

03 May 2023

Report to ACT NoWaste

Proposed ban of a third tranche of single-use plastic items

Regulatory Impact Statement

SL2023-10



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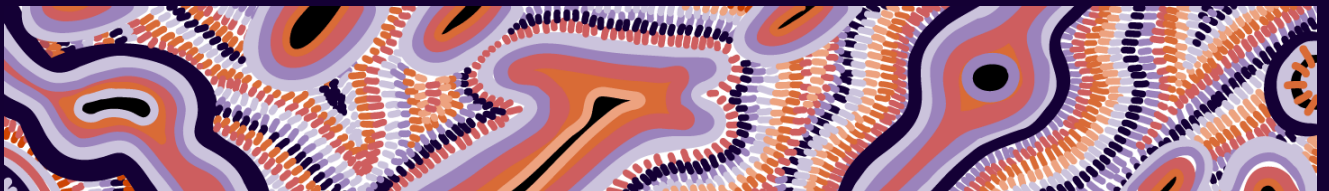
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Goomup, by Jarni McGuire

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Glossary

ACT	Australian Capital Territory
BCR	Benefit-cost ratio
BRS	NSW Better Regulation Statement
CBA	Cost-benefit analysis
CIEL	Center for International Environmental Law
CO ₂ e	Carbon dioxide equivalent
EPS	Expanded polystyrene
GHG	Greenhouse Gas
N/A	Non-applicable
NPV	Net Present Value
NSW	New South Wales
NT	Northern Territory
NZ	New Zealand
OECD	Organisation for Economic Co-operation and Development
OIA	The Office of Impact Analysis
QLD	Queensland
RIA	Regulatory Impact Analysis
RIS	Regulatory Impact Statement
SA	South Australia
SUP	Single-use plastic
TAS	Tasmania
UNEP	United Nations Environment Programme

UNESCO	The United Nations Educational, Scientific and Cultural Organization
VIC	Victoria
WA	Western Australia
WTP	Willingness to Pay
WWF	World Wide Fund for Nature

Executive summary

In 2021, the ACT government introduced and passed the Plastic Reduction Bill 2021. The legislation allowed restriction and prohibition of the sale, supply or distribution of the first tranche of single-use plastic (SUP) products commencing 1 July 2021. The first tranche restrictions included a preliminary ban on SUP cutlery, drink stirrers and expanded polystyrene (EPS) containers for take-away food and/or beverages. The second tranche of restrictions took place in 2022, banning SUP drinking straws (with an exemption for those who need them), oxo-degradable plastic products, and cotton buds with plastic sticks.

ACT NoWaste (of the Transport Canberra and City Services Directorate) has commissioned ACIL Allen to conduct a Regulatory Impact Statement (RIS) to assess the net impacts of 2 identified policy options for phasing out single-use and other plastic products via cost benefit analysis (CBA). The items included in this RIS are plastic microbeads, expanded polystyrene loose-fill packaging, SUP takeaway containers, SUP plates and bowls, and heavyweight and boutique plastic bags.

Statement of the problem

Australia generated approximately 400 million tonnes of net SUP waste in 2019.¹ This equates to an average of 59kg of SUP waste per person per year in Australia. This is nearly 4 times the global average (currently at 15kg of SUP per capita per year).²

Despite a growing awareness of plastic pollution and its negative environmental impacts, plastic production and subsequent consumption continue to rise. The Organisation for Economic Co-operation and Development's (OECD) recent global plastics outlook³ projects that, under current policies, the production, and corresponding consumption, of plastic is projected to almost triple by 2060 due to economic and population growth. It is anticipated that half of this plastic will end up in landfill and less than a fifth will be recycled.

Plastic is flexible, durable, mouldable, and lightweight, with low production, distribution, and disposal costs. These characteristics make them the preferred material for various applications in a wide range of products. These same strengths also present a problem: plastic does not break down

¹ Charles D., Kimman L. and Saran N. 2021, *The Plastic Waste Makers Index*, Minderoo Foundation, page 63.

² Ibid.

³ Organisation for Economic Co-operation and Development (OECD) 2022, *Global Plastics Outlook: Policy Scenarios to 2060*, June.

naturally. It is suggested that plastics generally take 500-1000 years to break down; even so, they become microplastic instead of fully degrading.⁴

Plastics can have environmental, economic, and social impacts when not captured and disposed of correctly. These impacts include:

- **Environmental impacts:** SUPs constitute a significant source of pollution and harm to wildlife. Plastic waste is often disposed of improperly, either through littering or improper waste disposal, and can end up in the natural environment, such as oceans, rivers, and forests, causing impacts both on marine and terrestrial ecosystems.
Furthermore, manufacturing SUP requires significant energy and resources, contributing to greenhouse gas emissions, climate change and resource depletion.
- **Economic impacts:** The production, use, and disposal of SUPs have significant economic impacts, including increased costs of waste management, clean-up costs borne by governments, NGOs, and volunteers, and damage to fisheries, aquaculture, marine transport, shipbuilding, and marine tourism industries caused by marine plastic pollution.
SUPs are also an inefficient use of resources because they often have a short lifespan and few options for reuse or recycling, so most end up in landfills or as litter. Moreover, when the world's population is growing, and natural resources are dwindling, producing SUP products, especially unnecessary or problematic ones, goes against the idea of the circular economy where resources keep circulating within the economy and thus reduce the use of natural capital.
- **Social impacts:** The production and disposal of SUPs can have social impacts, such as harm to human health and safety. Plastic waste can also lead to increased litter and debris in public spaces, impacting communities' aesthetic appeal and safety.

Multiple studies have demonstrated the presence of plastic in the human body, suggesting adverse effects on human health, including cell death, immune response, oxidative stress, barrier attributes, and genotoxicity, and more. While the extent of these impacts is still unclear, a precautionary approach is desirable.

Plastic litters are visually displeasing and depreciate the aesthetic and real value of the surrounding environments. Littering can affect human health and well-being by creating safety hazards and disease vectors, cause injuries or infections from sharp objects or contaminated materials. Littering can also influence human behaviour and perception by creating social norms and increasing crime rates. Similarly, when people see littered places, they may perceive them as unsafe or undesirable, leading to more crime or vandalism.

There are several reasons why the current market is not addressing these impacts, and a socially optimal level of SUP production and consumption is not taking place (which include negative externalities, information failures and arguments relating to public goods). These reasons are important justifications for introducing the Tranche 3 bans (see Section 4.1). They also explain why market self-correction, quasi-regulation, co-regulation or self-regulation (other non-regulatory approaches) will not adequately address the longer-term problems associated with SUPs in the Territory.

Policy options explored in the RIS

The RIS considers 2 policy options; the base case and the policy case, where each SUP item considered is banned. Self-regulation, quasi-regulation and co-regulation have been explored and

⁴ United Nations Educational, Scientific and Cultural Organization (UNESCO) 2022, *Ocean plastic pollution an overview: data and statistics*, <https://oceanliteracy.unesco.org/plastic-pollution-ocean/>, accessed 17 March 2022.

are found to be unlikely to address the problem sufficiently. These options were discussed with ACT NoWaste and given approval for use in this RIS. They also align with the 2022 RIS approved by the Territory and the overwhelming support by the community and other stakeholders to introduce a third tranche of bans.

- **Option 1** (base case): Do not introduce the regulation. Under this option, there will be no new regulation to prohibit the sale and distribution of each of the SUP items considered in this RIS in the ACT. Instead, the government could introduce voluntary and intermediate approaches to influence the reduction in the consumption of SUP, such as through education campaigns, voluntary industry commitments and procurement processes.
- **Option 2**: Introduce the regulation. If option 2 is pursued, a new regulation will be created to introduce an immediate regulatory ban on the sale and distribution of each SUP item in the ACT.

Impact analysis

Based on best practice guidance from the ACT and elsewhere, the impacts of each policy option (and each SUP item) have been analysed in this RIS. Owing to the difficulties of quantifying some of the impacts associated with Option 2, it is important to note that the assessment is conservative, and the benefits of progressing Option 2 will likely increase as better data and more complete evidence emerges over time.

Quantified impact

The quantified costs and benefits associated with Option 2 is shown in Table ES 1. They are provided in 2 forms: Net Present Value (NPV) and Benefit-cost Ratio (BCR), calculated using 7% real discount rate.

Table ES 1 Estimated economy-wide costs and benefits of Option 2, present value (in 2023 at \$2022)

COSTS (\$)	
Consumers	-1,724,103
Industry	
Food and hospitality outlets	18,421,601
Medical and other exempted sectors	-23,648
ACT Government	450,000
TOTAL	17,123,850
BENEFITS (\$)	
Landfill operating costs	609,482
Society	
Avoided & substituted litter	4,209,552
Marine environment benefits	0
TOTAL	4,819,034
BENEFITS MINUS COSTS (\$)	-12,304,816
BCR (RATIO)	0.3

Source: ACIL Allen

Table ES 2 shows the distributional analysis results.

Table ES 2 Distributional assessment for Option 2, present value (in 2023 at \$2022)

Stakeholder	Estimated impact (NPV7)	
	Total	Per capita (blue) / per business (green)
ACT Government	-450,000	-0.98
Local Government (waste disposal costs)	609,482	1.33
Food and hospitality outlets	-18,421,601	-10,466.82
Medical and other exempted sectors	23,648	8.20
Consumers (retail)	1,724,103	3.77
Environment (society)	-450,000	-0.98

Note: Negative values are costs, and positive figures represent benefits. NPV7 stands for net present value at 7% discount rate. Negative figures represent costs. Per capita figures are based on the ACT population in 2021 and highlighted in blue. Per business figures are highlighted in green and have been calculated based on counts of ACT businesses by the ABS (ABS 8165.0 Counts of Australian Businesses). Food and hospitality outlets are counted using ABS' ANZSIC codes 44 and 45, while medical and other exempted sectors are drawn from the same source, using ANZSIC codes 84, 85, 86 and 87.

Source: ACIL Allen

Table ES 3 outlines the net impacts of the proposed bans under Option 2 by item (excluding government costs⁵) and provides some commentary about what drives each product's result.

Table ES 3 Summary of the impact of Option 2 by product

	NPV7 (\$ in 2023 at \$2022)	Cost	Benefits	BCR (ratio)	Main drivers of the result
Bowls	195,276	-146,741	48,535	N/A ^a	Plastic bowls were predominantly replaced with Bagasse bowls. The price of these was lower than the price of SUP bowls.
Bowl lids	322,066	-295,761	26,305	N/A ^a	Most bowl lid alternatives were also cheaper than the SUP product.
Plates	231,917	-163,893	68,025	N/A ^a	Most plate alternatives were also cheaper than the SUP product.
Boutique and heavyweight plastic bags	-1,592,561	4,549,090	2,956,529	0.65	The relatively high benefit value was due to the high level of items replaced by re-usable alternatives, which had a much lower per-use cost.
Take-away containers	-2,438,658	3,574,270	1,135,612	0.32	Food containers had a relatively high level of re-usable alternatives
Take-away container lids	-5,844,730	5,994,437	149,707	0.02	Food container lids had low benefits relative to their cost due to their relatively higher mass of single-use alternatives. Food container lids made of substances like plant fibres weigh more proportionally than those of plastic due to their lower strength.
EPS loose-fill packaging	-2,776,088	3,175,595	399,507	0.13	The alternatives (cardboard, kraft paper, HDPE air bags) are higher in cost than the EPS packaging. This means the benefits of replacing than are smaller than the costs.
EPS trays	47,961	-13,147	34,814	N/A ^a	The weighted alternative is cheaper than existing EPS products.

^a No BCR can be calculated as there are only benefits, no costs.

Note: NPV7 stands for net present value at a 7% discount rate. Impact by product excludes government costs.

Source: ACIL Allen

⁵ Estimates for government costs are not included in the costs per item, as they were estimated as an aggregate per option. These costs make up a small cost relative to the net cost of each option.

A sensitivity analysis was conducted to address 4 areas of uncertainty: discount rate, WTP for avoided litter, WTP for substituted litter, landfill operating costs, and response to regulation. The details of the assumptions tested are provided in Section 7.1.2.

These results are presented in Table ES 4. It shows that under all tested assumptions, the NPV is below zero. Additionally, it shows that:

- a lower discount rate increases the cost in net present terms
- a lower willingness to pay to avoid or substitute litter increases the cost in net present terms
- a change in landfill costs of +/- 50% had little impact on the NPV
- where fewer reusables are used, or fewer items are removed from the market, the cost in net present terms is higher.

Removed items contribute significantly to the NPV because, in the economic modelling, an item removed from the market only counts the saved costs to businesses, consumers and the environment and not the lost consumer or producer surplus resulting from the ban of a product. Reusable items contribute positively to the NPV because of their low cost per use.

Table ES 4 Sensitivity analysis — the impact of sensitivity tests on the NPV under each policy option (\$M 2022)

	NPV under scenarios
NPV under standard assumptions	-12.30
Discount rate (base assumption 7%)	
Low estimate (3%)	-16.82
High estimate (10%)	-10.10
WTP for avoided litter	
Low estimate	-13.15
High estimate	-5.19
WTP for substituted litter	
Low estimate	-13.15
High estimate	-5.25
Landfill operating costs	
Increase costs by 50%	-12.00
Decrease costs by 50%	-12.61
Response to regulation	
No SUP items removed from market (substituted by single-use alternatives)	-16.95
No SUP items replaced by re-usable products (substituted by single-use alternatives)	-21.04
No items removed from market + no reusables (all SUPs are substituted by single-use alternatives)	-25.68
<i>Source: ACIL Allen</i>	

Non-quantified impact

There are a range of costs of benefits that are either unquantifiable or unmonetisable associated with Option 2, due to limited data and information available. These impacts are discussed in detail in Section 7.2 and Section 7.3, and they include:

- Costs:

- Costs to manufacturers, wholesalers and distributors
- Compliance and inventory costs
- Increased cost of procuring for those who are exempt, including in medical and other sectors
- Other industry costs.
- Benefits:
 - Social cost of plastic
 - Impact on human health
 - The removal of microbeads from the environment
 - Reduced contamination of recycling streams
 - Policy and strategy alignment.

The non-quantified impacts should be taken into consideration when determining the case for each tranche SUP ban.

Transboundary impact

Australia, the *Mutual Recognition Act 1992* and the *Trans-Tasman Mutual Recognition Act 1997* aim to remove regulatory barriers to the free flow of goods and labour between Australian states and territories. In the ACT, the *Mutual Recognition Act (ACT) 1992* and the *Trans-Tasman Mutual Recognition Act (ACT) 1997* apply as laws. These Acts apply the ‘mutual recognition principle’: goods produced or imported into one Australian jurisdiction can be distributed and sold freely throughout Australia, and in, extension, to New Zealand.

The effects the proposed Regulation will have on the mutual recognition principle is explored in Section 7.4. In summary, the impacts on other jurisdictions from the ban in the ACT will only arise in a jurisdiction where an item that is banned in the ACT is not banned in that jurisdiction. Because most items are likely to be banned in most jurisdictions, these impacts are not expected to be large. Also, because of the small size of the ACT, if an item is banned but continues to be supplied elsewhere, this will likely only result in a small reduction in the market for these products. In the context of the overall economic impact of banning items, which will mainly affect businesses supplying relevant products in the ACT, and the positive environmental impact of the ban, the impact on other jurisdictions will likely be relatively small.

Conclusion

Quantitative analysis undertaken in this RIS for individual SUP items shows that the phasing-out of bowls, bowl lids, plates, and EPS trays has a positive net impact. In contrast, the quantitative analysis shows that the phasing-out of boutique and heavyweight plastic bags, plastic take-away containers, and container lids has a negative net impact. In aggregate, this analysis suggests that the overall costs of the proposed Tranche 3 bans outweigh the benefits. However, this is only a partial assessment of the overall impacts, and there is a broader range of reasons why banning all of the Tranche 3 products is justified:

- The CBA was based on assumptions developed from our research, the best available information, and ACT NoWaste’s inputs. While the CBA is based on existing data sources, overtime, additional data about Territorians’ WTP for environmental benefits will become available and will likely improve the CBR of options. These elements will improve over time, allowing more of the benefits to be quantified.
- The value of unquantified benefits to the environment and society, including human health, of reducing plastic waste. In particular, the environmental benefits that other jurisdictions have been able to quantify based on avoided environmental ocean impacts of SUP.

