Economic assessment shows that only the status quo and statewide bans deliver a positive NPV. The majority of costs are experienced by consumers, where costs of alternatives are passed on by retailers; however, this is considerably lower for a statewide ban.

Table 15 shows the total costs, benefits, net impact, 20-year NPV and ratio of costs and benefits (CBR) of policy intervention on lids.

Table 15 – NPV overview for lids ($ millions)

Policy	Cost impact*	Benefit impact*	Net impact*	NPV – 20 years	NPV to base case	CBR
Status quo	-127.47	133.96	6.49	4.92	0.00	1.05
Education/ behaviour change	-138.31	134.27	-4.04	-3.66	-8.58	0.97
Incentivise alternatives	-144.23	131.58	-12.64	-10.48	-15.39	0.91
Distributor levy	-283.43	256.38	-27.04	-22.56	-27.48	0.90
Statewide ban	-79.76	85.40	5.64	3.42	-1.50	1.07
Voluntary agreements	-125.99	116.30	-9.69	-7.80	-12.72	0.92

* Values not discounted to current present value.

As with the distributional breakdown, all policies aside from a statewide ban result in a negative cost-benefit ratio, with a ban resulting in a greater ratio than the status quo.

Table 16 presents the change to plastic consumption across each policy intervention on lids.

Table 16 – Estimated policy impact on plastic consumption for lids (tonnes)

Policy	Plastic consumption (tonnes)
Status quo	408
Education and behaviour change campaign	357
Incentivise sustainable alternatives	255
Introduction of levy on distributors	378
Statewide ban	25
Voluntary agreements with retailers	255

A statewide ban has the greatest reduction on consumption.

The statewide ban is assessed as the preferred balance of economic and environmental outcomes.

4.8 Expanded polystyrene (EPS) cups

Assessment of policy intervention on EPS cups required consideration of additional assumptions including:

- economic assessment of this item was completed earlier, so values are expressed as relevant to 2021 monetary value
- the cost and weight of alternatives are about even with EPS cups
- EPS cups are assumed to be predominantly replaced with lined paperboard cups certified to Australian composting standards.

Table 17 presents the distributional breakdown of total NPV ($ millions) for EPS cups.

Table 17 – Distributional assessment for EPS cups ($ millions)

Policy	State Gov't	Local Gov't	Distributors	Retailers	Community	Environment	NPV
Status quo	1.5	-0.06	1.29	21.95	-22.34	-0.17	**2.16**
Education/ behaviour change	-0.71	-0.06	1.27	20.75	-22.09	-0.01	**-0.84**
Incentivise alternatives	-1.67	-0.06	-0.35	19.05	-20.16	0.95	**-2.24**
Distributor levy	41.34	-0.06	-51.64	21.93	-22.32	-0.13	**-10.88**
Statewide ban	-1.06	-0.04	0.86	14.64	-14.9	3.66	**3.15**
Voluntary agreements	0.22	-0.05	1.03	2.53	-17.89	2.12	**-12.03**

The results show that a statewide ban returns the strongest NPV at +$3.15 million. Consumers receive the greatest distributional impact following transferred profit margins and costs from retailers. These impacts may be reduced over time as additional supply enters the market.

Table 18 shows the total costs, benefits, net impact, 20-year NPV and ratio of costs and benefits (CBR) of policy intervention on EPS cups.

Table 18 – NPV overview for EPS cups ($ millions)

Policy	Cost impact*	Benefit impact*	Net impact*	NPV – 20 years	NPV to base case	CBR
Status quo	-81.76	87.97	6.21	4.70	0.00	1.08
Education / behaviour change	-86.37	84.12	-2.25	-2.30	-4.00	0.97
Incentivise alternatives	-79.06	73.39	-5.66	-5.20	-6.91	0.93
Distributor levy	-168.96	146.00	-22.96	-19.43	-21.14	0.86
Statewide ban	-43.13	47.34	4.21	2.83	1.12	1.10
Voluntary agreements	-82.47	68.47	-14.01	-10.98	-12.68	0.83

* Values not discounted to current present value.

Cost-benefit ratio assessment shows that a statewide ban continues to be the most favourable economic option for action on EPS cups.

Table 19 presents the change to plastic consumption across each policy intervention on EPS cups.

Table 19 – Estimated policy impact on plastic consumption for EPS cups (tonnes)

Policy	Plastic consumption (tonnes)
Status quo	62.35
Education and behaviour change campaign	54.27
Incentivise sustainable alternatives	37.95
Introduction of levy on distributors	57.66
Statewide ban	1.18
Voluntary agreements with retailers	37.95

A statewide ban has the greatest reduction on consumption.

The statewide ban is assessed as the preferred balance of economic and environmental outcomes.

4.9 EPS PACKAGING

Modelling of EPS packaging is required to be split further because of the difference in application of EPS food trays in comparison with product packaging using loose-fill or moulded EPS.

Loose-fill and moulded EPS

Assessment of policy intervention on EPS packaging for loose-fill and moulded options required consideration of additional assumptions including:

- the policy options considered were a status quo (no change), statewide ban and voluntary agreements. Other policies were not considered practical to implement
- goods packaging will continue to be single-use in nature, rather than increasingly transitioning to reusable alternatives over time as with other items. EPS has been assumed to be directly replaced with another disposable product
- alternatives for EPS packaging (both loose-fill and moulded) are assumed to be predominantly cardboard/paper, with smaller shifts expected towards wool, hay/straw, timber or plant-based options
- the weight of these alternatives to EPS packaging is at least 200 per cent greater than EPS options
- a shift from EPS to other plastic products (such as pocketed air) has been embedded into calculations, with a higher ratio of plastic-to-plastic shifts in the first five years
- of these alternatives, the costs attributed to non-plastic options were highest for wool and plant-based alternatives.

Table 20 presents the distributional breakdown of total NPV ($ millions) for EPS loose-fill and moulded packaging.

Table 20 – Distributional assessment for EPS loose-fill and moulded packaging ($ millions)

Policy	State Gov't	Local Gov't	Distributors	Retailers	Community	Environment	NPV
Status quo	160.19	-2.00	136.52	2233.65	-2370.17	-4.96	**153.23**
Statewide ban	39.42	-2.35	35.67	583.65	-619.32	-12.28	**24.79**
Voluntary agreements	112.59	-2.17	97.02	1576.66	-1684.42	-8.51	**91.16**

Modelling of policy interventions indicates that the status quo has the highest NPV.

These results highlight some limitations of the economic assessment, especially with respect to environmental outcomes where the model is strongly influenced by the weight differences of EPS compared with alternative products.

The economic model is also unable to consider the full life-cycle impact of EPS packaging. The primary shortcoming is the limited quantification of the environmental costs from EPS loose-fill and moulded packaging (especially given the high representation of EPS in litter streams) and recycling systems.

Table 21 shows the total costs, benefits, net impact, 20-year NPV and ratio of costs and benefits (CBR) of policy intervention on EPS loose-fill and moulded packaging.

Table 21 – NPV overview for EPS loose-fill and moulded packaging ($ millions)

Policy	Cost impact*	Benefit impact*	Net impact*	NPV – 20 years	NPV to base case	CBR
Status quo	-3097.63	3297.71	200.08	153.23	0.00	1.06
Statewide ban	-735.35	762.15	26.81	24.79	-128.44	1.04
Voluntary agreements	-2172.77	2288.81	116.04	91.16	-62.07	1.05

* Values not discounted to current present value.

As above, the negative values for environment are driven by the increased weight of the alternatives in comparison with EPS and the inability to consider the full costs of EPS waste. For this value the model is limited in its ability to adequately quantify the environmental benefit of a shift away from EPS.

Table 22 presents the change to plastic consumption across each policy intervention on EPS loose-fill and moulded packaging consumption across each policy.

Table 22 – Estimated policy impact on plastic consumption for EPS loose-fill and moulded packaging (tonnes)

Policy	Plastic consumption (tonnes)
Status quo	1836.02
Statewide ban	131.16
Voluntary agreements with retailers	1152.27

A statewide ban has the greatest reduction on consumption.

These considerations and the potential for environmental benefit from reducing EPS use has resulted in a statewide ban remaining as the preferred policy approach.

EPS trays for meat, seafood and fresh produce

Assessment of policy intervention on EPS trays for meat, seafood and fresh produce required consideration of additional assumptions including:

- all policy scenarios were modelled, as opposed to the limited range of policy options for EPS loose-fill and moulded packaging
- EPS trays were assessed for the whole of market in the implementation for Stage 1 regulations; therefore, economic assessment is expressed as 2021 monetary value

- the application and frequency of use of EPS trays for fresh produce and meat/seafood has fluctuated since this assessment was undertaken; accordingly results may not reflect current product packaging preferences
- modelling includes consideration of meat, seafood and fresh produce
- alternatives for unbanned EPS trays are assumed to be predominantly a shift to other plastic such as PET, or to products made from paper, bamboo or bagasse.

Table 23 presents the distributional breakdown of total NPV ($ millions) for EPS trays used for meat, seafood and fresh produce.

Table 23 – Distributional assessment for EPS meat, seafood and fresh produce trays ($ millions)

Policy	State Gov't	Local Gov't	Distributors	Retailers	Community	Environment	NPV
Status quo	0.84	-0.13	0.72	12.34	-12.56	-0.33	**0.89**
Education/ behaviour change	0.97	-0.13	0.83	14.19	-14.44	-0.33	**1.08**
Incentivise alternatives	1.07	-0.13	0.92	15.69	-15.97	-0.31	**1.27**
Distributor levy	86.79	-0.13	-89.35	13.67	-13.92	-0.34	**-3.27**
Statewide ban	1.22	-0.12	1.05	17.92	-18.24	-0.24	**1.59**
Voluntary agreements	0.88	-0.11	0.76	12.89	-13.12	-0.27	**1.02**

Modelling of policy interventions indicates that the statewide ban has the highest NPV (+$1.59 million).

Table 24 shows the total costs, benefits, net impact, 20-year NPV and ratio of costs and benefits (CBR) of policy intervention on EPS trays used for meat, seafood and fresh produce.