- The effect of the bans on the cost of alternatives. The analysis does not reflect the possibility for the cost of alternatives to decrease over time due to innovation and technological developments, hence assuming the costs of alternatives to be at this point in time. If alternatives' prices were to decrease further, the NPV would improve.
- The availability of suitable alternative products to substitute SUP products.
- Feedback from stakeholders regarding the need for bans.
- The actions taken by other Australian jurisdictions and New Zealand to reduce SUP and the low level of impact a ban in the ACT will have on other jurisdictions.

Considering the results of the CBA, including the non-quantified impacts, other jurisdictions' actions taken, stakeholder feedback, and alignment with government policy on the phasing out of SUP, Option 2 is assessed as the preferred approach in this RIS.

That said, the RIS has also identified concerns stakeholders have regarding the implementation of the regulation, including timeframes for introducing the ban with approximately 6-18 months to prepare and potential exemptions for certain sectors, including health, veterinary, charity and not-for-profit as there are no viable alternatives or a significant cost increase would be incurred.



2.1 Background

In the mid-2000s, the ACT Government began exploring options to reduce plastic waste through a plastic shopping bag ban. This resulted in legislation with the *Plastic Shopping Bags Ban Act 2010*, followed by the Plastic Shopping Bags Ban Regulation 2011. The Act was then repealed, and the *Plastic Reduction Act 2021* was introduced, expanding to more plastic items.

Since its introduction, the regulations have contributed to reducing the amount of single-use plastic (SUP) bags produced and consumed in the ACT.⁶ A 2018 review conducted by the Office of the Commissioner for Sustainability and the Environment⁷ found that between 2011-12 and 2017-18, plastic bag consumption was approximately 1,132 tonnes lower than it would have been without the ban.

While the initial plastic shopping bag ban has helped reduce plastic consumption in the Territory, the review also noted that consumption levels of plastic bags were gradually increasing, with predictions of early 2020s consumption rates likely surpassing pre-ban levels. These predictions supported the need for continued systemic government intervention to reduce the prevalence of SUP in the Territory.

Around this time, the ACT Government established a Plastic Reduction Taskforce (the Taskforce) to guide policy development on SUPs, identify potential single-use items requiring action, and provide direction and ongoing advice to address various issues related to SUP in the ACT. The Taskforce included members from different national and local businesses, industry, and environmental and disability advocacy bodies.

Following the reports/work of the Taskforce, the Legislative Assembly introduced and passed the Plastic Reduction Bill 2021⁸ in March 2021, making the ACT one of the first Australian jurisdictions to pass laws to address SUPs more broadly.

The legislation allowed the ban of the first tranche of plastic products commencing 1 July 2021. This ban included a preliminary ban on SUP cutlery, drink stirrers and expanded polystyrene (EPS) containers for take-away food and/or beverages. Tranche 1 included a series of exemptions that expired on 30 June 2022, paving the way for Tranche 2 products to be considered for phase-out.

The Tranche 2 Consultation process included new items added to the ban. These included:

- SUP drinking straws (with an exemption for those who need them)

⁶ Auty, K., & Dickson, K. (2018). *Unfantastic plastic-review of the ACT plastic shopping bag ban*. Office of the Commissioner for Sustainability and the Environment (ACT).

⁷Ibid.

⁸ ACT Government, Phasing Out Single Use Plastics, Accessed on 27/02/2022

- oxo-degradable plastic products
- cotton buds with plastic sticks.

Following consultation with environmental groups, retailers, industry groups and individuals, these products above were banned from 1 July 2022 with the acceptance of the tranche 2 Regulatory Impact Statement (RIS) by the Legislative Assembly.

The bans apply to all businesses and organisations that sell or supply these items in the ACT, such as cafes, restaurants, supermarkets, events, and schools. The bans also cover bioplastics and oxo-degradable plastics that can break down into microplastics. The ACT Government has provided resources and support for businesses and consumers to comply with the ban and switch to more sustainable alternatives.

2.2 RIS scope

ACT NoWaste has engaged ACIL Allen to conduct a cost-benefit analysis (CBA) and RIS to assess the net impact of phasing out another 5 SUP items (described below).

2.2.1 Plastic microbeads in rinse-off personal care, cosmetic and cleaning products

Plastic microbeads (or microbeads) are a multi-use product used widely in the cosmetic, cleaning and manufacturing industries. Microbeads are small, solid, manufactured plastic particles⁹ that are not dissolvable or degradable in water. Due to their size and availability, microbeads serve as a relatively cheap ingredient.

Microbeads are typically not captured by most existing wastewater treatment systems. As such, they can end up in Australian rivers, lakes, and oceans.¹⁰ Microbeads are persistent in the environment, usually having a damaging effect on marine life, the environment and potentially on human health.

The most common ingredients in microbeads are polyethylene (PE), polyethylene terephthalate (PET), nylon (PA), polypropylene (PP), and polymethyl methacrylate (PMMA).¹¹ These ingredients can be substituted with many natural abrasive ingredients that do not pollute nor harm the environment, such as pumice, salt, and crushed seed kernels.¹²

2.2.2 Expanded polystyrene (EPS) loose-fill and fresh produce/meat packaging

EPS loose-fill packaging is made from a lightweight cellular plastic material with small hollow spherical balls.¹³ EPS packaging is not recyclable and has a high environmental impact if littered. EPS does not degrade, and most do not dissolve in water, which pollutes waterways and the wider environment.

EPS trays are primarily used for fruit and meat trays and serving. They are made of the same materials as other EPS packaging but at a higher density to store produce and meat. EPS trays

⁹ Australian Government, *Plastic Microbeads*, accessed 7 March 2023, <https://www.dcceew.gov.au/environment/protection/waste/plastics-and-packaging/plastic-microbeads>

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid.

¹³ Expanded Polystyrene Australia, *What is EPS?*, Accessed 14 March 2023, <https://epsa.org.au/about-eps/what-is-eps/>

have the same environmental impact as other EPS products and cannot be recycled using kerbside recycling systems.¹⁴

Some alternatives to EPS loose-fill packaging have a lower environmental impact and can be recycled, such as recycled cardboard, recyclable plastic mouldings and LDPE air pillow padding.

2.2.3 SUP take-away containers

Like all SUP products, plastic take-away containers are designed for just one use. Discarded plastic take-away containers, plates, and bowls do not break down for hundreds of years.¹⁵ This waste ends up in landfills or as litter, which can harm wildlife and the environment.

Plastic take-away containers are usually made of non-recycled material and are cheap, lightweight, and readily available for consumers. The most common ingredients found in takeout containers are polyethylene (4) or polypropylene (5).¹⁶ This RIS only considers non-recyclable plastic take-away containers.

Single-use alternatives for plastic take-away containers include ones made of bamboo, bagasse, or palm leaves, and reusable alternatives include stainless steel, reusable plastic, or glass containers.

2.2.4 SUP plates and bowls

Some plastic plates and bowls are made from 'bioplastic' or mixed materials, which still take a long time to decompose and create a waste problem. Most plastic take-away plates and bowls are made from the same materials as SUP take-away containers. The most readily available and cheapest take-away plates and bowls are non-recyclable, further contributing to Australia's litter and waste problem. Alternatives to these products are fibre-based products, stainless steel or ceramic reusable items or genuine compostable alternatives that meet Australian Standards.¹⁷

Non-recyclable SUP bowls pose more challenges in phasing-out than plates. In Victoria, the phasing out and ban on plates and bowls have been separated, primarily due to function and usage. Bowls are more robust than plates, as they can hold more solids and liquids and be used to hold hot and cold foods. It is also more practical for transport whilst being lightweight, cheap, and readily available.¹⁸

2.2.5 Heavyweight and boutique plastic bags

Boutique plastic bags are mainly used in the retail environment and are designed for consumers to use once and then discard. They often get branded as 'reusable' due to their physical structure and sturdiness; however, they are often only used once and then end up in landfill or as harmful litter.

The ban includes:

- All soft plastic bags greater than 35 microns in thickness
- Shopping bags made from plastic-lined paper or cardboard.

¹⁴ Government of South Australia, *Replace the Waste – Phased Out 2024*, accessed 21 March 2023, <https://www.replacethewaste.sa.gov.au/phased-out-2024>

¹⁵ ACT Government, *Single-use plastic take-away containers*, Accessed 14 March 2023, <https://yoursayconversations.act.gov.au/single-use-plastics/single-use-plastic-takeaway-containers>

¹⁶ Zanolli, L., *Are plastic containers safe for our food?*, Accessed 20 March 2023, [https://www.theguardian.com/us-news/2020/feb/18/are-plastic-containers-safe-to-use-food-experts#:~:text=Most%20food%20containers%20%E2%80%93%20both%20takeout,%20or%20polypropylene%20\(5\).](https://www.theguardian.com/us-news/2020/feb/18/are-plastic-containers-safe-to-use-food-experts#:~:text=Most%20food%20containers%20%E2%80%93%20both%20takeout,%20or%20polypropylene%20(5).)

¹⁷ ACT Government, *Single-use plastic plates and bowls*, Accessed 14 March 2023, <https://yoursayconversations.act.gov.au/single-use-plastics/single-use-plastic-plates-and-bowls>

¹⁸ Ibid.

These products are not recyclable in household recycling bins making the likelihood of these bags ending up in landfill or as litter much more likely. In addition, less than 2% of lightweight plastic bags are recycled, with the majority piling up in landfill, potentially lasting thousands of years.¹⁹ Additionally, the ACT government recognises the difficulty in changing the industry from heavyweight and boutique plastic bags to reusable alternatives, especially because these are readily available and cheap for consumers.²⁰

2.3 Legislative and policy requirements

The ACT's current legislative and policy framework, including waste management strategy, provide the parameters for analysing the proposed regulations and the objectives a phase-out seeks to achieve.

The ACT already has some of Australia's most ambitious waste management and resource recovery targets, including participation in national waste policies and action plans. They are discussed in detail below.

2.3.1 Waste Management Strategy

The ACT Government Waste Management Strategy²¹ aims to reduce waste and consider it a resource. This strategy was developed with public input and follows the waste management hierarchy. This hierarchy prioritises reducing and reusing products before recycling and recovering them, with safe disposal as a last resort. This approach aligns with the principles of a circular economy.

The ACT currently generates 24,000 tonnes of plastic waste sent to landfill each year (see Section 3.1.1), putting a heavy burden on the waste management system. SUP also does not follow the hierarchy approach as most SUP are disposed of instead of being reused. Therefore, reducing the amount of SUP consumed will alleviate some of the stress on the system and increase alignment with the waste management hierarchy.

2.3.2 Climate Change Strategy 2019–2025

The ACT is a global leader in climate change action with some of the world's most ambitious emissions reduction targets.

In 2019, the ACT Government achieved its 100% renewable electricity target. The ACT Climate Change Strategy establishes a pathway for achieving net zero emissions by 2045. It includes actions to reduce emissions and build resilience to climate change impacts.²²

Plastic production and disposal have a significant carbon footprint (as further discussed in Section 3.2.1); thus, reducing the consumption of SUPs will help deliver the ACT Government's commitment to tackling climate change.

¹⁹ WA Bag Ban, *About the Ban*, accessed 14 March 2023, <https://bagbanwa.com.au/about-the-ban/>

²⁰ ACT Government, *Heavyweight and boutique plastic bags*, accessed 14 March 2023, <https://yoursayconversations.act.gov.au/single-use-plastics/heavyweight-and-boutique-plastic-bags>

²¹ ACT Government - Environment and Sustainable Development 2011. *ACT Waste Management Strategy 2011-2025*.

²² ACT Government 2019. *ACT Climate Change Strategy 2019-2025*. <https://www.climatechoices.act.gov.au/policy-programs/act-climate-change-strategy>

2.3.3 2018 National Waste Policy and 2019 National Waste Policy Action Plan

In 2018, all Australian Governments, including the ACT Government, agreed to a National Waste Policy²³ that promotes a circular economy. This policy aims to shift from the traditional ‘take, make, use and dispose’ approach to one where resources are used efficiently and their value is maintained for as long as possible. Strategy 10 specifically targets plastics and packaging to reduce their impact on the environment and oceans while maximising economic and societal benefits.

SUP production and consumption do not support a circular economy. Evidence suggests that only 13% of Australia’s SUP is recycled.²⁴ Reducing the consumption of SUP in the ACT would support this strategy.

2.4 RIS requirements

The RIS must consider the ACT Treasury’s *Best Practice Guide for Preparing Regulatory Impact Statements*,²⁵ which requires the RIS to address 7 key points:

1. identifying the problem, including identifying market failure (address in Chapter 3)
2. stating the objectives of government intervention (addressed in Chapter 5)
3. identifying options for achieving the objectives (addressed in Chapter 5)
4. identifying mutual recognition issues (addressed in Chapter 7)
5. undertaking a qualitative impact assessment (addressed in Chapter 7)
6. determining a recommended option (addressed in Chapter 8)
7. developing guidelines for the implementation of the recommended option (addressed in Chapter 9).

In addition, the RIS has been developed using best practice regulatory principles and guidance promoted by the Commonwealth Office of Impact Assessment (OIA) in the *Regulatory Impact Analysis Guide for Ministers’ Meetings And National Standard Setting Bodies* (referred to as the RIA Guidelines or OIA Guidelines)²⁶.

²³ Department of the Environment and Energy. *National Waste Policy 2019*.
<https://www.dcceew.gov.au/environment/protection/waste/publications/national-waste-policy-2018>

²⁴ Department of Agriculture, Water and the Environment 2021, *National Plastics Plan summary*.
<https://www.dcceew.gov.au/environment/protection/waste/publications/national-plastics-plan-summary>

²⁵ ACT Government Treasury 2003, *Best Practice Guide for Preparing Regulatory Impact Statements*, December.

²⁶ Commonwealth of Australia, Department of the Prime Minister and Cabinet 2021, *Regulatory Impact Analysis Guide for Ministers’ Meetings and National Standard Setting Bodies*, May.

Box 2.1 What is the best option from those considered?

A RIS must recommend a preferred option from among those presented and analysed. Typically, the decision rule to identify the preferred policy option is to select the option with the highest net benefit to society as a whole. However, there are some circumstances where an option, other than the one with the highest net benefit, could be recommended. The circumstances where a 'second best' option could be recommended include:

- When the option would deliver significant benefits that cannot be monetised. The OIA's CBA guidance notes that 'if a proposal is advocated despite monetised benefits falling significantly short of monetised costs, the RIS should explain clearly why non-monetised benefits would tip the balance and the nature of the inherent uncertainties in the size of the benefits'²⁷.
- When the option would provide higher resilience in the face of uncertainty. As noted by the OIA, an option can be recommended that has a lower expected value of net benefits, but with a smaller chance of imposing a significant net cost on the community (lower 'downside risks').²⁸

Where the option with the highest net benefit disproportionately impacts a vulnerable sector of the community. Indeed, the OIA's CBA guidance indicates that decision makers 'may decide to reject an option with the largest NPV if it has significant adverse equity impacts.'²⁹

Source: ACIL Allen based on Commonwealth of Australia, Department of the Prime Minister and Cabinet 2020, *Cost-benefit analysis guidance note*, March.

This RIS needs to be assessed by ACT NoWaste and ACT Treasury for compliance with the Regulatory Impact Analysis (RIA) requirements for best practice regulation.

2.4.1 Stakeholder engagement

As part of the RIS requirement, the ACT Government must undertake consultation with key stakeholders to the regulations. Under the *Plastic Reduction Act 2021*, the Minister for Transport and City Services is required to give public notice of the proposed regulation and invite public submissions about it before making a regulation. The Minister announced the tranche 3 public consultation period by public notice on 15 September 2022, ending on 8 December 2022. Territory officials and the ACT Plastic Reduction Taskforce also met with key stakeholders during this consultation period.

Stakeholders from peak industry, waste management bodies, environment bodies, governments, businesses, not-for-profit and charities, advocacy groups and members of the general public participated in the tranche 3 consultation process. The ACT Government received email and written submissions through the YourSay website. The following questions were asked to inform submission responses:

- What impact will banning these items have?
- Are alternative products appropriate and readily available?
- Are there alternative products that can perform similarly to banned products?
- Are there any exemptions that should be considered?

13 information sessions were also held with businesses, State and Territory governments and individual ACT government departments. These contributions are summarised in Table 2.1.

²⁷ Commonwealth of Australia, Department of the Prime Minister and Cabinet 2020, *Cost-benefit analysis guidance note*, March, p. 12.

²⁸ Ibid., p. 9.