Table 24 – NPV overview for EPS meat, seafood and fresh produce trays ($ millions)

Policy	Cost impact*	Benefit impact*	Net impact*	NPV – 20 years	NPV to base case	CBR
Status quo	-17.11	18.29	1.18	0.89	0.00	1.07
Education/ behaviour change	-19.53	20.95	1.42	1.08	0.19	1.07
Incentivise alternatives	-21.43	23.09	1.66	1.27	0.37	1.08
Distributor levy	-137.42	133.12	-4.30	-3.27	-4.17	0.97
Statewide ban	-24.09	26.16	2.06	1.59	0.70	1.09
Voluntary agreements	-17.65	18.98	1.33	1.02	0.12	1.08

* Values not discounted to current present value.

Cost-benefit analysis indicates most policy options create opportunity for positive economic outcomes. The preferred option of a statewide ban returns a +$1.59 million NPV over 20 years and the most favourable cost-benefit ratio.

This assessment does not consider potential impacts such as potential for increased damage to fresh produce, consumer purchasing behaviours (e.g. decreased bulk purchases) or reduced shelf-life of products.

Table 25 presents the change to plastic consumption across each policy intervention on EPS trays used for meat, seafood and fresh produce across each policy.

Table 25 – Estimated policy impact on plastic consumption for EPS meat, seafood and fresh produce trays (tonnes)

Policy	Plastic consumption (tonnes)
Status quo	122.31
Education and behaviour change campaign	125.13
Incentivise sustainable alternatives	115.86
Introduction of levy on distributors	126.12
Statewide ban	88.80
Voluntary agreements with retailers	102.05

A statewide ban has the greatest reduction on consumption; however, this is influenced by the rate that EPS trays are replaced with plastic or non-plastic alternatives. The consumption figures understate the benefits of the interventions, as a significant proportion of EPS consumption (a material that is lightweight but problematic for the environment and recycling systems) is expected to be replaced with alternative plastics that are heavier but are readily recyclable and less problematic for the environment).

4.10 Oxo-degradable plastics

The application of oxo-degradable plastics is broad and includes potential oxo-degradable items of bin liners, magazine covers, garment bags and agricultural applications. Consumption data for many applications is limited. As such, economic impact analysis of oxo-degradable plastic only includes dog waste bags and bin liners as a targeted case study.

Assessment of policy intervention on oxo-degradable dog waste bags and bin liners required consideration of additional assumptions including:

- the policy options considered were a status quo (no change), education campaigns, statewide ban and voluntary agreements; other policies were not considered practical to implement
- layered assumptions have been applied to estimate consumption of dog waste bags, meaning:
    - 40 per cent of Australian households own a dog[54]
    - local governments which provide compostable dog waste bags have been excluded from consumption estimates
    - weekly consumption per dog is assumed to be three oxo-degradable bags
- it is assumed that home composting of dog waste bags will increase to 20 per cent in the medium term
- in lieu of bin liner consumption data, layered assumptions have been applied to estimate their use, meaning:
    - it is assumed three bin liners are used by a household each week
    - of these bin liners the market is divided between conventional plastic and oxo-degradable plastic options; it is assumed that 20 per cent of bin liners used are made from oxo-degradable plastic

- alternatives for oxo-degradable bin liners are assumed to shift back to conventional plastic bin liners for 50 per cent of the market in the short-medium term
- oxo-degradable dog waste bags and bin liners are assumed to eventually be replaced with compostable variants.

Table 26 presents the distributional breakdown of total NPV ($ millions) for oxo-degradable dog waste bags and bin liners.

Table 26 – Distributional assessment for oxo-degradable dog waste bags and bin liners ($ millions)

Policy	State Gov't	Local Gov't	Distributors	Retailers	Community	Environment	NPV
Status quo	9.12	-0.56	7.77	127.07	-134.83	-1.45	**7.11**
Education/ behaviour change	8.15	-0.52	7.89	129.03	-136.92	-0.74	**6.89**
Statewide ban	8.59	-0.27	8.31	135.93	-144.24	3.18	**11.49**
Voluntary agreements	8.57	-0.44	8.06	121.14	-139.94	0.39	**-2.23**

The results indicate the strongest NPV for policy intervention is the preferred policy approach of a statewide ban (+$11.49 million). The majority of costs are experienced by consumers where costs of alternatives are passed on.

Table 27 shows the total costs, benefits, net impact, 20-year NPV and ratio of costs and benefits (CBR) of policy intervention on oxo-degradable dog waste bags and bin liners.

Table 27 – NPV overview for oxo-degradable dog waste bags and bin liners ($ millions)

Policy	Cost impact*	Benefit impact*	Net impact*	NPV – 20 years	NPV to base case	CBR
Status quo	-179.7	189.1	9.4	7.1	0.00	1.05
Education/ behaviour change	-182.4	191.7	9.2	6.9	-0.2	1.05
Statewide ban	-185.5	200.5	15.1	11.5	4.4	1.08
Voluntary agreements	-198.2	195.5	-2.7	-2.2	-9.3	0.99

* Values not discounted to current present value.

As with the distributional breakdown the preferred policy option of a statewide ban is the most economically favourable over the 20-year assessment period and provides the strongest cost-benefit ratio.

For the case study of oxo-degradable plastics there is anticipated to be an initial shift to other plastic products, resulting in less-significant reduction in plastic consumption because of policy intervention. The benefit of this change predominantly results from there being less fast-fragmenting plastic entering the environment.

4.11 Microbeads

There are several challenges in developing evidence-based economic analysis of the impact of microbeads. The size, nature of use and market coverage of microbeads means it is not feasible to quantify total plastic consumption. This limits the ability to quantify costs and benefits of policy intervention.

The main challenges are:

- limited quantifiable data of microbead consumption (use) or pollution
- reliable ways to measure pollution from microbeads have not been developed
- the mass of microbeads used is relatively small compared with other plastic products
- it is not possible to determine the source of microbead pollution (i.e. the proportion of microbeads within the scope of the Plan for Plastics compared with other sources such as industrial applications).

While cost-benefit analysis on policy options is not considered viable for microbeads, there remains benefit to policy intervention to ensure voluntary measures are converted to permanent change for environmental benefit. It is also assumed that the proposed regulatory actions lead to limited-to-no economic impact as change is already realised in the market and further voluntary change can be expected for other products.

4.12 Statewide ban summary

An overview of the economic impact of the preferred policy option, a statewide ban, is provided for all Stage 2 items where quantified information was available in *Figure 1*.

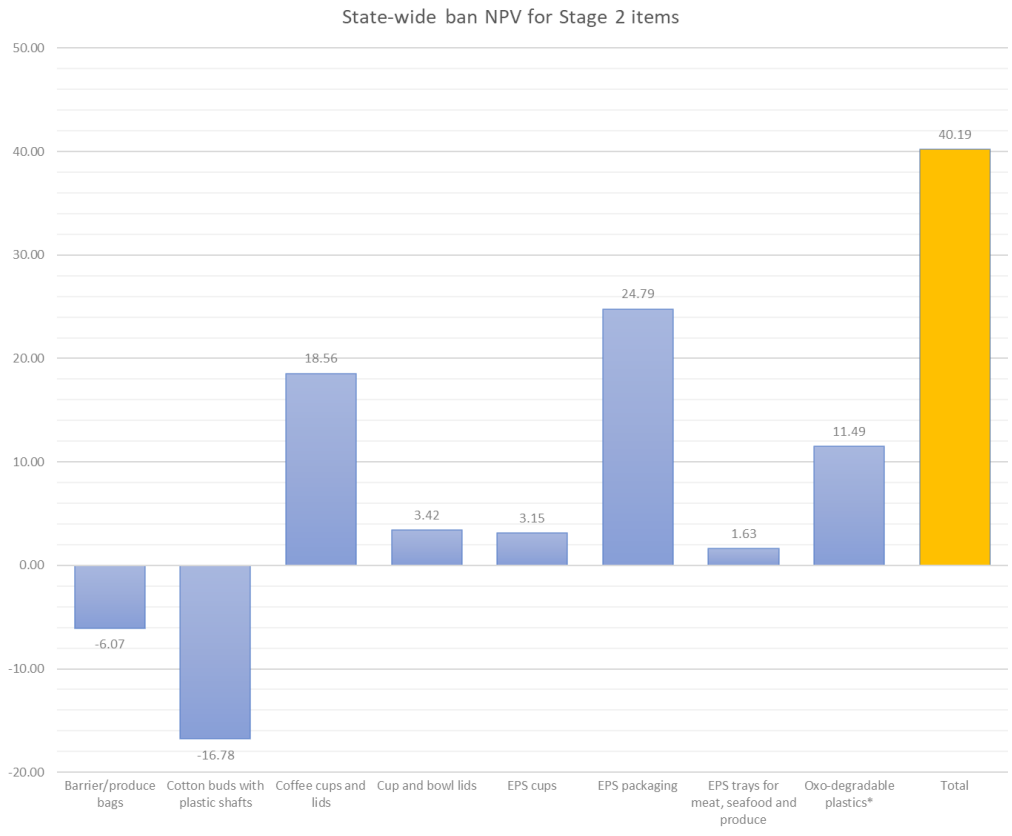


Figure 1 – NPV overview of all Stage 2 items ($ millions)

Results indicate a positive NPV of +$40.19 million for the Stage 2 policy collectively. Greatest economic impact is expected to be felt by consumers (community); however, this is dependent on the level of costs and profit margins absorbed by manufacturers, distributors and retail businesses.

4.13 Sensitivities tested

Sensitivity testing, via modification of key variables, can help to identify input values that can materially change the results. The following variables were considered as part of this testing:

- changes in consumption of disposable plastics and their alternatives
- modification of ban scope to include or exclude additional components
- differences to the proposed levy charged for each product, for example ranging from 5 cents to two dollars
- changes to the cost of alternatives to plastic products
- fluctuations to the cost of capital (the minimum shift in returns required to make investment worthwhile)
- modification of the assumed profit margins of distributors and retailers.

Some specific scenario results are provided in Table 28 ($ millions) to show variation across items and variables.