²⁹ Ibid., p. 13.

Table 2.1 Stakeholder engagement

Category	Time period	Responses/Submissions
Community submissions	15 th September – 8 th December 2022	<p>188 community submissions were received by email. These range in size and complexity from single sentences to detailed submissions.</p> <p>165 of these submissions were emails received from supporters of an environmental advocacy group. These submissions used a predetermined template. For this reason, there is consistency in perspectives across the 165 submissions in relation to each of the items.</p> <p>It is important to note that these responses have made up majority of the community submissions dataset (87.7%).</p> <p>As a result, this analysis has recorded overwhelming support from community submissions due to the weightage of this subgroup.</p> <p>The bias is reflected in supporting immediate action on all proposed items as well as a regulatory approaches by the ACT Government.</p> <p>The rest of the community submission responses (12.3%) were provided by varied stakeholders groups. These included local businesses, individual community members, representatives of school communities, advocacy groups and other wildlife organisations.</p>
Written submissions	22 nd November – 15 th December 2022	A total of 23 written submissions were received from peak industry, environmental bodies, government, businesses, charities, advocacy groups and members of the general public.
Meetings	26 th October – 6 th December 2022	. 15 meetings were held, including 5 business meetings, 2 meetings with State and Territory governments and 8 meetings with ACT government departments.

Source: ACIL Allen 2023

2.5 Structure of this report

The remainder of this report is structured as follows:

- Chapter 2 discusses the nature and extent of the problem that the proposed changes are seeking to address.
- Chapter 3 discusses the rationale for government intervention.
- Chapter 4 outlines the policy objective and options.
- Chapter 5 outlines the framework used in the impact analysis of the proposed changes.
- Chapter 6 assesses the costs and benefits of the proposed changes.
- Chapter 7 identifies the preferred option.
- Chapter 8 discusses the implementation and evaluation of the proposed regulation.

Statement of the problem 3

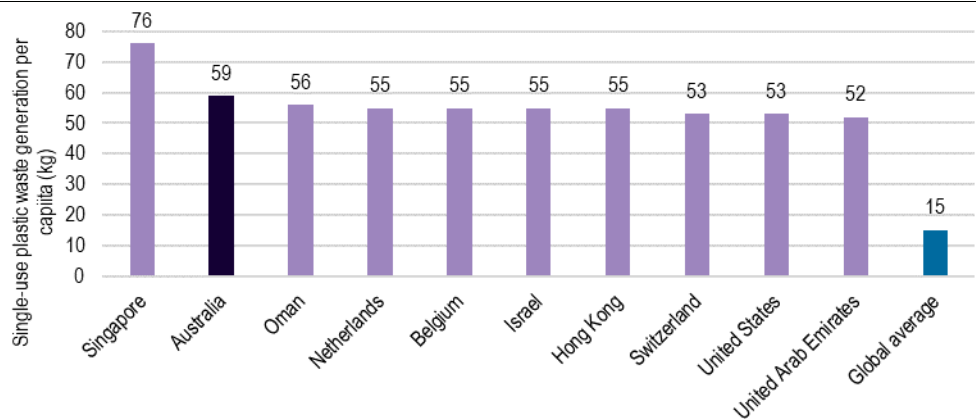
3.1 Identifying the problem

3.1.1 Consumption of SUP

Plastic is flexible, durable, mouldable, and lightweight, with low production, distribution, and disposal costs. These characteristics make them the preferred material for various applications in a wide range of products.

Australia generated approximately 400 million tonnes of net SUP waste in 2019.³⁰ Australians consume more SUP per capita than any other country except Singapore at 59 kg per person per year, far higher than the global average of 15 kg (see Figure 3.1).³¹

Figure 3.1 Top 10 countries generating SUP waste, ranked by per capita consumption (2019)



Source: Charles D., Kimman L. and Saran N. 2021, *The Plastic Waste Makers Index*, Minderoo Foundation.

In the ACT, plastic makes up approximately 7% of waste sent to landfill in 2020-21 or 24,000 tonnes.³² Although this is a reduction in the proportion of plastic sent to landfill (down from 8.15% in 2018-19), the amount of plastic sent to landfill has increased by 2,000 tonnes in the last 2 years.³³

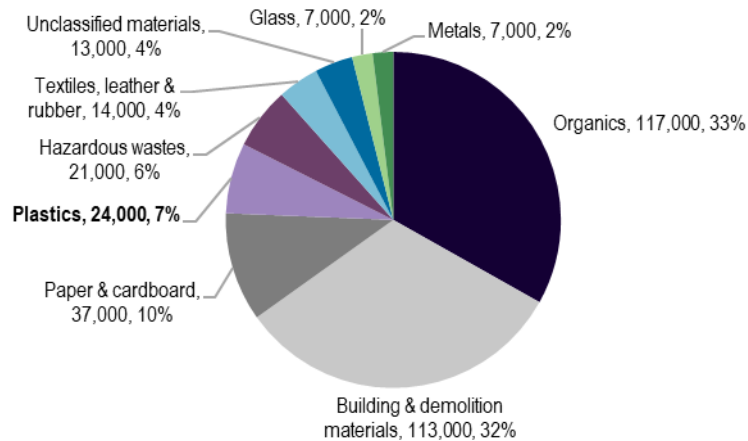
³⁰ Charles D., Kimman L. and Saran N. 2021, *The Plastic Waste Makers Index*, Minderoo Foundation, page 63.

³¹ Ibid.

³² The Department of Climate Change, Energy, the Environment and Water 2022, *National Waste Report 2022*.

³³ The Department of Agriculture, Water and the Environment 2020, *National Waste Report 2020*.

Figure 3.2 Waste sent to landfill in the ACT by material, 2020-21 (tonnes)



Source: ACIL Allen based on *The Department of Climate Change, Energy, the Environment and Water, National Waste Report 2022*

Despite growing awareness of plastic pollution and its negative environmental impacts, plastic production and subsequent consumption continue to rise. Indeed, the Organisation for Economic Co-operation and Development’s (OECD) recent global plastics outlook³⁴ projects that, under current policies, the production, and corresponding consumption, of plastic is projected to almost triple by 2060 due to economic and population growth. It is anticipated that, by that time, half of all plastic will end up in landfill, and less than a fifth will be recycled.

3.2 Impacts of SUP

The same strengths that make plastic so widely used also present a problem: plastic does not break down naturally. The United Nations Educational, Scientific and Cultural Organization (UNESCO) suggests that plastics generally take 500-1000 years to break down. Even then, they become microplastics without fully degrading.³⁵

When not captured and disposed of correctly, plastics can have environmental, economic, and social impacts (as discussed below).

3.2.1 Environmental impacts

SUPs constitute a significant source of pollution and harm to wildlife. Plastic waste is often disposed of improperly, either through littering or improper waste disposal, and can end up in the natural environment, such as oceans, rivers, and forests. Furthermore, manufacturing SUP requires significant energy and resources, contributing to greenhouse gas emissions and resource depletion.

Marine pollution and effects on marine ecosystems

Even though ACT is a landlocked territory, it does have rivers, lakes, creeks, and other waterways. These bodies of water host diverse marine life and a complex ecosystem.

Plastics entering the marine environment directly threaten wildlife in different ways. Larger plastics, microplastics, and nano-plastics can threaten animal species through ingestion, entanglement,

³⁴ Organisation for Economic Co-operation and Development (OECD) 2022, *Global Plastics Outlook: Policy Scenarios to 2060*, June.

³⁵ United Nations Educational, Scientific and Cultural Organization (UNESCO) 2022, *Ocean plastic pollution an overview: data and statistics*, <https://oceanliteracy.unesco.org/plastic-pollution-ocean/>, accessed 17 March 2022.

lacerations and suffocation³⁶ and can cause malnutrition and death within animal populations.³⁷ UNESCO also notes that floating plastic items can carry invasive species, threatening the health of marine ecosystems, biodiversity, and the food chain.³⁸ The presence of plastic in marine environments, amongst other pressures, is driving certain species closer to extinction.³⁹

Impacts of plastic litter on terrestrial environments

Plastic pollution can also harm land environments. A recent study by the Royal Society⁴⁰ shows that microplastics have caused a decrease in organisms that live underground, such as mites, larvae and others that maintain soil health and nutrition. The study also noted the effects of microplastic spread through the soil food chains, changing how microbes work and possibly affecting how soil stores carbon and nutrients.

The UNEP also notes that Chlorinated plastic can release harmful chemicals into the surrounding soil, seeping into groundwater or other surrounding water sources and the ecosystem. This can cause various potentially dangerous effects on the species that drink the water.⁴¹ Terrestrial animals such as mammals and birds can also ingest plastic, as with marine animals, which threatens their survival.⁴²

Climate change

SUP production and disposal is a growing greenhouse gas (GHG) emission source. About 98% of plastics are produced from fossil fuels such as oil and gas.⁴³ These gases contribute to global warming and climate change, negatively impacting society and ecosystems.

³⁶ World Wildlife Foundation Australia (WWF) 2021, *Plastic in our oceans is killing marine mammals*, <https://www.wwf.org.au/news/blogs/plastic-in-our-oceans-is-killing-marine-mammals#gs.i8hk2e>, accessed 17 March 2023.

³⁷ N K Y Susanti et al 2020, *Microplastics and the Impact of Plastic on Wildlife: A Literature Review Conf. Ser.*: Earth Environ. Sci. 528 012013.

³⁸ United Nations Educational, Scientific and Cultural Organization (UNESCO) 2022, *Ocean plastic pollution an overview: data and statistics*, <https://oceanliteracy.unesco.org/plastic-pollution-ocean/>, accessed 17 March 2023.

³⁹ World Wildlife Foundation (WWF) 2022 *Ocean plastic pollution to quadruple by 2050, pushing more areas to exceed ecologically dangerous threshold of microplastic concentration* https://wwf.panda.org/wwf_news/press_releases/?4959466/Ocean-plastic-pollution-to-quadruple-by-2050-pushing-more-areas-to-exceed-ecologically-dangerous-threshold-of-microplastic-concentration, accessed 17 March 2023.

⁴⁰ Lin, Dunmei & Yang, Guangrong & Dou, Pengpeng & Qian, Shenhua & Zhao, Liang & Yang, Yongchuan & Fanin, Nicolas 2020, *Microplastics negatively affect soil fauna but stimulate microbial activity: insights from a field-based microplastic addition experiment*. Proceedings of the Royal Society B: Biological Sciences. 287. 10.1098/rspb.2020.1268.

⁴¹ United Nations Environment Programme (UNEP) 2021, *Plastic planet: How tiny plastic particles are polluting our soil*, <https://www.unep.org/news-and-stories/story/plastic-planet-how-tiny-plastic-particles-are-polluting-our-soil#:~:text=Toxic%20effects&text=Chlorinated%20plastic%20can%20release%20harmful,species%20that%20drink%20the%20water>, accessed 23 November 2022.

⁴² Thompson, Richard & Moore, Charles & vom Saal, Frederick & Swan, Shanna 2009, *Plastics, the environment and human health: Current consensus and future trends*, Philosophical transactions of the Royal Society of London. Series B, Biological sciences. 364. 2153-66. 10.1098/rstb.2009.0053.

⁴³ Charles D., Kimman L. and Saran N. 2021, *The Plastic Waste Makers Index*, Minderoo Foundation.

SUPs also create GHG emissions when they are discarded. Only 16% of plastics are recycled globally, while the rest end up in landfills, incinerators or as litter.⁴⁴ In landfills, plastics release methane as they decompose.⁴⁵ In incinerators, plastics release carbon dioxide and other pollutants when they are burned. As litter, plastics can enter rivers and oceans, breaking down into microplastics under sunlight and heat. These microplastics release methane and ethylene as they degrade further.⁴⁶ Moreover, microplastics can affect the ability of marine organisms (e.g. plankton) to produce oxygen and absorb carbon dioxide.⁴⁷ This reduces the ocean's capacity to act as a carbon sink and regulate the climate.

According to a Center for International Environmental Law (CIEL) report, plastic production and incineration could emit 1.34 gigatons of carbon dioxide equivalent (CO₂e) in 2019, equivalent to 189 coal-fired power plants operating for one year. By 2050, these emissions could rise to 56 gigatons of CO₂e – accounting for up to 13% of the total remaining carbon budget.⁴⁸

3.2.2 Economic impacts

The production, use, and disposal of SUPs have significant economic impacts. According to the WWF, the economic costs of plastic include:

- increased costs of waste management
- clean-up costs borne by governments, NGOs, and volunteers
- damage to fisheries, aquaculture, marine transport, shipbuilding, and marine tourism industries caused by marine plastic pollution.

SUPs are also an inefficient use of resources because they often have a short lifespan and few options for reuse or recycling, so most end up in landfills or as litter. Moreover, when the world's population is growing, and natural resources are dwindling, producing SUP products, especially unnecessary or problematic ones, goes against the idea of the circular economy where resources keep circulating within the economy and thus reduce the use of natural capital.

3.2.3 Social impacts

The production and disposal of SUPs can have social impacts, such as harm to human health and safety. Plastic waste can also lead to increased litter and debris in public spaces, impacting communities' aesthetic appeal and safety.

Microplastics and the human body

In Australia, current evidence suggests that each individual could consume up to 5 grams of plastic weekly, the equivalent of a credit card.⁴⁹ The potential effects of microplastics on human health are

⁴⁴ World Economic Forum 2022, *We know plastic pollution is bad – but how exactly is it linked to climate change?* <https://www.weforum.org/agenda/2022/01/plastic-pollution-climate-change-solution/>, accessed 20 March 2023.

⁴⁵ United States Environmental Protection Agency, *Basic Information about Landfill Gas*, <https://www.epa.gov/lmop/basic-information-about-landfill-gas>, accessed 20 March 2023.

⁴⁶ Center for International Environmental Law, *Plastic & Climate: The Hidden Costs of a Plastic Planet*, <https://www.ciel.org/project-update/plastic-climate-the-hidden-costs-of-a-plastic-planet/>, accessed 20 March 2023.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ World Wild Fund for Nature (WWF) Australia 2019, *Plastic ingestion by people could be equating to a credit card a week*, <https://www.wwf.org.au/news/news/2019/revealed-plastic-ingestion-by-people-could-be-equating-to-a-credit-card-a-week>, accessed 20 March 2023.

still unclear, as the problem is relatively new. However, research undertaken to date has suggested:

- microplastics can have adverse effects on various biological endpoints, including cell death, immune response, oxidative stress, barrier attributes, and genotoxicity⁵⁰
- SUPs contain chemical additives such as plasticisers that have been found in humans and are linked to a range of reproductive health problems⁵¹
- inhaled plastic fibres have been found in lung cancer tissue and suggested as candidate agents contributing to the risk of lung cancer⁵²
- when inhaled or ingested, microplastics can penetrate biological membranes, accumulate in tissues, and elicit cytotoxic and immune responses. Exposure of laboratory animals or cell cultures to microplastics results in inflammation, cytotoxicity (e.g., oxidative stress, cells injury, cell viability, altered membrane function), genotoxicity (through oxidative damage) and immunotoxicity at the cellular level⁵³
- microplastics can cross the blood-brain barrier in rats⁵⁴
- plastic materials are carcinogenic and can affect the body's endocrine system, causing developmental, neurological, reproductive and immune disorders.⁵⁵

While the extent of the impact of microplastics on the human body remains unclear, recent studies have highlighted the growing community concern about their impact on health.⁵⁶

Therefore, a precautionary approach to microplastics is desirable from a community perspective.

The visual impact of litter

The visual impact of litter is one of the aspects of the environmental and social cost of littering that affects both urban and natural landscapes, as they have a subjectively undesirable impact on these environments.

⁵⁰ Evangelos Danopoulos, Maureen Twiddy, Robert West, Jeanette M. Rotchell, *A rapid review and meta-regression analyses of the toxicological impacts of microplastic exposure in human cells*, *Journal of Hazardous Materials*, Volume 427, 2022.

⁵¹ Hongquan Cai, Weiwei Zheng, Pai Zheng, Shu Wang, Hui Tan, Gengsheng He, Weidong Qu 2015, *Human urinary/seminal phthalates or their metabolite levels and semen quality: A meta-analysis*, *Environmental Research*, Volume 142, 2015, Pages 486-494.

⁵² J L Pauly; S J Stegmeier; H A Allaart; R T Cheney; P J Zhang; A G Mayer; R J Streck 1998, *Inhaled cellulosic and plastic fibers found in human lung tissue*, *Cancer Epidemiology, Biomarkers & Prevention*, Vol. 7, pp. 419-428.