Table 28 – NPV impact from changes to model variables for a statewide ban ($ millions)

Item	Sensitivity	NPV compared with the statewide ban base case				
		Education campaign	Incentives	Levy	Ban	Voluntary agreements
Barrier bags	Change from base case (42/capita/yr) to New Zealand consumption rate of four household/week	-0.0	-0.1	3.8	-0.0	0.0
Coffee cups	Change from base case 68 capita/yr to UK consumption rate (estimated at 36 capita/yr)	9.0	8.8	-20.5	6.2	7.5
Cotton buds	Change from base case weights (11/39 g respectively for plastic/paper stems) to UK product weights (25/45 g for plastic/paper stems)[55]	-1.9	-6.4	-1.0	-11.2	-3.5
Cup and bowl lids	Increase of levy costs proposed for lids from 5 to 20 cents	-	-	13.9	-	-

These results show how the NPV of a policy approach is impacted by the changing variable.

For example, product weight changes (such as for cotton buds) results in a negative impact to the NPV for a statewide ban (-$11.2 million) and presents greater cost across all policies because of heavier weight of materials.

Considering different rates of product consumption was a key part of sensitivity testing; for example, an increase in barrier bags usage was modelled using equivalent New Zealand data (about a 32 per cent increase). The results indicate such a change would have a negligible NPV impact across policy

approaches. Modelled consumption changes for coffee cups/lids (UK consumption rates which are about 46 per cent lower than Australia) shows potential for increased net benefit (+$6.2 million) – indicating this assessment may have underestimated potential benefits.

4.14 KEY LIMITATIONS

There are several parameters within the cost-benefit assessment that are not able to be incorporated into the quantitative analysis. Further qualitative context to these parameters, and how they may result in unquantified cost or benefit, are provided below.

Plastic consumption

Avoided plastic consumption because of policy intervention has the greatest impact to net economic impact, particularly where disposable options are replaced with reusable alternatives (such as a glass coffee cup), or product use is avoided entirely (such as not using a barrier bag for fresh produce). Potential additional benefit can be realised with flow-on effects to reduce waste disposal costs, reduced litter impacts, and reduction of capital expenditure for businesses.

Waste management

Policy intervention also impacts the management of waste streams. By improving the quality of waste systems and aligning with composting infrastructure there is potential for reduced disposal costs and increases to the value of products that would previously become waste (e.g. integration to compostable products into composting processing streams). This can lead to further reduction of environmental and litter costs. In contrast, the weight of non-plastic alternatives can be three times higher than the plastic items proposed to be removed from use. This could lead to increased disposal costs if non-plastic products are landfilled or composting of compostable materials is not achieved.

The value of recyclate, and broader recycling market impacts, are not assessed in this economic assessment. While market benefit of recycling plastic has potential, it is noted that many of the targeted items have very low recycling rates. For specific items it is also noted that some recycling streams present much lesser value (e.g. there are limited expanded polystyrene processing options in WA).

Many of the targeted Stage 2 items present as a contaminant to existing recycling processes (for example cotton buds and barrier bags). These costs are not considered in this analysis.

Cost of alternatives

The cost of alternatives to disposable plastic and the rate of adoption of long-lasting reusable options is a key driver in assessing distributional costs. Current modelling assumes a slow shift to reusable products, with most suppliers and businesses opting for plastic-free or permitted low-plastic alternatives (such as lined coffee cups). A small but growing sector would also choose avoidance where applicable. Over the 20-year assessment period it is predicted the availability of reuse schemes and normalising consumer behaviour/interaction with these will improve.

However, short-term costs are expected to be higher (five years) for alternatives as businesses adapt and economies of scale are yet to be realised. Any pivot in adoption of behaviour can have deep impacts in redirecting costs and benefits for all sectors. A faster consumer uptake and demand for non-plastic disposable items is likely to drive a supply chain response, with potentially initial increases in wholesale cost. This would attract competitor producers and expansion of supply, which would eventually drive down wholesale prices.

Business viability

Policy interventions such as an incentive-based policy, levy or ban may result in different short-term financial impacts to individual suppliers/distributors as they adapt to new market influences. The assumed impact to business viability is anticipated to be limited if suitable time is provided to adapt to change.

Government costs

Government costs have been incorporated into this assessment based on preferred implementation processes and gradual efficiency gains over the 20-year period. In reality a multi-policy approach, such as a ban combined with education, would result in further cost efficiencies and improved policy outcomes. Such approaches are anticipated to result in an improvement to the cost-benefit ratio and the net impact via reduction of costs from well-prepared businesses and consumers.

Government administration of policy implementation that include incentive schemes, voluntary codes of practice, and levies invariably lead to higher staffing costs. For levies the funds received would then lead to additional environmental benefits/programs which are not included in the scope of this assessment. It would take considerable net impact shift for a levy policy shift to compare favourably in economic terms with other approaches, particularly as levy costs have proven to be normalised over time, reducing effectiveness of the policy and requiring amendment.

Unaccounted benefits

Other unaccounted benefits could arise from:

- improved environmental amenity, and value of tourism markets
- intergenerational benefit as reduced impacts have continuing benefit beyond the 20-year assessment scope
- quantification of exact environmental benefits of maintaining biodiversity, reduced litter, and reduced frequency of clean-up activities
- reduction of some human health impacts and health sector costs from people ingesting less plastic fragments.

Other uncertainties

Other unaccounted uncertainties that may impact economic outcomes may include:

- the complex behavioural nature of littering
- varying value of the Australian dollar.

Guidance questions:

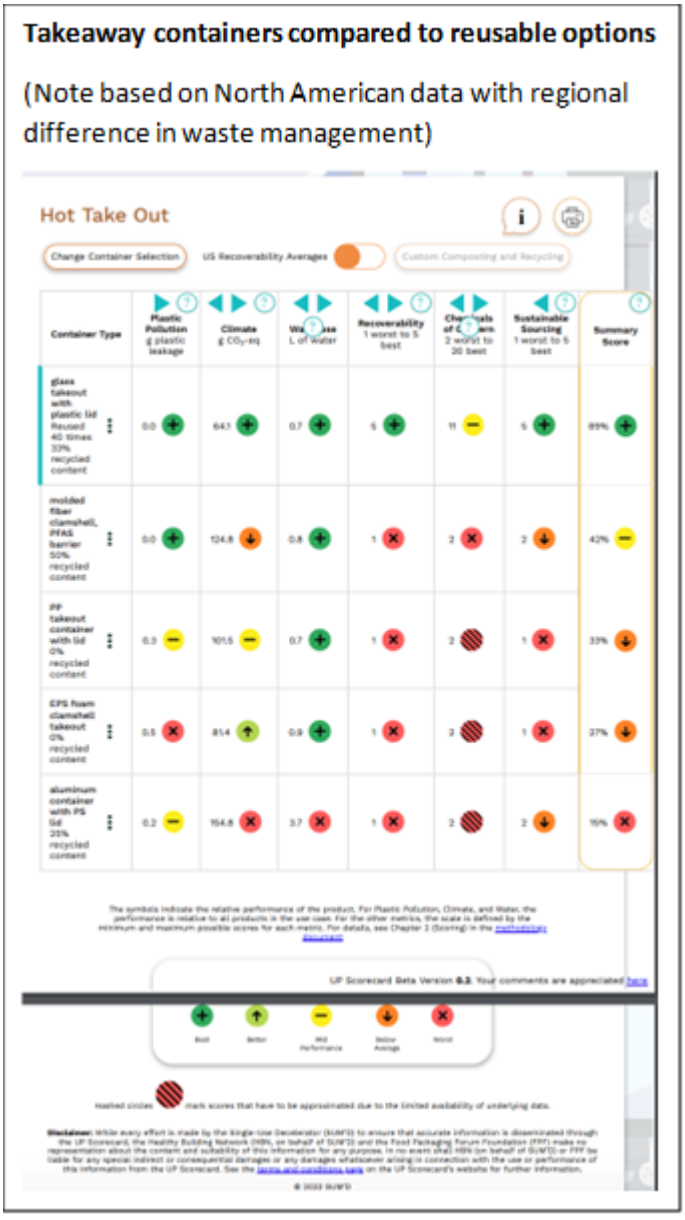
- What additional costs do you expect to incur from the preferred approach of a statewide ban?
  - What actions do your costs include?
  - Are any additional costs likely to be passed on to consumers?
- What other policy approaches are favourable to you in terms of economic outcomes and addressing plastic impacts?
- Do you agree with the parameters of the economic assessment? If not, why?
- Can you quantity the costs or benefits not considered as part of this assessment (such as the benefit of plastic reduction in the environment)?
  - What other information can you provide to improve quantification of environmental costs/benefits?

5. Lifecycle Analysis of Stage 2 Items

A lifecycle analysis (LCA) is an important tool used to understand and quantify the environmental impact or footprint of a product from 'cradle to grave'. It includes the responsibility that everyone has in the whole lifecycle of the product through all phases of its life, including product design, raw materials extraction, manufacture, packaging/distribution, use or consumption and end of life.

High-quality LCAs include an evaluation of the extraction and consumption of all resources, including the energy along with all releases to air, water and soil throughout every stage. From this information an understanding of the product's potential contribution to environmental impacts such as climate change, human and eco-toxicity, environmental pollution impacts, waste contamination and decline in resources, such as water and non-renewable energy resources, can be quantified.

In 2022 the Understanding Packaging (UP) Scorecard, a new web-based LCA tool, was launched. Developed by a collaboration of food service companies, non-government organisations and technical experts, it assesses sustainability and health impacts of common single-use plastic, compostable and reusable foodware choices with the aim of providing a 'single yardstick' for making better environmental choices without needing to understand the LCA science behind it. It currently uses North American waste management data only.



From the international LCA studies and tools covering food and drinkware (UNEP LifeCycle Initiative's 2021 report on single-use beverage cups and their alternatives and the UP Scorecard), there are some overall conclusions that relate to single-use cups and containers in the WA Plan for Plastics:

- Reusable beverage cups have the best LCA scores, compared with PLA or PE-lined paperboard takeaway cups; products made from EPS rank poorly on most sustainability and health indicators.
- Reusable tableware such as glass takeaway containers with reusable plastic lids consistently outperform single-use tableware.
- In situations where reusables are impractical, single-use paperboard, fibreboard, bagasse, bioplastic and other products made from renewable materials rank higher over fossil-based plastic, where there are good industrial composting and recycling facilities available.

6 Review of Policies considered

In Chapter 4 we compared a set of policy tools for each item in the WA Plan for Plastics Stage 2. Below is a review of those assessments.

Status quo

A status quo approach results in no policy intervention on Stage 2 plastic items. Without intervention, consumption is anticipated to grow in line with current disposable product habits and an increasing population. Some decrease of consumption occurs because of naturally adapting behaviours of consumers from external influences.

The State Government does not consider this a preferred option as it does not address the problems presented by plastic, nor meet the expectations of community requests for change – whereby over 98 per cent of respondents to consultation in 2019 supported extensive action on plastic.

Consumption data indicates that current actions are not reducing our dependence on plastic.

Education campaign

Education campaigns to reduce plastic are employed extensively by government and non-government organisations. Such campaigns can raise awareness of the issue, target specific sectors, and promote alternatives to plastic items across a range of platforms including digital, radio, television and social media. An education program targeting Stage 2 plastics could aim to avoid plastic waste and reduce consumption.

The degree of change from an education program is influenced by a range of factors including the extent of the campaign and the scale of change. It is also influenced by the capacity for consumers and businesses to make the change (e.g. consumers can bring alternatives for barrier bags for fresh produce, but have limited ability to change the use of EPS packaging in international supply chains).

If the underlying drivers are not changed, education campaigns need to be ongoing to avoid the loss of gains made.

The State Government's preference is to continue to integrate education as a support mechanism for the preferred policy option of a statewide ban. Education can support regulated change by assisting targeted sectors such as suppliers, retailers and consumers to adapt. This approach is consistent with the approach to the lightweight plastic bag ban in 2018, and Stage 1 Plan for Plastic regulations in 2022. An evaluation of the implementation of the lightweight plastic bag ban found that more than 80 per cent of consumers and 100 per cent of retailers recalled education materials and noted their awareness of the bans and need to adapt behaviour[56].

Incentives

Under this policy approach the State Government would provide a cash incentive to retailers, distributors, suppliers and/or manufacturers to adopt plastic-free alternatives to Stage 2 items.

The value of the incentive would need to be set appropriately to promote sufficient uptake of alternatives. This is evidenced in the cost-benefit analysis where the alternatives are almost always more expensive.

Levy

A levy on Stage 2 items would provide a price signal to encourage a change in behaviour. A levy can bridge the gap between the cost of alternatives on the market. Levies as a source of government income also act as an enabler to implement other environmental programs.

However, evidence suggests that levies can decrease in their effectiveness over time. As an example, in Ireland a EUR 0.15 (AUD 0.24) levy on lightweight plastic bags in 2002. The levy resulted in a 90 per cent reduction in plastic bag consumption in its first year of operation. In 2006, use of plastic bags was found to be increasing as consumers became desensitised to the levy. The levy was then increased to EUR 0.22 (AUD 0.35) to ensure the levy remained effective in limiting the consumption of single-use plastic bags.

There is also potential for levies to have inequitable impacts on different socio-economic sectors within the community.

Consultation in 2019 identified that a levy approach to addressing plastic impacts was less desirable (20 per cent) than that of an education campaign (37 per cent) or a statewide ban (47 per cent). The cost-benefit analysis found that levies had higher costs and less desirable economic outcomes than other policies.

Voluntary agreements

Under this policy approach a voluntary agreement would be developed with and implemented by signatory retailers to avoid plastic products.

This policy is not the preferred approach as it is unlikely to achieve as much change as other policy options that impose regulation, additional costs or financial support. The agreements would also require businesses to adopt the approach indefinitely and would pose risks of potential reversion of progress in the event businesses change ownership or direction. The State Government does not consider this approach to align with the objective of meaningfully reducing plastic impacts.

Statewide ban

The preferred policy approach is a statewide ban on Stage 2 items.

As a policy tool, the statewide ban was found to be the most effective in reducing the volume and use of each item and in most cases had the lowest net economic impact. The lifecycle analysis showed the positive environmental and waste outcomes from moving from single-use items to compostable, recyclable and reusable items higher up the waste hierarchy.

7. Proposal 1: Phase-out of fragmentable-by-design or construction plastics

Expanded polystyrene and degradable plastics (also known as fragmentable plastic) contaminate kerbside waste collections, are unable to be recycled and have a high impact when littered because of their fragmentable nature.

Under the National Plastics Plan, APCO has identified these plastics as part of a group of problematic and unnecessary single-use plastic packaging types for immediate action and set a target to phase out problematic and unnecessary single-use plastic packaging by 2025[57].

In addition, the Australian Government has set interim targets through the National Plastics Plan 2021[58], including roadmaps for industry-led phase-outs of:

- expanded polystyrene (EPS) loose-fill packaging and moulded product packaging fill by June 2022
- EPS consumer food beverage service containers by December 2022
- plastic packaging products with additive fragmentable technology that do not meet relevant compostable standards by December 2022.

7.1 Expanded polystyrene (EPS) packaging

EPS packaging in a loose-fill (void fill, e.g. 'peanuts') and a moulded form are used for product packaging applications from business-to-business and business-to-consumer. Aligned with APCO's targets, the proposed phase-out targets the latter. They also acknowledge that other similar expanded plastic packaging products like expanded polyethylene (EPE) and expanded polypropylene (EPP) are not appropriate alternatives as they are even more problematic to recycle than EPS and similarly litter prone. Most applications have single-use or reusable alternatives with similar functionality already in use by product manufacturers. We understand there may be some items where this is not the case and welcome your feedback in this consultation.

EPS packaging is in use by both local product manufacturers and suppliers as well as imported with goods from interstate or overseas manufacturers, or suppliers to WA retailers. Banned items under the Prohibited Plastics Regulations would include imported goods purchased by a customer from a WA retailer or an interstate or international manufacturer or supplier via an online purchase.

7.1.1 Proposed regulatory scope and timeline

Regulations proposed to phase out the sale or supply of:

- **loose-fill EPS or similar foamed plastic* packaging material, with the phase-out to come into effect six months after the regulations commence.**
- **moulded EPS or similar foamed plastic* packaging for light product protection proposed, with the phase-out to come into effect 18 months after the regulations commence.**

* EPS-like plastics used for packaging that serve a similar function to EPS include EPE, EPP and expanded PLA.

The scope is aligned with the APCO draft roadmap to phase out EPS. The scope of this ban extends further to other foamed plastic alternatives as they are not suitable long-term alternatives being non-recyclable or compostable and litter-prone.

It is proposed that the phase-out will not include moulded packaging for fragile and precision products or products more than 45 kg in weight. This is because there are not yet alternatives for these uses.

Consistent with the APCO draft roadmap to phase out EPS, business-to-business will not be captured by this ban.

Table 29 below presents a summary of the items proposed for regulation in Stage 2 and those outside of the Stage 2 scope.

Table 29 - Summary of EPS packaging scope

<table>
<tr><th colspan="2">Inside scope – proposed for regulation</th><th>Outside scope – not proposed for regulation</th></tr>
<tr><td>  </td><td>EPS loose-fill packaging (void or cushioning packaging)

Other EPS-like foamed plastics loose fill used for packaging that serve a similar function to EPS</td><td rowspan="2">Moulded packaging for fragile* and precision* products.

Products more than 45 kg in weight.

Business-to-business applications include transportation of fresh or frozen produce such as fish, meat, fruit and vegetables between businesses or specialist packaging such as medical applications with transporting organs or pharmaceuticals.</td></tr>
<tr><td>  </td><td>EPS moulded packaging for light product protection (below 45 kg).

Other EPS-like foamed plastics used for packaging that serve a similar function to EPS</td></tr>
<tr><td colspan="3">Note: EPS packaging for food and beverage items is also to be phased out and is listed under single-use food and drinkware items.</td></tr>
</table>

* APCO is developing definitions for these terms.

7.1.2 Available alternative products and practices

APCO advises businesses to first consider how to eliminate or otherwise reduce the need for packaging through changed delivery models, packaging format and box redesign to reduce void space[59].

For loose-fill EPS packing peanuts used in applications like cushioning in e-commerce parcels, alternatives could include reusable satchels, paper honeycomb, shredded paper and straw. There are also single-use plastic packaging options based on other plastic polymers such as LDPE air pillow padding. These would be permitted but not encouraged as they are lightweight litter-prone plastic, are currently not designed for reuse and are difficult to recycle.

For moulded EPS applications like protective packaging for electronics, small furniture or homewares, alternatives could include moulded pulp or cardboard.

7.1.3 Implementation considerations

The most significant implementation consideration is the impact upon existing product lines using moulded EPS packaging. Redesigning and manufacturing alternative protective packaging for existing products has a significant impact upon the cost of the product line and may result in products becoming unviable for sale in WA. A transition period of 18 months after the regulations come into effect is proposed to address this concern. The timeframe matches APCO's target for 90 per cent of such packaging to be removed.

Retailers with products supplied with EPS packaging from interstate or overseas will need to consider the impacts on their supply chain from changes to packaging regulations.

The transition period is also intended to provide time for businesses to address other transition issues including:

- finding suitable alternatives that meet required transport tests, including those for international safe transit
- conducting well-managed trials with all parties involved to assess the are risks involved in new packaging formats, models or materials.

Guidance questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of disposable expanded polystyrene packaging? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?
- What should be the rights and obligations of a business that did not intend to order items with banned packaging, but nevertheless received items with banned packaging?

7.2 Degradable plastics designed to fragment

Once thought to address littering issues, these oxo-degradable and other degradable-type plastics are now of concern as our understanding of microplastics and plastic additives grows. The additives themselves can undermine their recyclability and their 'degradable' label causes confusion and subsequent waste stream contamination. Jurisdictions in Australia and Europe are now moving to address this problematic plastic in products and packaging through regulations and education.