⁵³ Kannan K, Vimalkumar K. 2021, *A Review of Human Exposure to Microplastics and Insights Into Microplastics as Obesogens*. *Front Endocrinol* (Lausanne).

⁵⁴ Shan S, Zhang Y, Zhao H, Zeng T, Zhao X. 2022, *Polystyrene nanoplastics penetrate across the blood-brain barrier and induce activation of microglia in the brain of mice*. *Chemosphere*.

⁵⁵ United Nations Educational, Scientific and Cultural Organization (UNESCO) 2022, *Ocean plastic pollution an overview: data and statistics*, <https://oceanliteracy.unesco.org/plastic-pollution-ocean/>, accessed 22 March 2022.

⁵⁶ Lingzhi Deng, Lu Cai, Fengyun Sun, Gen Li, Yue Che 2020, *Public attitudes towards microplastics: Perceptions, behaviors and policy implications*, *Resources, Conservation and Recycling*, Volume 163.

Littered places are visually displeasing⁵⁷ and depreciate the aesthetic and real value of the surrounding environments.⁵⁸

Littering can affect human health and well-being by creating safety hazards and disease vectors. Litter can attract pests such as rats, roaches and mosquitoes that can spread diseases or cause allergies. Litter can also cause injuries or infections from sharp objects or contaminated materials.⁵⁹

Littering can also influence human behaviour and perception by creating social norms and increasing crime rates. Many studies have shown that when litter already exists, people are more likely to continue littering in that same area.⁶⁰ Similarly, when people see littered places, they may perceive them as unsafe or undesirable, leading to more crime or vandalism.

In many communities, litter is cleaned up by volunteers or councils, but this work is labour-intensive. Therefore, it can represent a cost to government and a time cost to volunteers. This is particularly important in areas that depend on tourism, as cleanliness has been shown to drive choices of where tourists, particularly international tourists, choose to travel.^{61,62}

3.3 Summing up

The consumption of plastic in Australia is among the highest in the world and has been increasing. The average ACT citizen produces 52kg of plastic waste per year, comparable to the national average.⁶³ Plastic, especially SUPs, significantly impacts the environment, economy, and society of the Territory and Australia.

⁵⁷ Pandey, J. (1990), *The environment, culture, and behavior*. In R. Brislin (Ed.), *Applied cross-cultural psychology*, Thousand Oaks, CA: SAGE. 254-277.

⁵⁸ Skogan, W. (1990), *Decline and disorder: Crime and the spiral of decay in American neighborhoods*, NY: Free Press.

⁵⁹ Schultz, P.W., Bator, R.J., Large, L.B., Bruni, C.M. & Tabanico, J.J. (2013). *Littering in context: Personal and environmental predictors of littering behavior*. *Environment and Behavior*, 45(1), 35-59.

⁶⁰ Cope, J.G., Huffman, K.T., Allred, L.J & Grossnickle, W.F. (1993). *Behavioral strategies to reduce cigarette litter*. *Journal of Social Behavior and Personality*, 8(4), 607-619.

⁶¹ A. Ballance, P.G. Ryan and J.K. Turpie 2000, *How much is a clean beach worth? The impact of litter on beach users in the Cape Peninsula, South Africa*, *South African Journal of Science* 96, May.

⁶² Allan Paul Krelling, Allan Thomas Williams, Alexander Turra, 2017, *Differences in perception and reaction of tourist groups to beach marine debris that can influence a loss of tourism revenue in coastal areas*, *Marine Policy*, Volume 85.

⁶³ ACIL Allen based on figures from The Department of Climate Change, Energy, the Environment and Water, *National Waste Report 2022* and the Australian Bureau of Statistics

Rationale for government intervention

4

4.1 The need for further intervention

Market failure is commonly defined as a situation where the free market does not allocate resources efficiently or fairly, as they normally should. Thus, goods and services demanded by consumers are produced inefficiently, and innovation and consumer choices are not promoted.

When a market failure occurs, it could mean that government intervention is needed to improve outcomes for consumers, businesses, the economy, and society. However, this is not always true, there are instances that government intervention is not warranted, either in cases, the market can self-correct or the risks and impacts are not sufficient to require intervention. How the government should intervene also needs to be considered as poorly fit and designed regulations could lead to further inefficiencies and unnecessary administrative and compliance costs for market agents.

As discussed below, 3 main types of market failure relate to SUP and the problems they create (see chapter 2). Evidence of these failures (and the need to correct them) are accepted rationales for the phase-out of SUPs in Australian jurisdictions.

4.1.1 Negative externalities

Externalities are defined as the costs and benefits of an activity that are experienced by individuals or organisations other than those directly involved in the activity. They exist when the welfare of some agent, or group of agents, is affected by the actions of another, and this is not reflected in market prices. When the effects of one economic agent on another are not considered, market prices will not reflect the true marginal cost/benefit of the good or service traded. When externalities exert adverse or unfavourable effects on these other agents, they are called negative externalities.

Some negative externalities related to the use and disposal of SUP include:

- the degradation of marine and land ecosystems due to inadequate disposal of SUP items
- the economic cost of damage to fisheries, aquaculture, marine transport, shipbuilding, and marine tourism industries from marine plastic debris
- the impact that littered plastics have on amenity
- the health impacts associated with the ingestion of microplastics
- the GHG impacts generated across the plastics life cycle.

Because these negative impacts are not reflected in the cost of SUP products, more plastic products continue to be produced than it is socially optimal, despite the problems (social and environmental) they pose at the point of disposal and throughout their life cycle.

4.1.2 Information asymmetries

In some markets, consumers may have a hard time determining the quality of a product or service before using it. This can make it challenging for providers of higher-quality products to justify their higher prices to customers, even if those prices are necessary to cover the additional costs incurred by the producers.

Information asymmetry can also occur when consumers buy or use a product or service without fully understanding the consequences of their choices. For example, people may consume more unhealthy food than they would if they were aware of the health problems associated with high-sugar diets and obesity.

A lack of information about SUPs' impact on health, wildlife and other costs can lead to excessive use and improper disposal, such as littering at the end of their functional life. A lack of information may also explain why some participants in the market have not already transitioned to cheaper SUP alternatives with similar or enhanced functionality.

4.1.3 Public good

There are 2 dimensions of a good or service: excludability and rivalry. Excludable goods are goods that the seller can prevent non-buyers from accessing them, and rivalrous goods means one agent's consumption typically reduces others' ability to consume it. Public goods are both “non-excludable” and “non-rivalrous”, meaning both paying and non-paying consumers can access them, and an agent consumption does not reduce others' ability to consume. As a result, an unregulated market will lead to an undersupply of public goods at the detriment of social welfare, and thus, require governments to intervene in their provision.

Marine and land ecosystems are public goods that can be affected by the littering of SUPs. Even though it would benefit the community if these ecosystems were free of plastic litter, a free market does not provide enough incentive to prevent overuse or misuse. This is because people can ‘free ride’, and there is a lack of accountability for decisions about the use and disposal of plastic items. As a result of this market failure, marine and land ecosystems have been used as disposal grounds for single-use items.

While littering is illegal and subject to fines in the *ACT Litter Act 2004*⁶⁴, in practice, this legislation is difficult to comprehensively enforce as littering in many locations is difficult (and expensive) to effectively monitor and often goes undetected, and some of the littering is unintentional.

4.2 Potential interventions that address the problem

The above discussion about impact and market failure suggests government intervention may be needed to reduce the problems associated with SUP. However, it is necessary to consider whether any other approaches can address the problem.

Regulation can be seen as a scale that goes from self-regulation (or market self-correction, where the government has little or no role), through quasi-regulation and co-regulation (which are different ways that the government can set rules, tools, or standards for businesses to follow), to direct government regulation (policy intervention).

It is generally preferred if market failure can be addressed through means on the lower scale of regulations, such as self-regulation, quasi-regulation and co-regulation, rather than direct intervention through regulation. These regulations can give businesses and consumers more flexibility, efficiency and innovation. They also generally have lower administrative and compliance

⁶⁴ ACT Government City Services, *Littering*, <https://www.cityservices.act.gov.au/public-land/maintenance/littering>, accessed 6 March 2023.

costs for businesses and government, and they encourage industry best practices and consumer confidence. Direct regulation can be more costly, rigid, and intrusive than these options.

The possibilities of addressing the SUP problem through self-regulation, quasi-regulation and co-regulation are discussed below.

4.2.1 Self-regulation (Market self-correction)

The Australian Government Best Practice Regulation Handbook defines self-regulation as a situation where the industry sets its own rules and codes of conduct, with industry itself.⁶⁵

The Australian Treasury's Taskforce on Industry Self-regulation suggestion for when self-regulation should be used is outlined in Box 4.1 below.

Box 4.1 Checklists for assessment of self-regulation

Self-regulation should be considered where:

- there is no serious public interest issue, especially, no significant public health and safety issue;
- the problem is a low risk event, with low impact/importance, that is the outcomes of self-regulation failing to address a specific problem are minor; and
- the problem can be solved by the market itself, that is there is a motivation for individuals and groups to develop and follow self-regulatory arrangements (e.g. for industry survival, or to gain a market edge).

Proposed approaches should not restrict competition.

Source: Commonwealth of Australia 2007, Best Practice Regulation Handbook.

However, this option is unsuitable and unlikely to be effective for most of the products considered in this RIS, including EPS loose-fill packaging, plastic take-away containers, and SUP plates and bowls. The problems caused by SUP are of high significance, with tremendous potential impact on public health and safety..

Furthermore, there's no current need for industries to move away from plastic as the economic incentives are not sufficient, while voluntary arrangements are also unlikely to address the issues of littering and waste management of SUP items. Therefore, it is not reasonable to assume self-regulation will address the problem in a sufficient way.

The 2 SUP items that have seen self-regulatory attempts taken are plastic bags and plastic microbeads. However, there are reasons to believe in the context of these items, self-regulation is unlikely to address the problem of SUP to the level of satisfaction sought by the community. Self-regulation also does not provide sufficient incentives to completely remove some SUPs from the environment (which emerging scientific evidence suggests is desirable) and therefore reduce the longer-term impacts SUPs may have on animal and human health.

Plastic bags

There have been attempts taken by the retail sector in phasing out plastic bags in the ACT. In September 2022, a major retailer trialled the removal of fruit and vegetable barrier bags from stores in the ACT, instead offering reusable mesh bags for purchase. As of February 2023, the retailer had returned 'compostable' single-use barrier bags to stores, indicating in the media that the trial

⁶⁵ Commonwealth of Australia 2007, *Best Practice Regulation Handbook*.

had presented challenges.⁶⁶ This could indicate that voluntary market corrections being tested were found to be unsuitable.

Another major retailer announced that it will start phasing out soft plastic bags in 2023, stating that approximately 80% of customers are currently using other alternatives. While it is unknown if this was a result of the 2011 ban of SUP shopping bags at or below 35 micrometres in thickness, it suggests that a portion of community has demonstrated behaviour change in response to the ban. However, the remaining portion of the community are still opting to use SUP shopping bags, and this means the problem still persists.

Western Australia⁶⁷ and South Australia⁶⁸ are taking regulatory actions to remove or replace SUP bags with alternatives which are suitable for the waste management and resource recovery systems and infrastructure. This suggests that self-regulatory approaches in these jurisdictions were deemed unsuitable or would not address the problem.

These examples show that while a self-regulatory approach could potentially solve a part of the problem in the context of SUP bags, it is not likely to address the problem entirely.

Plastic microbeads

At the Meeting of Environment Ministers (MEM) in 2016, ministers agreed to support a voluntary industry phase-out of plastic microbeads found in 'rinse-off' personal care, cosmetics, and some cleaning products by July 2018.⁶⁹ The voluntary phase-out was led by Accord and overseen by the Commonwealth Department of Environment and Energy and the NSW Environment Protection Authority.

There are reasons to believe that industry volunteer phase-out of plastic microbeads has been successful. The *Assessment of the presence of microbeads in rinse-off personal care, cosmetic and cleaning products currently available within the Australian retail market* conducted by the Department of Agriculture, Water and the Environment in 2020 found that out of 8,100 unique products inspected, only 0.7% contained microbeads.⁷⁰

Furthermore, the Plastic Reduction and Circular Economy Act 2021 bans the supply of rinse-off personal care products containing microbeads in NSW from 1 November 2022.⁷¹ With NSW being a major economy and market within Australia, this ban further incentivise industry to phase out microbeads.

⁶⁶ ABC News, *Supermarket giants Woolworths and Coles changing up plastic bag policies in Queensland and ACT*, accessed 27 April 2023, <https://www.abc.net.au/news/2023-02-15/woolworths-coles-reusable-plastic-shopping-bag-policies-act-qld/101976184>

⁶⁷ Western Australia Government, *Western Australia's Plan for Plastics*, accessed 27 April 2023, <https://www.wa.gov.au/service/environment/business-and-community-assistance/western-australias-plan-plastics>

⁶⁸ South Australia Government, *Replace the Waste*, accessed 27 April 2023, <https://www.replacethewaste.sa.gov.au/>

⁶⁹ Department of the Environment and Energy 2018, *Assessment of the voluntary phase-out of microbeads - report*, <https://www.dcceew.gov.au/environment/protection/waste/publications/assessment-voluntary-phase-out-microbeads>, accessed 20 March 2023.

⁷⁰ Department of Agriculture, Water and the Environment 2020. *Assessment of the presence of microbeads in rinse-off personal care, cosmetic and cleaning products currently available within the Australian retail market*. <https://www.dcceew.gov.au/environment/protection/waste/publications/assessment-presence-microbeads-pccc>

⁷¹ NSW Environment Protection Authority 2022. *NSW Microbeads Ban*. <https://www.epa.nsw.gov.au/your-environment/waste/reducing-your-household-waste/what-are-microbeads>

It is important to consider that in the case of plastic microbeads, considering the above factors of voluntary market correction and low presence in products. While most products on the market are microbead-free, the remaining could still pose a problem.

This remaining portion of products (and manufacturers) still including plastic microbeads presents a free rider problem, a situation where some agents enjoy the benefits of a shared resource without paying for it or paying less than their fair share. In this case, the manufacturers still including microbeads enjoys an unfair advantage over the manufacturers who comply and incur the costs of switching to more sustainable alternatives. This undermines the effectiveness of the voluntary phase-out in reducing the impacts associated with plastic microbeads.

4.2.2 Quasi-regulation and co-regulation

Quasi-regulation covers various rules and/or arrangements that influence businesses/industry to comply without being part of official government regulation.⁷² Examples of quasi-regulation are accreditation schemes and codes of conduct/practice that involve government participation. Box 4.2 describes the situations where quasi-regulation may be suitable.

Quasi-regulation is likely to work when government is not sure about the need to create or enforce a code for the entire industry. Flexible, customised solutions and less formal mechanisms bring cost advantages, and the industry can respond in a cohesive way.

Co-regulation is when industry develops and administers its own arrangements, but government provides legislative backing to enable enforcement.

Box 4.2 Checklists for assessment of quasi-regulation

Quasi-regulation should be considered where:

- there is a public interest in some government involvement in addressing a community concern and the issue is unlikely to be addressed by self-regulation
- there is a need for an urgent, interim response to a problem in the short term, while a long-term regulatory solution is being developed
- government is not convinced of the need to develop or mandate a code for the whole industry
- there are cost advantages from flexible, tailor-made solutions and less formal mechanisms
- there are advantages in the government engaging in a collaborative approach with industry, with industry having substantial ownership of the scheme. For this to be successful, there needs to be:
 - a specific industry solution rather than regulation of general application
 - a cohesive industry with like-minded participants, motivated to achieve the goals
 - a viable industry association with the resources necessary to develop and/or enforce the scheme
 - effective sanctions or incentives to achieve the required level of compliance, with low scope for benefits being shared by non-participants
 - effective external pressure from industry itself (survival factors), or threat of consumer or government action.

Source: Commonwealth of Australia 2007, *Best Practice Regulation Handbook*.

In this case, quasi-regulation or co-regulation is unlikely to effectively reduce the impacts of SUP. No peak bodies represent the numerous industries responsible for SUPs. It would be challenging to enable the necessary coverage and enforcement of the different measures to address the problem.

⁷² Commonwealth of Australia 2007, *Best Practice Regulation Handbook*.

4.2.3 Phase-out of SUP items across Australia and New Zealand

Many jurisdictions in Australia and overseas have taken action to phase out SUP.⁷³ In particular, many of the SUP items considered in this RIS have already been phased out in other Australian jurisdictions and New Zealand, as shown in Table 4.1 below.

Table 4.1 Summary of other jurisdictions' legislation on phasing out proposed SUP items

Heading	NSW	VIC	QLD	SA	WA	TAS	NT	NZ
Plastic microbeads	2022		2023		2023		TBC	
EPS loose-fill packaging			2023		2023		2025*	
EPS produce/meat trays			2024* ⁴	2024	2023			
Plastic take-away containers			2025* ³	2024*	2022 ²		2025*	
Boutique and heavyweight bags	2024*		2023*	2024*	2022			
SUP plates	2022 ¹	2023 ¹	2021	2023*	2022			2023*
SUP bowls	2022 ^{1,2}		2021	2023*	2022 ²		2025*	2023*

* indicates proposal for phasing out and have not yet been included in any legislation

¹ exemption for plastic-lined paper plates or bowls

² exemptions for lidded items, lids will be phased-out from 2023 for WA.

³ possible ban for non-recyclable

⁴ possible ban for non-compostable

Source: ACIL Allen based on various sources

4.2.4 Government regulation

It is clear that in the case of the SUPs considered in this RIS (except for microbeads to a certain extent), several of the conditions for using self-regulation, or quasi-regulation are not met, thus suggesting that regulation is appropriate:

- the problems caused by single-use and other problematic plastics are of high impact and significance
- there are limited market incentives for individuals and businesses to comply with self-regulatory arrangements
- jurisdictions have already moved to ban various plastic items, which is likely to continue in the future
- there is a strong public interest concern, in particular the significant concerns regarding the harm of SUPs to the environment and human health (as discussed in more detail below).

Strong stakeholder support for future regulation

In addition, there is strong support from stakeholders, including industry, community, and peak body representatives, who were consulted on the proposed phase-outs of tranche 3 items. The detailed justifications underpinning this support are discussed in Appendix E.

⁷³ Otto de Bont 2021, *Why we need to competitively price secondary plastics*, accessed 28 March 2023, <https://resource.co/article/why-we-need-competitively-price-secondary-plastics>

Plastic microbeads

The majority of community submissions (93%) and written submissions (59%) support the phase-out of microbeads. The remaining 6.3% of community submissions and 36.3% of written submissions do not mention microbeads in their submissions.

EPS packaging

Approximately 94.1% of community submissions support some action on EPS packaging. Around 72.7% of written submissions either support or partially support government taking action. The remaining submissions did not comment on banning these EPS products or did support any actions in tranche 3.

SUP take-away containers

Approximately 93.6% of community submissions and 45.5% of written submissions support action on this item. Around 22.7% of written submissions partially support action on this item. By contrast, only 4.2% of community submissions, 13.4% of written submissions and 6.6% representatives of government departments who attended the tranche 3 meetings do not support this action. This suggests there is strong support for removing take-away containers from the ACT.

SUP plates and bowls

Approximately 92% of community submissions and 59% of written submissions support this action. Around 18.1% of written submissions and 20% of meeting respondents partially support action on this item. Close to 6.9% of community submissions and 18.1% of written submissions did not comment on this item. Less than 1% of community submissions and 4.5% of written submissions do not support actions being taken on this item.

Heavyweight and boutique plastic bags

Approximately 94.1% of community submission support this action. While 72.7% of written submissions either support or partially support this action.

Close to 4.8% of community submissions and 22.7% of written submissions did not comment on this item. Less than 2% of community submissions and 4.5% of written submissions do not support action being taken on this item.

4.3 Summing up

The discussion in this chapter suggests that there is a case for phasing out the SUP items in principle based on the following factors:

- market failures, including negative externalities of plastic litter, information asymmetry and public goods, currently preventing production and consumption at social optimal levels
- policy goals and direction
- community support.

The next chapters of this RIS examine the case for phasing out SUP items in the ACT and the costs and benefits of regulation.

Objectives and options

5

5.1 Objectives of government action

The proposed Regulation aims to support the objectives of the Act and reduce the:

- use of plastic in the ACT
- impact of plastic on the environment, including the impact of the production and post-consumption persistence of plastic
- impact of plastic on waste management and resource recovery systems.

5.2 Policy options

The RIS considers 2 options; the base case, and the policy case, where each SUP item considered is banned. These options were discussed with ACT NoWaste and given approval for use in this RIS. They also align with the 2022 RIS that the Territory approved.

5.2.1 Option 1 (base case): Do not introduce the regulation

Under this option, there will be no new regulation to prohibit the sale and distribution of each of the SUP items considered in this RIS in the ACT.

Instead, the government could introduce voluntary and intermediate approaches to influence the reduction in the consumption of SUP, such as through education campaigns, voluntary industry commitments and procurement processes.

5.2.2 Option 2: Introduce the regulation

If option 2 is pursued, a new regulation will be created to introduce an immediate regulatory ban on the sale and distribution of each SUP item in the ACT.

It is important to note that each item is analysed independently, with its own costs, benefits, and overall impact. This allows the RIS to recommend options for SUP items should they be different (see Chapter 8 for our recommendations).

Moreover, option 2 is based on considerable stakeholder feedback about the desirability of banning all tranche 3 items (i.e. all are included in the regulation), as shown in Table 5.1 below and Appendix E.

Table 5.1 Stakeholders’ product-specific approach to government action

Item	Approach	Stakeholder group
Plastic microbeads	Regulatory phase-out	– Industry associations
	Regulatory phase-out (with exemptions)	– Retail and service industry – Suppliers and distributors – Small retailers, suppliers and farmers
Expanded polystyrene products and packaging		– Industry associations – Waste management sector – Animal health products sector – Community
	Regulatory phase-out (with exemptions)	– Retailers – Manufacturers and suppliers – Small businesses – Charities/volunteer canteens/small restaurants
SUP take-away containers		– Community – Industry (regulation on non-recyclable plastic take-away containers)
	Regulatory phase-out	
SUP plates and bowls	Regulatory phase-out (with exemptions)	– Retailer and service industry providers – Industry associations – Health sector
Heavyweight and boutique plastic bags	Regulatory phase-out	– Community

Source: ACIL Allen based on a review of submissions

5.3 Other options

As discussed in Section 4.2, self-regulatory, quasi-regulatory and co-regulatory approaches have been considered and explored in detail. It is unlikely that these approaches could address the problem of SUP in the ACT effectively, therefore they have not been considered as an option for the Impact analysis.

Framework for impact assessment

6

6.1 General framework

Consistent with best regulatory practice, the impacts of the proposed policy options have been analysed using a CBA framework.

CBA is a framework for analysing the costs and benefits of regulatory proposals. Costs and benefits are examined from the whole community's perspective to identify the proposal with the highest net benefit. One of its most important attributes is that it provides a useful framework for consistently organising disparate impacts. The framework considers gains and losses to all affected parties, including social gains and losses that may not be apparent in a financial analysis or business case.

A CBA approach applies a comparative analysis using a baseline (i.e. no change) and reasonable alternatives. Estimated benefits and costs are compared with the baseline, representing circumstances expected without the proposed new activity or policy change. Importantly, if an economic impact is identical in the baseline and the alternative, it is not modelled in a CBA.

An excess of benefits over costs in CBA does not imply that everyone has been made better-off. It simply means that the overall economy could be made better-off. Government would have to decide how much weight to place on distributional consequences of (who wins and who loses from) the economic disturbance, the extent to which losers should be compensated, and how distributional issues should be addressed).

A fundamental premise of CBA is that values assigned to benefits and costs should be the values of affected individuals. This premise assumes that individuals understand and benefit from their individual preferences that contribute to individual welfare. Another important assumption is that monetary measures of welfare change can be derived from observations of how much individuals are willing to pay for the phase out plastic products or how much they would be prepared to accept (be compensated) to forgo specific alternatives.

In CBAs, differences in the timing of benefits and costs are addressed by discounting future streams of benefits and costs to present values using an appropriate discount rate or rates. This makes monetary values in different periods comparable and amenable to meaningful aggregation.

The following sections outline our approach to some general parameters used in the CBA.

6.1.1 Timeframe for analysis

The timeframe used to model the costs and benefits of the proposed phase-out is based on assumptions about the intervention's life and associated impacts.

Consistent with best practice and previous CBA analyses and mirroring the tranche 2 modelling, it is assumed that actions related to the policy (compliance actions, information campaigns, industry

training, etc) begin the year the scheme starts (2023) and extend for a period of 20 years (that is, costs associated with the scheme are be modelled for 20 years). The RIS does not propose a phase out for any SUP item as a preferred option.

After this period, it is assumed that a new CBA results in the policy being superseded, revised or extended in a normal cyclical policy review. As no ongoing investments are associated with the phase out, the modelling will cease in 2043.

6.1.2 Discount rate

There is extensive debate around the basis and selection of the appropriate rate to discount the stream of costs and benefits of interventions related to energy efficiency, as the rate used in CBAs has a very significant impact on the value placed on the benefits accumulated in the future over a long period of time.

Since the analysis timeframe is 20 years, the OIA (Office of Impact Analysis) guidelines require calculating net present values at an annual central real discount rate of 7%, with sensitivity analysis conducted using a lower bound discount rate of 3% and an upper bound discount rate of 10%.⁷⁴

6.1.3 Net impact measures

The results of a CBA should be presented to facilitate the identification of the preferred option. Combining all estimated benefits and costs, we have estimated the net impact of the proposed changes and identify the option that generates the greatest net benefit for the community.

We will provide two measures for each of the policy options, they are outlined in Table 6.1 below.

Table 6.1 Summary of measures to be included in the CBA

Summary measure	Description	Success measurement	Comparative ability
Net present value (NPV)	Sum of discounted annual net benefits (benefits minus costs)	Policy is beneficial to society if NPV is greater than zero	Provides the ability to compare policy options according to the total economic return of each, where the option with the largest NPV should be favoured
Benefit-cost ratio (BCR)	Ratio of the present value of total costs to the present value of total benefits	Policy is beneficial to society if BCR is greater than one	Provides the ability to compare policy options according to the degree to which benefits outweigh costs for each, where the option with the largest BCR should be favoured When costs are negative (i.e., the alternative is cheaper), a BCR cannot be calculated as there is no cost to form the basis of the ratio. This is denoted as N/A CBR.

Source: ACIL Allen

Non-quantified benefits and costs will be discussed both as context and a supplement to the final NPV and BCR.

The RIA Guidelines require that the RIS identifies the best option from those considered. Additional details about the decision rule to identify the best policy option are provided in Box 6.1 below.

⁷⁴ OBPR 2020, *Environmental Valuation Guidance Note*, Department of the Prime Minister and Cabinet.

Box 6.1 What is the best option from those considered?

A RIS must recommend a preferred option from among those presented and analysed. Typically, the decision rule to identify the preferred policy option is to select the option with the highest net benefit to society as a whole. However, there are some circumstances where an option, other than the one with the highest net benefit, could be recommended. The circumstances where a 'second best' option could be recommended include:

- When the option would deliver significant benefits that cannot be monetised. The OBPR's CBA guidance notes that 'if a proposal is advocated despite monetised benefits falling significantly short of monetised costs, the RIS should explain clearly why non-monetised benefits would tip the balance and the nature of the inherent uncertainties in the size of the benefits'⁷⁵.
- When the option would provide higher resilience in the face of uncertainty. As noted by the OBPR, an option can be recommended that has a lower expected value of net benefits, but with a smaller chance of imposing a significant net cost on the community (lower 'downside risks').⁷⁶

Where the option with the highest net benefit disproportionately impacts a (vulnerable) sector of the community. Indeed, the OBPR's CBA guidance indicates that decision makers 'may decide to reject an option with the largest NPV if it has significant adverse equity impacts.'⁷⁷

Source: ACIL Allen based on Commonwealth of Australia, Department of the Prime Minister and Cabinet 2020, Cost-benefit analysis guidance note, March.

6.1.4 Compliance and cost pass through

The analysis assumes full compliance with the new SUP requirements. While there may be some level of under-compliance, this is a standard assumption in regulatory analysis.

The extent to which this price change will eventually be passed on to consumers is based on the relative elasticities of demand and supply. There is insufficient data and research on this matter in SUP, both in Australia and the ACT. Therefore, in this analysis, it will be assumed that the cost of the price increases will be assessed on a case-by-case basis. Where the products are sold at wholesale, the cost will be attributed to businesses, whereas in instances where products are sold at retail, the cost will be attributed to the consumers.

This assumption will reflect the initial costs borne by each party, but not the final costs attribution after costs transfers. As this is an economy-wide analysis, the overall economy's final costs and benefits will remain constant whether costs from businesses will ultimately transfer to consumers or not.

6.1.5 Base case

The effects of the proposed policy options are estimated by comparing their impacts with the baseline or base case (baseline) scenario (see Section 5.2). The baseline is a projection of the future state of the world in the absence of any policy or regulatory change, given the currently available information and data.

The objective of the CBA is to assess the change caused by the proposed SUP bans. Therefore, the baseline should make specific reference to those factors which will be affected by the regulation, and which will affect the estimates of its impact. To establish the baseline for the analysis in the RIS we considered:

⁷⁵ Commonwealth of Australia, Department of the Prime Minister and Cabinet 2020, Cost-benefit analysis guidance note, March, p. 12.

⁷⁶ Ibid., p. 9.

⁷⁷ Ibid., p. 13.

- the current consumption of SUP items in the ACT
- changes in consumption of SUPs.

Additional information about each of these elements is provided in the sections below.

Current consumption of SUP items in ACT

There are no published data on the level of consumption of SUPs for the proposed items in the ACT. As such, we have used other studies to determine the per capita SUP consumption, which is assumed to be the same in the ACT as in other jurisdictions. Without any consumption data, we have used conservative assumptions with the support of the ACT NoWaste team.

Table 6.2 shows the estimated annual consumption of SUP items in the ACT, forming the baseline for this analysis.

Table 6.2 Estimated annual consumption of SUP items in the Australian Capital Territory, 2023

Item	ACT annual consumption (No. items, millions)			Per capita consumption (No. items/yr)	ACT annual consumption - weight (Tonnes)	
	Retail	Hospitality & other sectors (wholesale) ^b	Medical & other exempted sectors			Total
Option 1 (base case)						
Plastic bowls	0.1	0.5	0.0	0.7	2	7.2
Bowl lids	0.1	0.3	0.0	0.4	1	3.6
Plastic plates	0.1	0.5	0.0	0.7	2	9.5
Boutique and heavyweight plastic bags	-	8.8	-	8.8	19	388.1
Take-away containers	2.2	8.7	-	10.9	23	240.2
Take-away container lids	1.1	4.4	-	5.5	18	27.3
EPS loose-fill packaging	-	2.5	-	2.5	5	63.6
EPS trays used for meat, fruit and other items for retail sale	-	3.4	-	3.4	7	20.5

Source: ACIL Allen.