7.2.1 Proposed regulatory scope and timeline

The State Government proposes regulations to phase out the sale and wholesale supply of degradable plastics, including oxo-degradable and landfill degradable, and for the phase-out to come into force within six months after regulations commence.

Table 30 presents a summary of the items proposed for regulation in Stage 2 and those outside of the Stage 2 scope.

Table 30 - Summary of degradable plastic scope

Inside scope – proposed for regulation		Outside scope – not proposed for regulation
	**All degradable plastics with an additive designed to cause the plastic to break up into fragments more rapidly under certain conditions.** **Includes any degradable plastic items in Stage 1 or 2 regulations.**	Nil identified

7.2.2 Available alternative products and design

To transition away from products or packaging containing degradable plastics, consider how to eliminate the use of such a plastic through redesign to replace the plastic polymer with a reusable or mechanically recyclable alternative. If requiring a plastic that completely degrades to soil, look for products labelled as compostable certified to the home composting standard AS 4736 or industrial composting standard AS 5810 where an appropriate organic waste collection service is in place.

7.2.3 Implementation considerations

For businesses using or supplying degradable plastics, it may be difficult to identify whether the plastic contains fragmenting additives. There are a set of products where degradable plastics are most commonly found, like dog poo bags, magazine covers and garment covers, and terms will be used like 'oxo-biodegradable' or 'fragmentable' to identify them.

For manufacturers of degradable plastic product lines, a ban on plastics with fragmenting additives will require a change in product design. These products are already facing bans interstate; for example in South Australia where it has been an offence since March 1, 2022 to manufacture or produce oxo-degradable plastic.

Guidance questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of degradable plastics designed to fragment? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

8. Proposal 2: Phase-out of single-use plastic food and beverage items

There are many single-use plastics used in the provision of food and beverages in retail businesses.

Stage 1 of the WA Plan for Plastics addressed many of these items, such as plates, bowls, cutlery, drink stirrers and straws, cold beverage cups, EPS containers and thick plastic carry bags. Stage 2 has identified further food and drinkware items for action.

The desired outcome is to transition to reusable products, assisted with compostable alternatives when needed. Lifecycle analyses demonstrate that this is the most sustainable outcome (Section 5). International experience and local programs like WA Plastic Free Places show this is achievable but some businesses may require support and mentoring to assist them with establishing a suitable system for reusable drink and foodware items.

In the current regulations, plastic includes all plastic polymers whether derived from fossil fuels or plant oils. Degradable, biodegradable and compostable plastics are also included as they have similar impacts of fragmenting and persisting in the environment if littered, or contaminating waste and recycling streams.

For some items there are specific exemptions where suitable single-use non-plastic alternatives are not available. In this instance, a regulatory exception may be considered for a single-use plastic-lined paperboard item that is certified to one or both of the Australian Standards for composting. Examples of such items include cold beverage cups and unlidded bowls and takeaway food containers in Stage 1.

8.1 Expanded Polystyrene (EPS) cups and food and packaging

EPS is used in disposable cups, in food packaging typically seen serving meat, fish or seafood, in pre-packaging noodle cups or at market stalls selling baked goods on pre-packaged EPS trays.

8.1.1 Proposed regulatory scope and timeline

Regulations to phase out the sale or supply of EPS cups and EPS for food and beverage packaging are proposed, with the phase-out to come into effect six months after the regulations commence.

Table 31 below presents a summary of the items proposed for regulation in Stage 2 and those outside of the Stage 2 scope.

Table 31 – Summary of EPS cup scope

Inside scope – proposed for regulation		Outside scope – not proposed for regulation
	**EPS 'foam' cups for food and beverage packaging, dine-in or takeaway** **All remaining EPS trays not covered in the Stage 1 ban**	Pre-packaged EPS cups and bowls holding non-perishable 'instant' meals found on supermarket shelves, such as instant noodle cups. Business-to-consumer packaging boxes for cold chain home delivery boxes and pre-prepared meals.

8.1.2 Available alternatives

Over the past decade EPS food and drinkware has been steadily replaced by an array of reusable, recyclable or compostable items including:

- replacing EPS cups with BYO reusable cup or PLA-lined AS certified compostable 'coffee' cups
- replacing EPS fruit serving trays with reusable buckets or non-plastic sugarcane bagasse and cardboard compostable trays
- replacing EPS meat or seafood trays with clear PET, HDPE or PP trays which are more readily recyclable or offering customers the option to bring their own containers.

For meat, chicken and seafood, EPS trays have been popular as the foam absorbs liquids from the meat. Alternatives such as PET, HDPE or PP trays use soaker pads to draw away liquids. New tray designs are also solving this issue without use of a pad. Businesses that have not yet transitioned from EPS trays will need to assess the appropriate solution.

Case study

APCO industry partners

APCO's targets for eliminating problematic EPS foodware have been met by a range of measures by its industry members. Since 2018, supermarket business Coles has been replacing hard-to-recycle EPS and black plastic trays for meat and poultry with clear recyclable trays made from a combination of recycled and virgin PET that can be recycled in kerbside collections. (APCO Member Case Study: Coles 2019 (packagingcovenant.org.au))

Business-to-consumer EPS packaging is not to be phased out during Stage 2 such as for delivering fresh produce or a dinner in an EPS box. However, businesses are already adopting alternatives such as cardboard boxes and reusable eskies.

8.1.3 Implementation considerations

A six-month transition period is proposed.

Guidance questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of EPS food and drinkware and packaging? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

8.2 Produce/barrier bags

Produce bags, also called barrier bags, are the 'soft' plastic bags without handles used to carry unpackaged perishable and non-perishable food. They are typically, but not always, offered by retailers on rolls that customers or staff rip off and use to pack fresh produce offered at shelves, bread racks, behind deli counters or from dry bulk produce bins.

Case Studies

Farmers markets
The Margaret River Farmers' Market has led with a plastic bag-free policy for stallholders, starting in 2014 with carrier bags and netting bags and, since 2019, produce bags. A variety of methods are employed to avoid the disposable produce bags and plastic pre-packaging, including BYO bags, produce buckets and paper bags. Conventional plastic produce bags or packaging are only in use for wet goods at fish and meat stalls. The markets pride themselves on minimising waste to landfill, with only a single 50 L bin of landfill waste each week, all other waste is compostable and directed to their FOGO bins, with ongoing education at the markets to ensure sound waste separation.

Greengrocers
Some grocers have been pioneering fruit sold in bulk quantities without the use of produce/barrier bags or pre-packaging. In response to customer feedback, The Grocer and The Chef in Beaconsfield developed an attractive, simple way to sell fruit in bulk which keeps the packaging in-store and constantly reused. The shop fills clear pails (labelled as property of the store) with selected fruits and presents these on shelves, where customers can place the whole pail into their shopping trolley. At the cashier counter, staff weigh the pail, minus the pail weight, and empty the pail into the customers bag, setting aside the empty pails for refilling. It became a success for the store once customers were familiar with the system. This is a great example of reuse that is easy and convenient for the retailer and the customer and ensures no loss of the containers. Now The Grocer and The Chef are trialling reusable paper buckets and paper produce bags priced at 10 cents each.



Bulk foods store
There are many bulk food shops that are pioneering plastic waste avoidance principles in their stores. One such example is the Wasteless Pantry, established in Mundaring seven years ago, who follow the zero-waste principles for their packaging of Refuse, Reduce, Reuse, Recycle and Rot. So instead of using single-use plastic produce bags for dry goods, customers are encouraged to bring their own containers to refill themselves, use a clean container from the exchange pool or for online orders, or the shop staff will fill goods into paper bags and glass jars.

The WA lightweight plastic bag ban implemented in 2018 has shown how Western Australians can transition away from single-use carry bags by adopting reusable bags, baskets and boxes. In Stage 1, from 1 July 2022, a ban on thick plastic carry bags came into effect.

Woolworths deli counter trial

In 2021 Woolworth launched the rollout of its BYO container program at their deli, meat and seafood counters that avoids the use of disposable plastic produce bags and takeaway containers. After a successful trial in a Sydney store, the supermarket chain are rolling out this reusable container service initially in Tasmania. Shoppers can now bring their own reusable containers from home to fill up at the deli counter, let deli staff know that they've brought their own container and they adjust the weight to their container, fill it and provide a printed barcode sticker to scan at the checkout. Containers brought by customers to be filled in store must have a sealable lid, be clean and in good condition, and not be glass or single-use.

8.2.1 Proposed regulatory scope and timeline

Regulations to phase out the sale or supply of produce/barrier bags for fresh produce and self-serve bulk produce, with the phase-out to come into effect on 1 January 2024, 12 months after the regulatory implementation date of 1 January 2023.

Table 32 below presents a summary of the items proposed for regulation in Stage 2 and those outside of the Stage 2 scope.

Table 32 - Summary of produce/barrier bag scope

Inside scope – proposed for regulation		Outside scope – not proposed for regulation
	**Loose fruit and vegetables** **Bread and bakery products** **Dairy servings like cheeses** **Cold cured meats like ham and salami** **Self-serve bulk produce such as cereals, nuts and confectionery.**	Where necessary to meet food standards requirements such as to manage the risk of contamination or leakage from raw, fresh or non-cured meat or fish. Pre-packaged produce packaged off the premises in bags, including 'grape bags' (unsealed bags with handles used for packaging perishable products offered as a whole item on shelf).

8.2.2 Available alternatives

Alternative practices and packaging used by some WA retailers and consumers include:

- in-store reusable container – 1 kg pails, buckets or baskets for selected fruit where produce is emptied into the customer's carry bag or box at the checkout
- customer BYO containers for deli items and BYO reusable mesh or calico bags for fresh fruit, vegetable and other dry bulk goods
- returnable packaging – robust PET or cardboard trays returned to a deposit bin at a grocer or store for reuse

- compostable disposable – paper bags for loose fruit and vegetables, waxed paper bags or sheets for deli items like cheese and salami slices.

With this phase-out of produce/barrier bags and the global movement to a circular economy, we anticipate further innovative methods will emerge to reduce single-use plastic packaging for fresh and other produce.