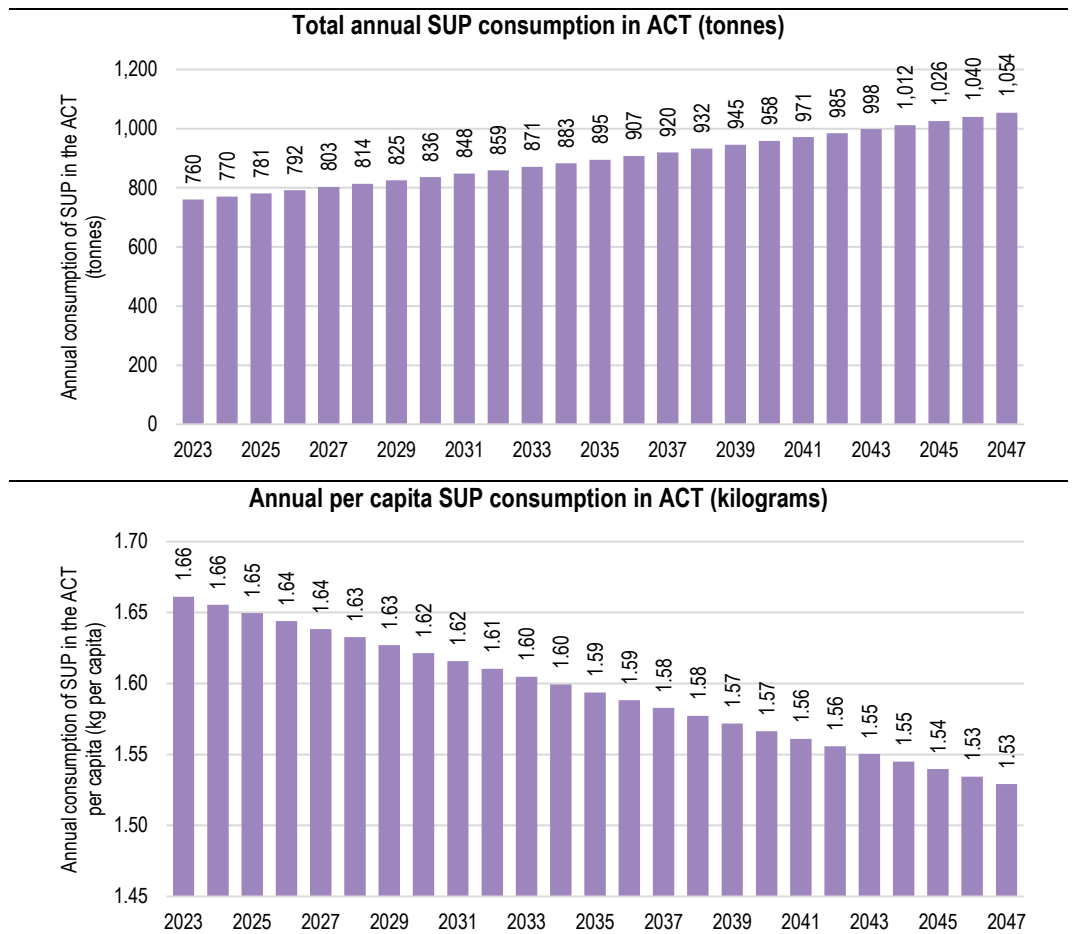
Changes in consumption of SUPs

In the baseline, it is assumed that the consumption of SUPs will increase in line with population growth projections. At the same time, there is a smaller countervailing trend where consumers choose to use SUPs less as public consciousness of their impact increases and the price of alternatives decreases. For this analysis, we have assumed that:

- Population will increase in line with the ACT government population projections.
- Consumers will voluntarily switch from SUPs at one-fifth of the annual population growth rate.

The net result of these two effects is that consumption of SUP will increase in the future, but not as fast as would be expected by the population alone. The resulting estimates are shown in Figure 6.1.

Figure 6.1 Consumption of SUPs in the ACT over time



Notes: only includes consumption of SUPs considered under the proposed bans.

Source: ACIL Allen

6.2 Impact assessment

6.2.1 Identified costs and benefits

Stakeholders identified a range of costs and benefits throughout the consultation process, which is detailed in Appendix E. These costs and benefits have been categorised as either impacting government, consumers or business, and are listed in Table 6.3.

Table 6.3 Summary table of costs and benefits that have been considered in the RIS

Group	Costs	Benefits
Territory Government	<ul style="list-style-type: none"> – Implementation costs – Community education and communication costs 	<ul style="list-style-type: none"> – Meet state, national and international goals and commitments – Opportunity to influence community behaviour
Local Government		<ul style="list-style-type: none"> – Waste disposal costs (avoided landfill costs)
	<p><i>Australian-based SUP manufacturers, wholesalers and distributors</i></p> <ul style="list-style-type: none"> – Lost profits – Cost to find new channels – Compliance costs – R&D costs 	<ul style="list-style-type: none"> – Increased business for producers of alternative products – Meeting community expectations and positive reputational impacts
	<p><i>Retailers</i></p> <ul style="list-style-type: none"> – Compliance and transition costs (incl. unused stock) 	
Industry	<p><i>Food and hospitality outlets (i.e. business purchasing SUPs)</i></p> <ul style="list-style-type: none"> – Additional (operational) cost of alternatives – Compliance and transition costs (incl. unused stock) 	
	<p><i>Medical and other exempt sectors</i></p> <ul style="list-style-type: none"> – Increased cost of plastic items for those who need them and difficulty acquiring them, including those with disabilities 	<ul style="list-style-type: none"> – Savings from the cost of single-use alternatives (if alternative products are cheaper)
Consumers	<ul style="list-style-type: none"> – Additional cost of alternatives in retail settings – Perceived quality of alternatives 	<ul style="list-style-type: none"> – Savings from the cost of alternatives in retail settings (if alternative products are cheaper) – See community benefits below
Community overall		<ul style="list-style-type: none"> – Reduced plastic litter – Reduced contamination of recycling streams – Reduction in consumption of microplastics – Reduced impact on biodiversity

Source: ACIL Allen

6.2.2 Assumed response to the bans

Different groups may respond to a ban in different ways, which will impact the cost and benefits that accrue to each group for each product. Three courses of action are considered in this model:

- **Switch to alternative non-plastic single-use items** (e.g. Forest Stewardship Council (FSC) certified paper, wood, bamboo, etc.) — this would involve a one-for-one switch to the alternative single-use item.

- **Switch to reusable items** (e.g. metal take-away containers, etc.) — this would involve a capital investment into reusable items. Each reusable item is expected to replace a significant number of SUP items (based on the lifespan of reusable items).
- **Removal from the market** — businesses may choose not to offer or may reduce the volume of single-use items supplied to customers (e.g. by not offering take-away containers). Equally, consumers may choose not to use these items.

The Victorian RIS⁷⁸ estimated the behaviour changes in response to the proposed bans based on findings from stakeholder consultations and several assumptions. A review of other jurisdictions' analyses reveals no other estimates for this data. In lieu of any additional consultation conducted for this project, we have developed assumptions for each product based on the Victorian estimates and discussions with ACT NoWaste. These estimates are presented in Table 6.4.

The alternatives that consumers and businesses will switch to are unclear; however, Table B.1 and Table B.2 in Appendix B outline the assumptions used for this model. These assumptions have been primarily driven by price and availability, such that cheaper alternatives are more likely to be used as substitutes, subject to the widespread availability of that alternative. Table B.4 also outlines the assumptions used to calculate the number of times that a reusable item will be used (these assumptions are used to calculate the cost per use of a reusable item to determine the differential costs of replacing a reusable item for a SUP).

⁷⁸ Victorian Department of Environment, Land, Water and Planning 2022, *Regulatory Impact Statement for regulations banning certain single-use plastic items*

Table 6.4 Assumed response to the proposed SUP phase-out

Product	Retail				Hospitality & other sectors (wholesale) ^a				Medical & other exempted sectors			
	Single-use plastic item	Single-use alternative	Reusable	Removed from the market	Single-use plastic item	Single-use alternative	Reusable	Removed from the market	Single-use plastic item	Single-use alternative	Reusable	Removed from the market
Option 2												
Plastic bowls	0%	90%	5%	5%	0%	95%	0%	5%	0%	80%	20%	0%
Bowl lids	0%	90%	5%	5%	0%	95%	0%	5%	0%	80%	20%	0%
Plastic plates	0%	90%	0%	10%	0%	90%	0%	10%	0%	90%	0%	10%
Boutique and heavyweight plastic bags	0%	0%	0%	0%	40%	50%	0%	10%	0%	0%	0%	0%
Take-away containers	0%	0%	0%	0%	0%	75%	25%	0%	0%	0%	0%	0%
Take-away container lids	0%	80%	20%	0%	0%	95%	0%	5%	0%	0%	0%	0%
EPS loose-fill packaging	0%	80%	0%	20%	0%	95%	0%	5%	0%	0%	0%	0%
EPS trays used for meat, fruit and other items for retail sale	0%	0%	0%	0%	60%	40%	0%	0%	0%	0%	0%	0%

^a And other sectors buying at wholesale prices.
Source: ACT NoWaste and ACIL Allen

More detailed assumptions of the percentage of each single-use and reusable alternative are included in Table B.1 and Table B.2 Appendix B.

6.3 Cost assessment

6.3.1 Cost to government

The additional costs that accrue to government due to implementing the ban include both one-off and ongoing costs. The one-off costs come from administration costs, consulting with industry, and producing educational materials. These one-off costs provided by ACT NoWaste are shown as follows:

- Implementation cost: \$400,000.
- Production of educational material: \$50,000.

ACT NoWaste estimates that there will be negligible ongoing costs, as compliance and other ongoing activities are unlikely to increase business-as-usual costs.

6.3.2 Cost to ACT industry

A ban on the consumption of SUPs in the ACT generates costs to industry, including lost revenue for manufacturers and suppliers of the banned items and a range of implementation and operational costs.

Costs to manufacturers, wholesalers, distributors and retailers

As noted in section 6.1.4, this analysis does not consider second and third-order effects that result from the ban. The costs affecting manufacturers, wholesalers, distributors and retailers are discussed qualitatively in the RIS.

Costs to medical and other exempt sectors

There is potentially a cost to medical and other exempt sectors in procuring the SUP items after the ban took place, as these items will become less available, therefore, more expensive and difficult to procure. This cost is discussed qualitatively, with particular regard to the equity implications.

Costs to hospitality and other outlets that purchase SUPs wholesale

Businesses that buy SUPs wholesale to provide to consumers alongside their services will face one-off and ongoing costs due to the ban.

Fixed and one-off costs

The one-off costs for implementation and transition include the:

- costs of checking the products they provide against the list of banned items
- cost of arranging for the supply of compliant (alternative) products
- costs of setting up new processes to provide for the washing of re-usable products
- redistribution or disposal of inventory.

These costs are considered minimal and not incorporated into the CBA. They are considered minimal for the following reasons:

- The costs associated with checking products against the list is expected to be small, due to the information published by ACT NoWaste and the relatively short list of products being banned in this tranche.
- The cost of engaging suppliers of compliant alternatives could be considered a part of regular business practice. Additionally, many suppliers that provide the products to be banned also provide compliant alternatives. In this case, businesses can simply select a compliant product offering.

- Businesses that already have cleaning facilities are more likely to opt for reusable items. In such cases, there is no additional infrastructure required.
- The cost of disposing of inventory is anticipated to be small, as any changes will be announced with a sufficient lead time for businesses.

Ongoing costs

Changes to ongoing and operational costs are primarily derived from the change in volume and price of a product supplied in the base case and the policy scenario.

The cost per banned SUP item and replacement items under each option (both at the retail and wholesale levels) have been sourced from desktop research conducted by ACIL Allen. The selection of replacement items under each option and their assumed prices have been agreed upon with ACT NoWaste (see Table B.3 and Table B.4 in Appendix B).

6.3.3 Cost to consumers

This analysis assumes that consumers will incur the costs for products sold in retail settings, including switching to alternatives. The price changes modelled are shown in the retail column of the tables above. An additional cost is the perceived quality of alternatives, which will be discussed qualitatively.

6.4 Benefit assessment

The societal benefit of removing a SUP from the market depends on where that SUP would have ended up. For example, a SUP that would have ended up in landfill that is removed from the market decreases the cost of landfill.

For this analysis, there are two quantified types of benefits:

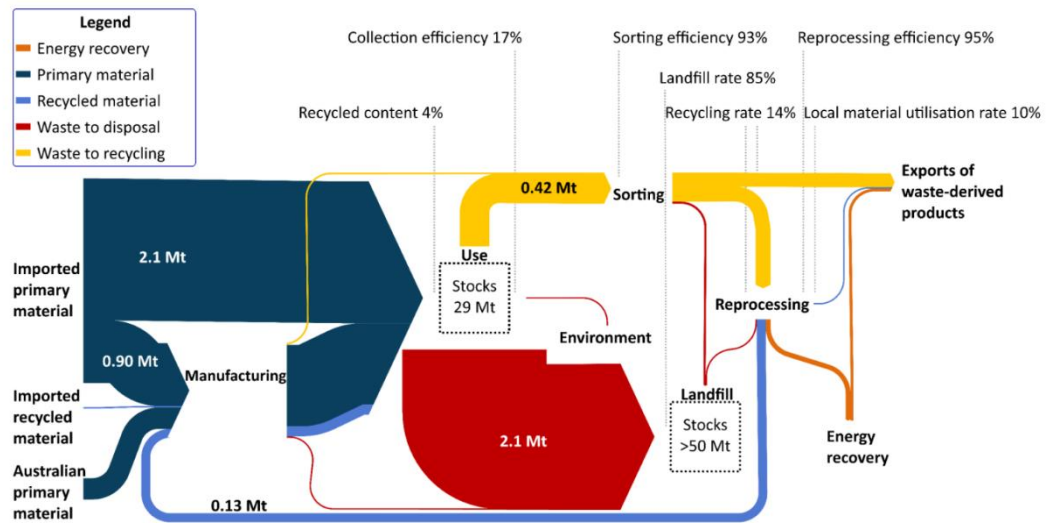
- reductions in operating landfill costs associated with the decrease in litter going to landfill
- reductions in the amount of litter (waste entering the urban and suburban landscape and the broader environment) associated with reduced or different litter entering the environment.

Data on the flows of SUPs in Australia (and in the ACT, more specifically) is limited. Some of the sources considered for use in this analysis include the following.

- The National Waste Report 2020⁷⁹ indicates that only a small proportion of all plastic products (as low as 1%) are entering the environment (see Table 6.2). However, these figures include all types of plastics, including multi-use and recyclable plastics, and may not represent the SUP items that need to be analysed.

⁷⁹ Blue Environment 2020, *National Waste Report 2020*, prepared for the Department of Agriculture, Water and the Environment.

Figure 6.2 Plastic flows in Australia, 2018-19

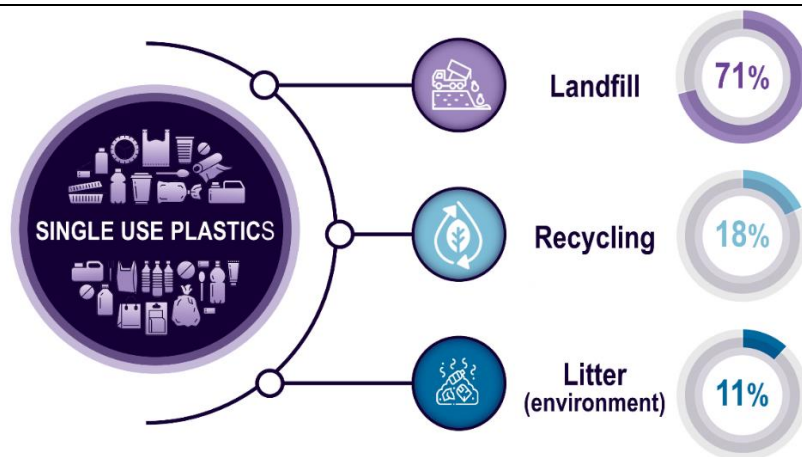


Note: This includes all types of plastics, including multi-use plastics and recyclable plastics.

Source: Blue Environment 2020, National Waste Report 2020,

- The latest Australian Plastics Flows and Fates Study (2019-2020) provides comprehensive data on plastic flows in Australia across polymer types and applications, including the amount of plastics that are recovered and disposed of. However, this dataset does not include data about the percentage of plastics that are littered. The report provides data on the national consumption of some SUP items relevant to this RIS. Still, no specific information about flows of SUP waste is provided.
- The WWF Australia’s Plastic Revolution to Reality Report⁸⁰ estimates that one million tonnes of Australia’s annual plastic consumption are SUPs. Of these SUPs, approximately 18% are recovered through recycling, 71% go to landfill and 11% leak directly into the environment (see Figure 6.3).⁸¹

Figure 6.3 Assumed SUP waste flow in the ACT under the BAU



Source: WWF Australia 2020, Plastic Revolution to Reality: A roadmap to halve Australia’s SUP litter, July.

⁸⁰ WWF Australia 2020, Plastic Revolution to Reality: A roadmap to halve Australia’s single-use plastic litter, July.

⁸¹ The reports notes that these figures were derived by extrapolating figures from single-use plastics analysis undertaken by Boston Consulting Group (BCG). No further details are provided about how these estimates were derived.

- Cost-benefit analyses of proposed SUP restrictions in other jurisdictions use several different assumptions.
 - The CBA for the previous round of SUP restrictions for the ACT Government assumed that 95% of SUP item waste enters landfill, none of the items enter recycling, and 5% enters the environment as litter, even temporarily.
 - The NSW Better Regulation Statement (BRS) on proposed plastic bans suggests a littering rate of SUPs in NSW of 3.9%.⁸² This report also notes that about 40% of all SUP litter in NSW is estimated to end up in marine environments (29% in bays, estuaries, and oceans) and waterways (11%).
 - The Victoria RIS⁸³ for proposed SUP bans used the WWF assumptions outlined above. It assumed that 18% of SUPs are recovered through recycling, 71% go to landfill and 11% leak directly into the environment.
 - The CBA of proposed SUP bans in Western Australia assumed litter rates vary from 1% to 15% depending on the product type, and the rest of the waste is assumed to be sent to landfill.

For this analysis, the WWF estimates in Figure 6.3 was used to reflect the SUP waste flows in the baseline. The rationale for this decision is as follows:

- The WWF estimates are preferred over the estimates in the NSW BRS because they relate to SUP waste flows across Australia. They are likely to represent the ACT's flows more than estimates specifically developed for the economy in other states or territories.
- The WWF figures are more appropriate than the previous ACT RISs, as the items in the previous bans were generally not recyclable. The items in this round will likely have some presence in the recycling stream.
- The WWF figures refer specifically to SUPs (as opposed to plastics in general) and are relatively recent.

To estimate the benefits of the proposed regulation, it is necessary to determine how the proposed bans would change waste flows. We propose to calculate these changes by taking into account:

- removed SUP waste — this refers to SUP items removed from the market. These items will avoid the waste flow altogether.
- avoidable SUP waste — this refers to avoided SUP waste due to the use of reusables and single-use alternatives.
- unavoidable SUP waste — this refers to the SUP items that are proposed to be exempt from the ban under each scenario.

6.4.1 Avoided landfill costs

From a whole-of-economy perspective, taxes are considered transfers, not costs or benefits. However, as noted by the NSW guide for CBA⁸⁴, in some cases, it is appropriate for the impacts of taxes or subsidies to be taken into account where those taxes reflect service fees or the price of a negative externality. This is the case of the waste levy, which incentivises waste generators to reduce, reuse or recycle waste by increasing the cost of sending waste to landfill.

⁸² NSW Department of Planning and Environment 2021, *Reducing the impacts of problematic plastics*, Better Regulation Statement, December, p. 19.

⁸³ PwC 2022, *Regulatory impact statement – Single-use plastic ban 2022*, prepared for the Victorian Department of Environment, Land, Water and Planning, April.

⁸⁴ NSW Treasury 2017, *NSW Government Guide to Cost-Benefit Analysis (TPP17-03)*, p. 59.

In light of this, the CBA will treat the landfill gate cost as a proxy for the economic cost to sequester the waste. As such, any reduction in landfill costs will be treated as a benefit of the ban. The cost used for this will be the cost per tonne of domestic waste, in this instance, \$105.25.⁸⁵

6.4.2 Litter benefits

The broader community place a high value on litter reduction. To date, no survey or modelling has been done on the willingness to pay (WTP) to reduce litter in the ACT. However, there is literature available that considers the Australian community's WTP, for instance:

- In 2010, PwC conducted a survey and choice modelling to estimate the community's willingness to avoid litter. Based on the national sample, the study estimated that households were willing to pay, on average, \$4.15 per 1 percentage point reduction in litter, or \$41.50 per annum for a 10% reduction in litter and \$83.00 for a 20% reduction.⁸⁶ However, ABARE and Marsden Jacob Associates have identified several technical shortcomings in this study.
- A 2016 study by Marsden Jacob Associates⁸⁷ used the following estimates to value avoided litter in land and marine environments:
 - land litter – \$1,876 per tonne (likely – used as a central estimate), with sensitivity analysis using \$1,101 per tonne (low) and \$20,060 per tonne (high)
 - marine litter – \$36,512 per tonne (likely – used as a central estimate), with sensitivity analysis using \$20,060 per tonne (low) and \$91,124 per tonne (high).
 - Coastal areas (bays, beaches, and estuaries): \$11,778 (low) to \$27,252 (high)
 - Open ocean: \$53,501 (low) to \$123,793 (high)

These estimates of the community's WTP to avoid litter are based on the cost of voluntary litter clean-up activities. The imputed value of a volunteer's labour provides a shadow price for the economic cost of litter. These values capture the avoided costs of cleaning up litter by local councils and account for the fact that the cost of cleaning up litter in marine environments could be roughly 5 to 60 times the cost of cleaning up land-based litter.⁸⁸

The Marsden Jacobs estimates (adjusted for inflation and paired with assumptions about the proportion of litter in oceans and land) have been used in several regulatory analyses to value the benefits of bans of SUP items (including the recent Victorian RIS, the previous ACT RIS and the NSW BRS). However, as noted before, while these analyses recognise that the benefits of reduced SUP litter may be (partially) offset by littering from alternative single-use items (e.g. bamboo cutlery and paper straws), this offsetting effect is not quantified. It is argued that these replacement items made of natural materials are less visible in the environment. Their presence will reduce over time through biodegradation.

For this RIS, we propose to assume that a portion of SUP litter is eliminated, and a proportion is substituted by littering from alternative single-use and reusable items (i.e. our analysis does not assume that the bans eliminate litter completely). To quantify these impacts, we propose the following.

⁸⁵ This represents the Household waste ACT residential fee for 0.5 tonnes or more from 1 January 2023

⁸⁶ PwC 2010, Estimating consumers' willingness to pay from improvements to packaging and beverage container waste management. Prepared for the NSW Government Environment Protection and Heritage Council. <http://www.nepc.gov.au/system/files/resources/0c513e54-d968-ac04-758b-3b7613af0d07/files/bevcon-rpt-pwc-wtp-packaging-final-report-201007-0.pdf>

⁸⁷ Marsden Jacob Associates 2016, *Plastic Bags Ban Options – Cost Benefit Analysis*, prepared for the Victorian Department of Environment, Land, Water and Planning.

⁸⁸ Ibid, p. 12.

- To value the benefits of avoided litter — recognising that the ACT is a land locked territory with several inland waterways (as opposed to coastal areas/oceans), we have valued the benefits of avoided land and *inland waterway* litter. Our research has not been able to find any estimates of WTP for avoided inland waterway litter or of the cost of cleaning rivers. In light of this, we have used the 2016 Marsden Jacobs WTP estimates to calculate a blended estimate of the WTP for avoided land and inland waterway litter, assuming the following:
 - The cost of cleaning inland waterways is equivalent to the cost of cleaning coastal areas. As there is no central case for coastal litter published, we assumed that this is the midpoint between high and low estimates (i.e. \$19,515 per tonne)
 - That 17% of plastic litter ends up in inland waterways (based on a 2021 CIE report)⁸⁹, and the remaining 83% is terrestrial litter.

This results in a blended WTP for a tonne of avoided litter of \$5,871 (see Table 6.5).

To avoid penalising non-plastic alternatives that often are heavier than plastic products (resulting in a heavier tonnage), the WTP per tonne of avoided litter has been converted to a WTP per item based on the weight of the SUP item.

Table 6.5 Willingness to pay to avoid litter, \$ per tonne

	Likely	Low	High
2016\$			
Land	1,876	1,101	20,060
Inland waterways	19,515	11,778	27,252
2022\$			
Land	2,259	1,326	24,161
Inland waterways	23,504	14,186	32,823
Blended waterway/land litter estimate, 2022\$	5,871	3,512	25,633

Note: the blended marine/land litter estimate assumes that single-use litter within waterways equates to 17% of the total litter experienced within the ACT and the remaining 83% is associated with land litter.

Source: ACIL Allen based on ABS CPI data and Marsden Jacob Associates 2016, *Plastic Bags Ban Options – Cost Benefit Analysis*, prepared for the Victorian Department of Environment, Land, Water and Planning

- To value the benefits of substituted litter — an indicative estimate of the benefits of substituting SUP litter by littering from both alternative single-use and reusable items has been calculated using information from a recently released paper on the WTP for reduced litter which contains information about the WTP to reduce different types of litter⁹⁰ in different locations within NSW, Victoria and Queensland. As shown in Figure 6.4, people are consistently willing to pay around three times more to reduce plastic litter than paper/cardboard litter. These estimates have been used to adjust the blended WTP per tonne of avoided litter to reflect a scenario where litter is not avoided entirely but substituted from SUP litter to paper/cardboard litter (i.e. this assumes that littering behaviour does not change, but the type of material littered is). These adjustments result in an indicative WTP for changing a tonne of plastic litter for a tonne of paper/cardboard litter of \$14,970. However, it is important to note that these estimates are only indicative, as they are derived from surveys

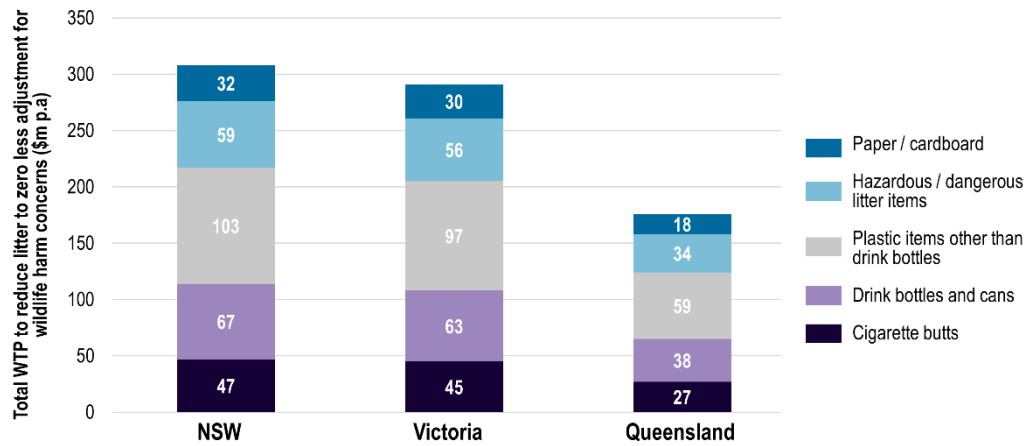
⁸⁹ Figure 5.2, The Centre for International Economics (CIE) 2021, *Measuring environmental costs from litter and illegal dumping*, December.

⁹⁰ Centre for International Economics 2022, *Willingness to pay for reduced litter and illegal dumping*, February, prepared for the New South Wales Environment Protection Authority, Sustainability Victoria, and Queensland Department of Environment and Science <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/litter/willingness-to-pay-reduced-litter-illegal-dumping-cie-final-report.pdf>.

asking people their WTP for eliminating litter, not their WTP for replacing one type of litter with another.

As mentioned above, to avoid penalising heavier non-plastic alternatives, the WTP per tonne of substituted litter has been converted to a WTP per item.

Figure 6.4 Total willingness to pay for zero litter by type of litter



Source: CIE 2022, *Willingness to pay for reduced litter and illegal dumping*, February

6.4.3 Environmental benefits

In other Australian jurisdictions, the environmental benefits of removing SUP items are mainly derived from the environmental cost of plastic in the oceans. There has been no study on the environmental impacts of plastic in terrestrial environments.

The ACT, however, is a landlocked jurisdiction. Therefore, it is reasonable to assume that the amount of plastic from the ACT entering the ocean is insignificant. In light of these factors, this analysis does not quantify the environmental benefits of banning SUP items but discusses them qualitatively in the next chapter.

6.4.4 Other benefits

There are a range of other benefits associated with the reduction of SUP plastic, such as the impact on human health, reduced contamination of recycling streams, and more. These benefits are deemed unquantifiable due to a number of factors including the lack of research and studies on the subject, unavailability of data, and applicability to this RIS. It is important to recognise these benefits exist; however, to remain consistent with best practice RIS guidance these benefits have not been quantified. As such, it is likely that the quantified impacts reflect only a portion of the overall benefits of phasing-out SUPs in the Territory.

These benefits are discussed qualitatively in Section 7.3.

Impact analysis

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7.1 Quantified impact

Table 7.1 summarises the costs and benefits of the policy option relative to the base case. It shows that the net present benefit to the ACT economy is **-\$12.3 million**, with a BCR of 0.3. Based on the quantified costs and benefits and the assumptions made, this result shows that the costs of substituting plastic products for suitable alternatives would not offset the quantified benefits.

Table 7.1 Estimated economy-wide costs and benefits of Option 2, present value (in 2023 at \$2022)

COSTS (\$)	
Consumers	-1,724,103
Industry	
Food and hospitality outlets	18,421,601
Medical and other exempted sectors	-23,648
ACT Government	450,000
	TOTAL 17,123,850
BENEFITS (\$)	
Landfill operating costs	609,482
Society	
Avoided & substituted litter	4,209,552
Marine environment benefits	0
	TOTAL 4,819,034
BENEFITS MINUS COSTS (\$)	-12,304,816
BCR (RATIO)	0.3

Source: ACIL Allen

Table 7.2 presents the distributional breakdown of the impacts of Option 2. As shown in this table, it is estimated that the:

- benefit to consumers (in present value terms) is approximately \$3.77 per capita, and the costs for food and hospitality outlets are approximately \$10,467 per business
- the overall societal (non-market) benefits are approximately \$9.20 per capita.

As discussed above, it has been assumed that businesses bear wholesale price increases while retail price increases are paid for by consumers (although it is acknowledged that any increases in costs for businesses may be passed on to consumers).

Table 7.2 Distributional assessment for Option 2, present value (in 2023 at \$2022)

Stakeholder	Estimated impact (NPV7)	
	Total	Per capita (blue) / per business (green)
ACT Government	-450,000	-0.98
Local Government (waste disposal costs)	609,482	1.33
Food and hospitality outlets	-18,421,601	-10,466.82
Medical and other exempted sectors	23,648	8.20
Consumers (retail)	1,724,103	3.77
Environment (society)	4,209,552	9.20

Note: Negative values are costs, and positive figures represent benefits. NPV7 stands for net present value at 7% discount rate. Negative figures represent costs. Per capita figures are based on the ACT population in 2021 and highlighted in blue. Per business figures are highlighted in green and have been calculated based on counts of ACT businesses by the ABS (ABS 8165.0 Counts of Australian Businesses). Food and hospitality outlets are counted using ABS' ANZSIC codes 44 and 45, while medical and other exempted sectors are drawn from the same source, using ANZSIC codes 84, 85, 86 and 87.

Source: ACIL Allen

7.1.1 Quantified impact (by product)

Table 7.3 outlines the net impacts of the proposed bans under Option 2 by item (excluding government costs⁹¹) and provides some commentary about what drives each product's result.

The results in this table show that either the costs outweigh the benefits or there are no monetisable costs, so a BCR cannot be applied (the BCR is reported as N/A). This reflects that the benefits recorded in the model (change in landfill costs, WTP to avoid and substitute litter) are small relative to the costs of the item. Where the NPV is positive, it occurs where the cost of the alternative products is lower than the SUP product.

Given that the SUPs are still consumed despite a higher cost, some non-monetised value may be attributable to the SUP that prevents an organisation from switching to the alternative. Or there may be information asymmetries or other market failures which prevent alternatives from being supplied and used (i.e. industries or consumers may not know that alternatives exist at lower prices).

Further, these outputs could vary significantly if the prices for these products are not accurately captured in the model. For example, if a cheap provider of goods raises prices due to supply chain challenges or a niche provider cannot provide enough product to the market. Given that these figures are sensitive to the input prices, the outputs should only be treated as an estimate.

The quantified benefits were low relative to the costs (either positive or negative). This differs from analyses in other jurisdictions for three main reasons:

- In this analysis, single-use alternatives were assumed to be littered at a similar rate to SUPs.
- The ACT is landlocked, so there are no quantified benefits to preventing litter from entering the ocean. Ocean litter benefits are usually significantly higher than terrestrial litter benefits.
- Similarly, most estimates of the social cost of plastic relate to the impact of plastic in the ocean on wildlife and biodiversity. As such, this is excluded from the analysis. This impact is discussed qualitatively in Section 6.4.3.

⁹¹ Estimates for government costs are not included in the costs per item, as they were estimated as an aggregate per option. These costs make up a small cost relative to the net cost of each option.