8.2.3 Implementation considerations

The transition away from single-use plastic produce bags may require modifications in-store for business managers as well as consumers on issues such as:

- choosing alternative methods and/or bags/containers to use
- presenting and weighing stock in a different manner
- establishing a bag or container weight policy in-store
- handling BYO containers
- training staff for changed practices.

A 12-month period of transition is proposed to enable consumer education and business support programs to operate effectively in the lead-up to a ban coming into effect.

Guidance questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of produce/barrier bags? How?
- If plastic barrier/produce bags are no longer available for use on the premises (in-store) for packaging, which alternatives are you likely to use?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

8.3 Hot beverage/soup cups - Takeaway 'coffee' cups

The takeaway 'coffee' cup is a high-volume item in use, combining WA's love of coffee and the freedom to move. However, these are lined with plastic to allow them to contain liquids. These coffee cups cannot be recycled through the yellow-topped kerbside recycling bin and are a common contaminant of recycling streams.

Some plastic-lined takeaway cups have been manufactured to enable them to be down-cycled through a specialised process. It requires the cup to be deposited in a specific collection bin, which can pose problems for such a takeaway item, which is typically walked away from the retailer. Such schemes do not support the preferred behaviour to use reusable cups.

Reusable hot cup schemes are also underway in WA and the adoption of these by retail businesses and consumers will greatly assist the transition away from the single-use plastic 'coffee' cup.

Case study

Reusable coffee cup schemes

Many WA cafes are making changes to the way they serve coffee to reduce waste. One of the newer ways is by joining one of the reusable cup networks operating in WA.

A reusable network is designed to be like a library, where coffee cups are borrowed, used and returned. Reusable coffee cup networks already operating have differences in the way they work. This is positive for businesses, as they can find one to best suit their business and customer needs.

As with all reusable networks, the more cafes that participate in a network, the greater the number of cafes a customer can return the cup to. There are several reuse networks operating in Perth, with three examples provided here.

Some paperboard takeaway cups are lined with PLA (a bioplastic) and are certified compostable to the AS 4736-2006. These cups can return to soil via a hot industrial composting facility through FOGO bins for households who have this kerbside service. Large volumes of these cups will cause issues for FOGO composters in the short-term but ultimately it will produce a clean stream of cups for biological cycling. When littered these cups should not persist in the environment long-term, unlike non-AS certified compostable plastic-lined paperboard cups.

8.3.1 Proposed regulatory scope and timeline

Regulations to phase out the sale or supply of disposable plastic cups for hot beverages are proposed, with the phase-out to come into effect 12 months after the regulations commence.

Table 33 below presents a summary of the items proposed for regulation in Stage 2 and those outside of the Stage 2 scope.

Case study

Reusable coffee cup swap-and-go schemes – how they work

Cup scheme 1: With scheme-branded cups and lids.

A customer pays a deposit for a cup and this is refundable on return to a participating cafe, or it can be returned and used an infinite number of times within the network

In this network, the only cost to the business is the initial purchase of cups and there are no ongoing subscription or participation fees. The cost to business neutralises over time with a reduction in packaging purchases. The customer deposit covers the cost of the cup.

Table 33 - Summary of coffee cup scope

Inside scope – proposed for regulation		Outside scope – not proposed for regulation
	**Disposable plastic-lined coffee cups with or without lids.**	Polymer-lined paperboard cups that are certified to the Australian composting standards.

8.3.2 Available alternatives

Reusable cup options include:

- BYO cups. A recent survey commissioned by the department[60] identified most WA consumers of takeaway hot beverages own a reusable takeaway cup and 31 per cent almost always adopted the practice to BYO or dine-in.
- reusable schemes typically use a swap-and-go system, where customers can return their used cup to the same cafe or another participating cafe in the network – placing the cup back in rotation.[61]

Case study continued

Cup scheme 2: Reusable cups with QR code scanning

This system enables the use of cups provided by the network or your own reusable cup. QR code stickers are placed on cups in use and scanned each time a coffee is purchased, to monitor the number of network and personal cups in circulation and waste avoided.

The AS-certified compostable plastic-lined paperboard 'coffee' cup is a common alternative already in use by many businesses. Note: cup lids are discussed in the next section.

8.3.3 Implementation considerations

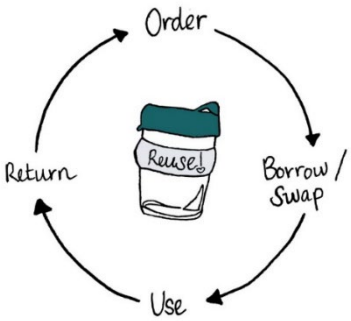
The phase out of traditional single-use coffee cups will require many WA businesses to source alternative cup stocks, investigate the options of in-store reusable cups and/or adopt a reusable cup scheme. In smaller regional WA towns, reusable cup schemes would face logistical challenges, limiting the ability for widespread adoption.

Case study

Cup scheme 3: Scheme-branded cups with customer mobile scanning and regular use trigger

Customers need to download the app and then scan their cup before taking it away, and then scan it back in the next time they are in a participating cafe. The service is free for customers as long as the cup is returned or swapped within 30 days. If not, they will be charged an overdue fee, which is the cost of the cup. There is no cost to the business as cups and lids are supplied and their business is listed on the app.

Although currently the majority of WA consumers do not consistently BYO cups, higher rates are observed than in other states such as Victoria. Increased adoption by WA consumers is anticipated with the commencement of this phase-out. It is also anticipated that reusable cup schemes will become more prevalent and widely used by businesses selling coffee as reuse becomes a consumer norm.



A 12-month period of transition is proposed to enable effective consumer education, business support programs and an increase in reusable cup schemes to operate in the lead-up to a ban coming into effect.

Guidance questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of disposable plastic coffee cups? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

8.4 Lids for disposable hot and cold cups

When evaluating stakeholder feedback to finalise the regulations for Stage 1, the decision about phasing out lids for disposable cold cups was deferred to Stage 2 because of the complexity of issues raised and to provide industry with additional time to develop alternative options.

In addition to the issues raised earlier in this document, lids for any allowed single-use cups must be compatible with the disposal options anticipated for the cups. As non-plastic fibre-based cup lids are already in use and available, it is anticipated that any lids containing plastics will be banned.

Issues with bioplastic lids include:

- bioplastic lids certified as compostable (e.g. PLA and PHA) can significantly impact existing PET recycling processes because they are visually indistinguishable from PET and chemically contaminate PET at low concentrations; this could be a significant issue if such bioplastic lids were disposed of through yellow-top bins
- when littered in the environment they persist and fragment like conventional plastics.

There is some industry concern that the alternative non-plastic products do not function adequately, particularly for hot beverages; however, some fibre-based products have heat tolerances of up to 120 °C and are in use by businesses without any health or safety concerns.

8.4.1 Proposed regulatory scope and timeline

Regulations to phase out the sale or supply lids for disposable hot or cold beverage cups are proposed, with the phase-out to come into effect 12 months after the regulations commence.

Table 34 below presents a summary of the items proposed for regulation in Stage 2 and those outside of the Stage 2 scope.

Table 34 - Summary of lids for hot cups scope

Inside scope – proposed for regulation		Outside scope – not proposed for regulation
	**Lids for hot and cold beverage cups which are made partly or wholly from plastic, including plastic-lined paperboard.**	

8.4.2 Available alternatives

Some WA food businesses and consumers avoid the use of single-use cup lids already. The most common approach is 'skip the lid' as an offer by business or a request by customers. This practice offers a financial saving for the business on the status quo of putting a lid on the cup. BYO cups also produce this outcome. Reusable bubble-tea products and schemes are also emerging.

In terms of alternative lid products, there are several recently developed fibre-based non-plastic lids available on the WA market that can be processed through kerbside FOGO collections or home composting. These fibre-based lids are suitable for hot and cold beverages and food items, and do not contain any plastic lining, coating, laminate or dispersion layer.

8.4.3 Implementation considerations

Similar to the phase out of takeaway coffee cups, the phase-out of disposable cup lids will require many WA businesses to source alternative non-plastic single-use cup lid stocks and investigate reusable cup use. A 12-month period of transition is proposed to phase out this item and support the adoption of new practices and products by consumers and businesses.

Guidance questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of disposable plastic lids for cups? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

8.5 Lids for disposable bowls and takeaway food containers

The introductory information regarding lids for disposable cups is equally relevant to lids for disposable bowls and containers. Additional considerations raised were:

- the capacity of containers to withstand extended periods of heat and/or contact with foods
- the impact on shelf life of food (both in store and once at home) if the lid container seal is not airtight.

8.5.1 Proposed regulatory scope and timeline

Regulations to phase out the sale or supply of lids of disposable plastic bowls and food containers are proposed, with the phase-out to come into effect 12 months after the regulations commence.

Table 35 below presents a summary of the items proposed for regulation in Stage 2 and those outside of the Stage 2 scope.

Case Study: Reusable containers at Toast My Curry, East Victoria Park

At the heart of the social enterprise Toast My Curry is waste avoidance. The restaurant is in a warehouse with its kitchen built inside a 35-year-old shipping container. All furnishing and food service items have been sourced from used materials for reuse or have been upcycled.

At Toast My Curry, customers can join a flexible prescription program called Containers4Curry where they can purchase a tiffin from the cafe and once each week bring the containers in to be filled with food. At any time, a person can cancel the subscription and either keep the tiffin and use on an ad hoc basis or return the tiffin to the cafe. Customers can also bring in their own containers to be filled with food.

The price of the food is calculated by weight, which solves the issue of differing container sizes. This also helps reduce food waste, as customers typically only purchase the amount of food they anticipate they can eat.

Container4 Curry is a great example of how both a reusable and a BYO food container scheme can reduce plastic and food waste, while meeting both business and customer needs.

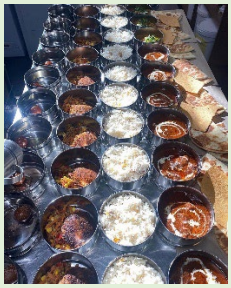


Table 35 - Summary of lids for bowls and food containers scope

Inside scope – proposed for regulation		Outside scope – not proposed for regulation
	**Lids for disposable bowls and food containers.** **Coupled with the Stage 1 ban on containers, bowls, containers and lids will be banned.**	Plastic-lined paperboard bowl lids and takeaway food container lids certified to Australian composting standards AS 4736:2006 and/or AS5810:2010. Lids on takeaway food containers and bowls pre-packaged off the premises.

8.5.2 Available alternatives

There are already non-plastic disposable bowl and container lids made from bagasse and paperboard available and in use for hot and cold foods.

For liquid hot foods, different handling may be required to avoid storage of this food for long periods as structural integrity will be affected in non-plastic fibre-based containers and lids.

Many of the alternatives for cup lids are applicable, including:

- 'skip the lid' for some food businesses and customers
- Customers' BYO reusable lidded containers, and businesses encouraging and trained for this practice.

8.5.3 Implementation considerations

The phase-out of lids for disposable bowls and containers will require many WA businesses to source alternative non-plastic single-use container lid stocks and investigate reusable options. A 12-month period of transition is proposed to phase out this item and support the adoption of new practices and products by consumers and businesses.

The South Australian government has also pursued passing legislation known as the 'BYO containers Bill' (Civil Liability (BYO Containers) Amendment Bill 2022) to remove liability on the business accepting BYO containers from customers.

Guidance questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of disposable plastic lids for bowls and food containers? How?
- If plastic lids are no longer available for use on the premises (in-store) for container packaging, which alternatives are you likely to use?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

9. Proposal 3: Phase-out of small or microplastics

9.1 Microbeads

In 2016, the Australian Environment Ministers agreed to support a voluntary industry phase-out for plastic microbeads found in rinse-off personal care, cosmetic and cleaning products sold in Australia. The voluntary phase-out was led by Accord and overseen by the Commonwealth Department of Climate Change, Energy, Environment and Water (DCCEEW) and the NSW Environment Protection Authority[62].

These items were identified because of the high risk for pollution. They readily enter the wastewater system and wastewater treatment plants are not able to remove these contaminants.

The voluntary phase-out through the BeadRecede campaign has been largely successful for these products. An independent assessment of these products in 2020[63] found that:

- of the about 8,100 unique products inspected, 99.3 per cent were microbead-free
- for the 0.7 per cent of products containing microbeads, facial scrubs, facial cleansers and facemasks were the most common product types using microbeads as an ingredient
- there were no microbeads present in cleaning products or in oral hygiene products surveyed, such as mouthwash and toothpaste.

The 2019, the National Waste Policy Action Plan included a commitment from the business sector and governments to phase out 100 per cent of microbeads from the targeted rinse-off products.

The proposed regulatory scope extends this voluntary agreement into a ban, which would affect the supply of the small number of rinse-off products that still contain plastic microbeads.

9.1.1 Proposed regulatory scope and timeline

Regulations to phase out the sale or supply of microbeads in rinse-off personal care, cosmetic and cleaning products are proposed, with the phase-out to come into effect six months after the regulations commence.

Table 36 below presents a summary of the items proposed for regulation in Stage 2 and those outside of the Stage 2 scope.

Table 36 - Summary of microbeads scope

In scope – proposed for regulation		Out of scope – not proposed for regulation
	Cleaning products in commercial, industrial and residential settings including indoor and outdoor applications Haircare products – colour dye, shampoo and conditioner, shaving cream and styling including hairsprays, styling gels, styling pastes and similar Oral hygiene – mouthwash, toothpaste, tooth- whitening products Skincare products – hand cleaner, body wash/scrub such as cleansers and exfoliants and facial scrubs, cleansers and masks	'Wash-off' products like sunscreen 'Wipe-off' makeup products Leave-on personal care products like moisturisers, deodorants, makeup and lipsticks Printing applications – printer toners, textile printing Craft glitter Microbead products in industrial and medical applications (with the exception of cleaning products)

9.1.2 Available alternatives

Microbeads in rinse-off personal care, cosmetic and cleaning products have a variety of functions including the following: abrasive, exfoliant, filler and aesthetic.

BeadRecede has identified many non-plastic alternatives available to replace the function of microbeads[64]. These alternatives seem economically viable at their current scale of use and potentially viable at a greater scale.

With 99.3 per cent of products in the target group surveyed as microbead-free, there appear to be ready and plentiful alternatives.

9.1.3 Implementation considerations

The proportion of products still containing microbeads is small, less than 0.7 per cent.

For those selling or providing such items, there may be difficulty with identifying products that have microbeads as an ingredient. Accord, the peak industry association for cosmetic, hygiene and specialty products, launched BeadRecede in early 2017 as an initiative open to all member and non-member companies engaged in the making and supply of cosmetic, personal care and certain cleaning products included in the scope of the phase-out. Accord remains a principal place for advice for WA suppliers to identifying products with microbeads.

A six-month transition period is proposed.

Guidance Questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of microbeads? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

9.2 COTTON BUDS

Given the widespread availability of cotton buds with compostable shafts, the State Government proposes a ban that eliminates this single-use plastic product, except where its properties are essential.

This includes degradable plastic and bioplastic materials because cotton buds are a littered item in the environment and not effectively screened out by wastewater treatment.

Plastic-shafted cotton buds may be required for medical, scientific, forensic and law enforcement purposes such as swabs for testing or gathering and retaining long-term evidence. In these cases, the rigid, inert properties can be essential.

9.2.1 Proposed regulatory scope and timeline

Regulations to phase out the sale or supply of plastic-shafted cotton buds are proposed, with the phase-out to come into effect six months after the regulations commence.

Table 37 - Summary of cotton bud with plastic shafts scope

In scope – proposed for regulation		Out of scope – not proposed for regulation
	Plastic-shafted cotton buds for general use	Cotton buds and swabs for medical, scientific, forensic and low-enforcement purposes.

9.2.2 Available alternatives

The current alternatives to single-use plastic-shafted cotton buds are:

- single-use cotton buds with stems made from paper, bamboo or sugar cane that offer a range of shaft strength and price
- reusable buds with bamboo, wood or hard-plastic stems and silicone heads which are designed for washing and reuse.

9.2.3 Implementation considerations

A six-month transition period is proposed

Guidance Questions:

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of cotton buds with plastic shafts? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

10. NATIONAL IMPACTS

10.1 MUTUAL RECOGNITION

Mutual recognition is an arrangement that allows goods sold in any Australian state or territory, or sold in New Zealand, to be sold in any other state or territory or in New Zealand without further requirements being met. This facilitates more efficient trade, which can lower costs or provide a greater range of products for consumers. Each state and territory, and the Australian and New Zealand governments, have in place laws that provide mutual recognition.

This regulatory impact statement document proposes regulatory changes in WA and considers the costs and benefits of the proposal from the perspective of WA. This is used to inform the decision of the State Government.

The proposed phase-out of Stage 2 single-use plastic items would require an exemption under the *Mutual Recognition Act 1992* (Cwlth) (MR Act) and the *Trans-Tasman Mutual Recognition Act 1997* (Cwlth) (TTMR Act).

The process for adding permanent exemptions involves making and/or gazetting regulations to amend the relevant schedules to the MR Act and the TTMR Act by the Australian Governement and all states and territories.

As an exemption requires amendment of regulations under Commonwealth legislation, it is subject to regulatory impact assessment. Therefore, this document considers costs and benefits below from a national perspective, as well was from a state perspective.

10.2 BUSINESS IMPACTS

Businesses that operate in both WA and in other jurisdictions may face costs associated with the phase-out. For example, a business may respond to a phase-out by selling different products in WA to those in other jurisdictions, may stop selling a product in WA, or may modify the product choice in all jurisdictions to allow it to be sold in WA.

The department expects that from the perspective of a business that operates in multiple jurisdictions, it may not be practicable or relevant to quantify the extent to which its additional costs are incurred outside or within WA. However, the department is interested in receiving any information from stakeholders about costs that are explicitly incurred outside WA.

10.3 NATIONAL BENEFITS

The department expects that the most significant benefits of a phase-out of single-use plastics in WA will largely accrue within WA, but it is possible that the phase-out of single use plastics in WA could have benefits elsewhere in Australia.

For example, a national business may respond to the phase-out by modifying the type of products on sale in all jurisdictions to reduce the use of plastic. As WA only accounts for about 10 per cent of the population in Australia, this may not necessarily be a common response.

Guidance Questions:

- Is there information to show that the phase-out of Stage 2 single-use plastic items could have significant costs or benefits outside WA?

11. EXEMPTION PROCESS AND ENFORCEMENT OF REGULATIONS

The Environmental Protection (Prohibited Plastics and Balloons) Regulations 2018 provide for the Chief Executive Officer (CEO) of the department to exempt some Stage 1 banned items. These exemptions can be granted to a person or class of persons for a prescribed plastic item or prescribed drinking straw, for a specified kind or in specified circumstances, or both, where the CEO considers that it is reasonably necessary to do so. Exemptions can be sought on application or issued on the CEO's own initiative.

Further information about exemptions is available.

Exemptions are intended to manage situations where the continued short-term supply of a banned plastic item may be necessary. For example:

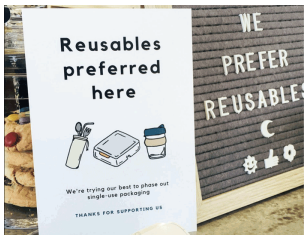
- public health requirements (e.g. to allow the continued safe delivery of a public health program)
- a safety or security need (e.g. to reduce sharp objects in remand facilities or mental health units)
- continued disability support or access to items required to allow for the same levels of quality of life and independence before the bans come into effect
- transitional supply arrangements for items* awaiting certification to Australian composting standards AS4736:2006 or AS5810:2010
- unavoidable supply chain issues
- policy objectives of government in relation to waste management.

*applies to paperboard-lined cups, bowls and food containers only, where existing European composting certification has been achieved and the product is undergoing assessment for certification under the Australian standards.

It is proposed that these exemption provisions be extended to items banned in Stage 2. The need for exemptions for items in Stage 2 will be assessed further during the consultation phase, with feedback from the relevant stakeholders or users of the Stage 2 products.

Enforcement of regulations will be the department's responsibility.

12. EDUCATION PROGRAMS AND MATERIALS SUPPORTING TRANSITION



Education programs and information resources were developed by the State government to support the introduction of the lightweight plastic bag ban and Stage 1 of the WA Plan for Plastics. These resources explained the regulations to business and the WA community.

The State Government engaged the National Retail Association (NRA) to deliver a retailer and supplier engagement and education program for the Stage 1 ban. This service offered a dedicated website (**plasticsbanwa.com.au**), retailer and supplier workshops and information sessions, resources including staff training kits and signage and a toll-free phone line to respond to questions from businesses. The direct engagement component of this program was delivered before the 1 July 2022 enforcement date, with ongoing retailer and supplier phone and website support continuing until June 2023.

In addition, to support businesses in the hospitality sector such as cafes, bars, stadiums and markets, the Boomerang Alliance has been funded by the State Government to implement their WA Plastic Free Places program, WA Plastic Free for three years. This program works with participating food retailers to adapt to the State Government's Plan for Plastics, assisting them to switch from single-use plastics to better alternatives such as reusable replacements or Stage 1 compliant single-use alternatives for the sale of food and beverages.

Behaviour change-based community education campaigns were delivered before the lightweight plastic bag ban and Stage 1 bans. This was an important step to prepare the WA community for the changes and ensure consumers work with businesses to embrace new practices and products.

WA Plastic Free Places will continue to be delivered through Stage 2 implementation, supporting food and hospitality businesses transition from food and drinkware and produce/barrier bags addressed in Stage 2. The department intends to establish a retailer and supplier engagement and education program, and a community education campaign to raise awareness and assist transition before the bans come into effect.

Case Study: Choose to Reuse Masterclass, University of Melbourne

Sustainability Victoria recently partnered with the University of Melbourne to host Choose to Reuse, a masterclass for other universities, food hall operators and permanent market operators to learn how to adopt a reusable system in preparation for the Victorian Government's single-use plastics ban.

Guidance Questions:

- If you manage a WA retail business, were the Stage 1 education resources adequate? Would you need anything else or different?
- What would you need to adopt reusable items and practices?
- As a consumer, were the Stage 1 education resources adequate? Would you need anything else or something different?
- What would you need to adopt reusable items and practices?
- As a consumer, where would you go to access information you need to avoid the banned items and take up new products and practices?

13. Preparing for Change

The State Government's preferred policy approach proposes a ban on the sale and supply of plastic products captured in Stage 2 of the Plan for Plastics, as detailed in section 6, 7 and 8. The regulations would apply to any person who sells or supplies prescribed plastic products. Consultation processes will consider all perspectives and adapt policy approaches where required, such as those provided during Stage 1 implementation.

However, businesses may be aware of the strong consumer shift away from single-use plastic items. For example, a recent Australian survey found that businesses implementing change to reduce plastic are seen most favourably by consumers, irrespective of proposed government intervention[65].

Businesses can take several measures and actions to prepare ahead of the anticipated reduction in plastic use, either to respond to the ban or to meet consumer expectations. An overview of general advice for impacted sectors is provided below.

12.1 Impacted businesses

Plastic items included in Stage 2 are broadly available and used in many settings. The business types and organisations likely to be impacted by the proposed legislation are:

- hospitality businesses, including those serving takeaway food and beverages
- retailers
- importers, suppliers and manufacturers of Stage 2 items
- state and local government agencies
- waste reprocessors
- supermarkets, including those selling fresh produce
- education institutions including schools, colleges, TAFEs, universities, student accommodation and childcare facilities
- not-for-profit clubs and associations.
- public and private event-coordination businesses
- meal service delivery providers.

12.2 Ways to prepare

To prepare for potential change, all stakeholders should consider that they:

- stop ordering disposable plastic items captured in proposed Stage 2 legislation
- if using these items, decide whether you will
    - sell or supply alternative non-plastic disposable items (such as compostable coffee cups)
    - adopt more environmentally conscious options including reusable products
    - avoid items altogether
- speak with your existing suppliers about how they can support your transition away from banned items.
- discuss implementation of Stage 2 bans within your organisation, including staff that may need to understand proposed changes
- consider indicating the potential for change to customers via signage and communication channels.

Consumers are encouraged to consider how their behaviour may need to change through Stage 2 implementation, such as bringing your own reusable containers or ways to transport produce, bringing a reusable coffee cup, or asking companies to package a product without using EPS.

Consumers are also encouraged to consider that businesses are introducing change too and may require time and empathy before changes to service delivery are efficient and clear.

In the short term, businesses and organisations who routinely sell or supply Stage 2 plastic products will need to consider how they may adapt. All stakeholders are encouraged to consider the longer-term benefit of sourcing reusable items and services.

APPENDIX 1: SUMMARY OF PROPOSALS AND PHASE-OUT TIMEFRAMES

Table 38 - Summary of Stage 2 timeframes

Item	Scope	Out-of-scope	Phase-Out Timeframe
Degradable plastic, including oxo-degradable and landfill degradable	The supply, sale and wholesale of degradable plastics which have additives designed to enable the plastic to break up into fragments under certain conditions, such as exposure to light, bacteria, heat and landfill environments.	None	6 months after regulations
Cotton buds with plastic shafts	The sale or supply of plastic-shafted cotton buds	When required in medical or scientific testing, forensic and law-enforcement applications	6 months after regulations
Microbeads	The sale or supply of microbeads in rinse-off personal care, cosmetic and cleaning products	Those outside of voluntary agreement.	6 months after regulations
Takeaway coffee cups	The sale or supply of disposable plastic cups for hot beverages	Lined paperboard takeaway cups certified to the Australian Standard AS 5810:2010 or AS 4736:2006	12 months after regulations
Cup lids (hot and cold)	The sale or supply of disposable cup lids made wholly or partly of plastic for hot or cold beverages		12 months after regulations
Lids for takeaway food containers and bowls	The sale or supply of takeaway wholly or partly plastic food containers, bowls and cups provided with lids	PLA paperboard takeaway food container or bowl lids certified to the Australian Standard AS 5810:2010 or AS 4736:2006	12 months after regulations
Produce/barrier bags	The sale or supply of produce/barrier bags for fresh produce and self-serve bulk produce	Supply or sale of barrier/produce bags when they are used in pre-packaged produce or deemed necessary to meet food standards requirements	12 months after regulations
EPS cups and EPS in food and beverage packaging	The sale or supply of EPS cups and food, beverage and retail fresh produce packaging	Pre-packaged non-perishable food packaging	6 months after regulations
EPS packaging and other expanded plastic equivalents including EPE, EPP and bioplastic EPS	The sale or supply of loose-fill packaging material in WA	Business-to-business produce packaging applications	6 months after regulations
	The sale or supply of light product-moulded packaging under 45 kg	Business-to-business light-product packaging, including specialist item packaging such as organ transport. Light product packaging for fragile furniture, and precision equipment (where not alternative packaging exists as per APCO roadmap)	18 months after regulations

APPENDIX 2: LIST OF KEY QUESTIONS

The following questions are extracted from the document to guide your written submissions. We would also appreciate a few introductory questions so we can understand the context for your responses.

Feel free to provide written responses only on those banned items you have an interest in.

Note: you can also complete an online survey that provides quantitative feedback and questions on each proposed banned item.

What is your area of interest for these bans?

- *concerned about the environment*
- *manufacturer*
- *supplier*
- *business who uses these products.*

What is the postcode for your home or business premises (whichever is more relevant to your responses)?

Cost-benefit analysis

- What additional costs do you expect to incur from the preferred approach of a statewide ban?
  - What actions do your costs include?
  - Are any additional costs likely to be passed on to consumers?
- What other policy approaches are favourable to you in terms of economic outcomes and addressing plastic impacts?
- Do you agree with the parameters of the economic assessment? If not, why?
- Can you quantify the costs or benefits not considered as part of this assessment (such as the benefit of plastic reduction in the environment)?
  - What other information can you provide to improve quantification of environmental costs/benefits?

EPS packaging

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of disposable expanded polystyrene packaging? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?
- What should be the rights and obligations of a business that did not intend to order items with banned packaging, but nevertheless received items with banned packaging?

Degradable plastics

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of degradable plastics designed to fragment? How?
- Are there any issues or challenges for you in transitioning to the alternatives?

- What assistance could be most helpful to transition to alternatives?

Expanded polystyrene (EPS) cups and food, beverage and retail fresh produce packaging

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of EPS food and drinkware and packaging? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

Plastic single-use produce/barrier bags

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of produce/barrier bags? How?
- If plastic barrier/produce bags are no longer available for use on the premises (in-store) for packaging, which alternatives are you likely to use?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

Disposable plastic hot beverage/soup cups – takeaway 'coffee' cups

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of disposable plastic coffee cups? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

Plastic hot and cold cup lids

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of disposable plastic lids for cups? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

Lids for disposable bowls and takeaway food containers

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?

- As a business or consumer, do you already minimise the use of disposable plastic lids for bowls and food containers? How?
- If plastic lids are no longer available for use on the premises (in-store) for container packaging, which alternatives are you likely to use?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

Microbeads in rinse-off personal care, cosmetic and cleaning product

- Is the scope of a ban clear?
- Do you support the scope of banned products containing microbeads?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of microbeads? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

Plastic-shafted cotton buds

- Is the scope of a ban clear?
- Do you support the scope of the ban?
- Are the proposed timeframes appropriate to balance action with the development of new product lines?
- As a business or consumer, do you already minimise the use of cotton buds with plastic shafts? How?
- Are there any issues or challenges for you in transitioning to the alternatives?
- What assistance could be most helpful to transition to alternatives?

National Impacts

- Is there information to show that the phase-out of Stage 2 single-use plastic items could have significant costs or benefits outside WA?
- If you manage a WA retail business, were the Stage 1 education resources adequate? Would you need anything else or different?
- What would you need to adopt reusable items and practices?
- As a consumer, were the Stage 1 education resources adequate? Would you need anything else or something different?
- What would you need to adopt reusable items and practices?
- As a consumer, where would you go to access information you need to avoid the banned items and take up new products and practices?

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