Table 7.3 Summary of the impact of Option 2 by product

	NPV7 (\$ in 2023 at \$2022)	Cost	Benefits	BCR (ratio)	Main drivers of the result
Bowls	195,276	-146,741	48,535	N/A ^a	Plastic bowls were predominantly replaced with Bagasse bowls. The price of these was lower than the price of SUP bowls.
Bowl lids	322,066	-295,761	26,305	N/A ^a	Most bowl lid alternatives were also cheaper than the SUP product.
Plates	231,917	-163,893	68,025	N/A ^a	Most plate alternatives were also cheaper than the SUP product.
Boutique and heavyweight plastic bags	-1,592,561	4,549,090	2,956,529	0.65	The relatively high benefit value was due to the high level of items replaced by re-usable alternatives, which had a much lower per-use cost.
Take-away containers	-2,438,658	3,574,270	1,135,612	0.32	Food containers had a relatively high level of re-usable alternatives
Take-away container lids	-5,844,730	5,994,437	149,707	0.02	Food container lids had low benefits relative to their cost due to their relatively higher mass of single-use alternatives. Food container lids made of substances like plant fibres weigh more proportionally than those of plastic due to their lower strength.
EPS loose-fill packaging	-2,776,088	3,175,595	399,507	0.13	The alternatives (cardboard, kraft paper, HDPE air bags) are higher in cost than the EPS packaging. This means the benefits of replacing than are smaller than the costs.
EPS trays	47,961	-13,147	34,814	N/A ^a	The weighted alternative is cheaper than existing EPS products.

^aNo BCR can be calculated as there are only benefits, no costs.

Note: NPV7 stands for net present value at a 7% discount rate. Impact by product excludes government costs.

Source: ACIL Allen

7.1.2 Sensitivity analysis

A sensitivity analysis was conducted to address 4 areas of uncertainty. For each of these areas, the analysis was conducted as follows:

- discount rate — a low discount rate of 3% and a high discount rate of 10%
- WTP for avoided litter — a low and high estimate of WTP were tested
- WTP for substituted litter — a low and high estimate of WTP were tested
- landfill operating costs — an increase in landfill operating costs of 50% and a decrease in landfill operating costs of 50% were tested.
- response to regulation — for certain items, the central analysis assumed that a proportion of SUP items were removed from the market (i.e., not replaced by any alternative) and that a proportion were substituted by reusable items (which are cheaper on a per use basis). To test the impact of these assumptions, we tested three scenarios:
 - a scenario where no items are removed from the market and these items are substituted by single-use alternatives
 - a scenario where re-usable alternatives substitute no items and these items are substituted by single-use alternatives

- a scenario where no items are removed from the market, and no items are substituted by re-usable alternatives (i.e., all SUPs are substituted by single-use alternatives).

These results are presented in Table 7.4. It shows that under all tested assumptions, the NPV is below zero. Additionally, it shows that:

- a lower discount rate increases the cost in net present terms
- a lower willingness to pay to avoid or substitute litter increases the cost in net present terms
- a change in landfill costs of +/- 50% had little impact on the NPV
- where fewer reusables are used, or fewer items are removed from the market, the cost in net present terms is higher.

Removed items contribute significantly to the NPV because, in the economic modelling, an item removed from the market only counts the saved costs to businesses, consumers and the environment and not the lost consumer or producer surplus resulting from the ban of a product. Reusable items contribute positively to the NPV because of their low cost per use.

Table 7.4 Sensitivity analysis — the impact of sensitivity tests on the NPV under each policy option (\$M 2022)

	NPV under scenarios
NPV under standard assumptions	-12.30
Discount rate (base assumption 7%)	
Low estimate (3%)	-16.82
High estimate (10%)	-10.10
WTP for avoided litter	
Low estimate	-13.15
High estimate	-5.19
WTP for substituted litter	
Low estimate	-13.15
High estimate	-5.25
Landfill operating costs	
Increase costs by 50%	-12.00
Decrease costs by 50%	-12.61
Response to regulation	
No SUP items removed from market (substituted by single-use alternatives)	-16.95
No SUP items replaced by re-usable products (substituted by single-use alternatives)	-21.04
No items removed from market + no reusables (all SUPs are substituted by single-use alternatives)	-25.68

Source: ACIL Allen

7.2 Non-quantified costs

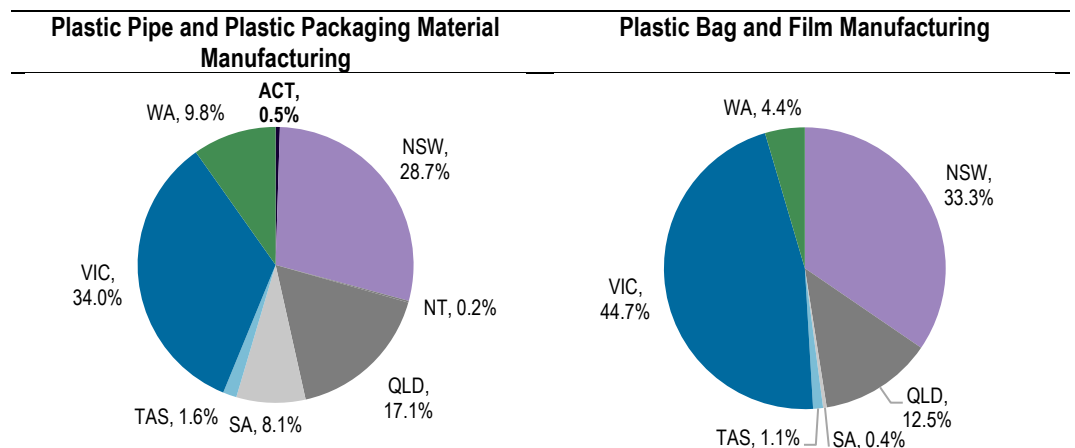
7.2.1 Industry

Costs to manufacturers, wholesalers and distributors

It is unknown how many plastic wholesalers and distributors exist within the ACT. The desktop research conducted as a part of this RIS identified that many wholesalers sold SUP and alternatives. This suggests these businesses could shift their product offerings with minimal disruption.

There appear to be few plastics manufacturers in the ACT (see Figure 7.1). The impact on those who manufacture is unknown but expected to be small. This is because any facility of scale is unlikely to rely on the ACT as a market alone. IBISWorld’s industry analysis indicates that the Plastic Pipe and Plastic Packaging Material Manufacturing industry is declining in its economic life cycle. IBISWorld’s analysis notes that local manufacturers have faced harsh operating conditions over the past 5 years due to greater import penetration/intense competition from low-cost operators in China. As such, most plastic manufacturers in the ACT will likely be headquartered in other jurisdictions or have significant operations in other locations. Those based in the ACT may be able to repurpose facilities for non-banned plastics and continue to export to markets where bans are not in place. There may, however, be costs associated with losing the ACT market.

Figure 7.1 Concentration of Plastic Pipe and Plastic Packaging Material manufacturers and Plastic Bag and Film manufacturers in Australia



Source: IBISWorld 2021, *Plastic Pipe and Plastic Packaging Material Manufacturing in Australia, April*. IBISWorld 2021, *Plastic Bag and Film Manufacturing in Australia, March*

Compliance and inventory costs and costs for hospitality and retail businesses to change suppliers

There is also likely to be a compliance cost associated with the new regulations. This may include the time it takes to check products businesses stock are compliant and those which need to change. This cost can be mitigated through education campaigns.

Several stakeholders raised the cost of unused inventory. While this may be a cost for businesses, this can be alleviated by adequate consultation and notice. Similarly, businesses may be able to transfer their products across the border, particularly where there are businesses with cross-jurisdictional locations. However, there is a cost associated with transferring material from one jurisdiction to another.

Stakeholders also suggested some costs may be associated with finding suitable compliant alternatives. This cost can be partially alleviated with educational campaigns funded by the ACT government and supported by existing suppliers offering compliant alternatives.

The increased cost of procuring for those who are exempt, including in medical and other sectors

Some sectors, such as medical, require SUP items, as existing alternatives are unsuitable. People who rely on these products, whether daily due to medical or disability needs or for a limited time (e.g., when recovery from an illness or injury), will be impacted by the proposed bans.

Stakeholders have identified that other sectors will have increased costs following the ban, including veterinary industry that will witness negative sales impact due to no EPS packaging alternatives for transporting animal health products, and increased labour costs for charities and not-for-profit canteens when switching to reusable alternatives.

Other industry costs

Stakeholders also cited costs to peak industry bodies associated with the ban, including costs to educate:

- retailers, suppliers and manufacturers on alternative materials (for all items but plastic microbeads)
- suppliers on the use of equipment to produce alternatives for all items but plastic microbeads).

These costs can be expected to be partially alleviated through government education. The extent to which these costs are to be reduced depends on the effectiveness of education campaigns about the alternatives.

In addition, the stakeholders from waste management industry identified there could be more food waste and damaged goods entering landfill, therefore increasing landfill operating costs. The potential costs from this increased waste are not quantified due to a lack of data.

Moreover, some stakeholders have suggested in their submissions that there could be potential toxic contamination in composting facilities from fibre-based alternatives containing PFAS (per- and poly-fluoroalkyl substances), resulting in increased cost of contamination treatment. Once again, without suitable data, it is difficult to understand the potential magnitude of these costs.

7.2.2 Costs to consumers

Perceived quality of alternatives

Some alternative products are less desirable to consumers for their purpose as single-use items. As stated in section 7.1, there are several product categories where the existing alternative is cheaper than the currently used single-use alternative. This may be because consumers value the plastic product's attributes over the alternatives. For example, plastic bowls might be valued over other single-use alternatives due to their ability to withstand moisture for a prolonged period.

On the other hand, consumers may experience satisfaction from using compostable or reusable products and, therefore, might experience a benefit as a result of the ban.

Increased risk of food safety compromises

Stakeholder submissions also identified that alternative food packaging products might increase the likelihood of foodborne illness and allergens. These risks could mean decreased health and quality of life and generate costs to consumers. These risks can be deemed small and insignificant if alternatives adhere to food and safety standards.

7.3 Non-quantified benefits

7.3.1 Environmental benefits and the social cost of plastic

The social cost of plastic

The environmental impact of plastic is one of the key drivers for policy action across jurisdictions. However, it is not quantified in this model.

Other CBAs have partially costed the impact of plastic pollution in the environment as the “social cost of plastic”. Typically, this cost is quantified through consumer surveys on the WTP to preserve biodiversity and protect endangered species. One example of this costing is CIE’s report *‘Measuring the environmental costs of litter and illegal dumping’*. Estimates for the social cost of plastic range from \$185 per tonne⁹² to \$3,994 per tonne⁹³.

While these values have been employed in other analyses, all estimates uncovered in the desktop review are derived from marine and aquatic benefits. The ACT is a landlocked territory, and without robust quantitative estimates for the terrestrial environmental impact, this key benefit cannot be included in the model.

If the CIE estimate of \$3,994 was simply input into the model, it would increase the benefits by \$4.3 million, increasing the BCR from 0.3 to 0.5. While the CIE’s estimate only partially quantifies the impact, this value would represent a best-case scenario estimate.

Impact on human health

The methods to estimate the social cost of plastic do not include the impact on human health. The impact on human health is still emerging, but current evidence suggests that Australians consume up to a credit card’s worth of plastic every week through food, water and the air as a result of microplastics that enter the environment.⁹⁴

Where preliminary results have been found for microplastics’ interaction with human health, they suggest that microplastics can potentially provoke immune and stress responses and induce reproductive and developmental toxicity.⁹⁵ Some research has found significant concern amongst the public when informed of the potential for microplastics to harm human health. This research suggests that a high WTP may manifest once the public better understands the human health impacts of microplastics.⁹⁶

Microplastics are an international issue, as they can travel through the air, oceans and even through rain clouds. As such, a significant proportion of the microplastics consumed by residents of the ACT or produced by industries operating in the Territory will impact other jurisdictions.

Finally, while some stakeholders have identified the risks of foodborne illness from SUP alternatives, such as for packaging, these risks are deemed insignificant. They can be further

⁹² Value used in the WA Plan for Plastics Stage 2 RIS

⁹³ The Centre for International Economics (CIE) 2021, *Measuring environmental costs from litter and illegal dumping*, December.

⁹⁴ World Wildlife Foundation (WWF) Australia 2019, *Plastic ingestion by people could be equating to a credit card a week*, <https://www.wwf.org.au/news/news/2019/revealed-plastic-ingestion-by-people-could-be-equating-to-a-credit-card-a-week>, accessed 22 March 2022.

⁹⁵ Blackburn, K., Green, D, 2022.. *The potential effects of microplastics on human health: What is known and what is unknown*. *Ambio* 51, 518–530

⁹⁶ Lingzhi Deng, Lu Cai, Fengyun Sun, Gen Li, Yue Che (2020) *Public attitudes towards microplastics: Perceptions, behaviors and policy implications*, Resources, Conservation and Recycling, Volume 163

mitigated by consultation and education campaigns, informing consumers and businesses of appropriate alternatives.

These impacts, while have been recognised in a number of studies, have not been quantified and monetised in any research. The impacts of plastic on the human health are recognised in this RIS, and therefore the benefits associated with the reduction of plastic.

Climate change

Banning SUPs could have significant benefits for the climate, as well as for the environment and human health. However, both the magnitude and direction of this impact depends strongly on the type of product that is substituted for the SUP, and the method and place of production for that substitute. Given the wide variety of alternatives and the even wider variety of production methods, it is impractical to create an estimate of GHG impact under Option 2, and it is not typically considered in RIS's for other jurisdictions. As such, the impacts are described qualitatively below.

There are several ways that a reduction in plastic production might have a positive impact on the climate:

- SUPs are made from fossil fuels, which emit greenhouse gases when extracted, refined and transported.⁹⁷
- SUPs release methane and ethylene when they break down in landfills or in the ocean, particularly in sunlight.⁹⁸
- SUPs affect the ability of marine microorganisms to produce oxygen and capture carbon dioxide, which are essential for regulating the climate.⁹⁹

However, the environmental impact depends on what alternatives are used to substitute SUPs. For example, some reusable or biodegradable products may require more energy or water to produce or wash than SUPs. They may also have a higher carbon footprint if they are transported over long distances or disposed of improperly.¹⁰⁰ Further, one study by the World Economic Forum found that if some reusable items are not used many times making their environmental impact potentially higher impact than a single-use disposable item.¹⁰¹

A ban on SUPs will increase progress towards a circular economy. However, given the high number of different impacts across the lifecycle of SUPs and their alternatives, it is difficult to quantify with certainty whether a SUP ban will positively or negatively impact the climate. Removal of microbeads from the environment

As discussed in this RIS, microplastics (especially microbeads) cannot be filtered out during normal sewage treatment works. Once in the water, microbeads have the potential to cause harm to the environment and human health due to their composition and ability to attract toxins and transfer

⁹⁷ Edmond, C. (2022, January 19). *This is how plastic pollution causes climate change*. World Economic Forum. <https://www.weforum.org/agenda/2022/01/plastic-pollution-climate-change-solution/>

⁹⁸ Ibid

⁹⁹ Ibid

¹⁰⁰ University of Bonn. (2021, February 5). *Bioplastics in the sustainability dilemma: Scientists investigate the factors affecting the global land use impacts and CO2 emissions of plant-based plastics*. ScienceDaily. <https://www.sciencedaily.com/releases/2021/02/210205121239.htm>

¹⁰¹ Mendoza, J. M. F., Azapagic, A., & Gallego Schmid, A. (2021, September 13). *Just how environmentally friendly are our reusable containers?* World Economic Forum. <https://www.weforum.org/agenda/2021/09/reusable-containers-environmental-frendly/>

them up the food chain¹⁰². These tiny plastics persist in the environment and damage marine life, the environment and human health¹⁰³. Microbeads can affect marine life, land animals and humans. However, the impact on human life is unclear. In addition to interrupting the digestive system of aquatic species, microbeads can actually absorb and concentrate other toxins in the water. When ingested in large numbers, these toxins can be absorbed into the fish itself and accumulate up the food chain, potentially ending up in food consumed by humans.¹⁰⁴

In 2016, the Australian Environment Ministers agreed to support a voluntary phase-out of plastic microbeads found in rinse-off personal care, cosmetic and cleaning products. The phase-out is led by Accord Australasia (Accord) through their BeadRecede campaign, and overseen by the Commonwealth Department of Agriculture, Water and the Environment and the NSW Environment Protection Authority.¹⁰⁵ In conjunction with this, the 2019 National Waste Policy Action Plan¹⁰⁶ incorporates a wider commitment from the business industry, sector, and governments to phase-out 100% of plastic microbeads from the outlined rinse-off products.

There are reasons to believe that industry's voluntary phase-out of plastic microbeads has been successful. The *Assessment of the presence of microbeads in rinse-off personal care, cosmetic and cleaning products currently available within the Australian retail market* conducted by the Department of Agriculture, Water and the Environment in 2020 found that out of 8,100 unique products inspected, only 0.7% contained microbeads.¹⁰⁷

Furthermore, the *Plastic Reduction and Circular Economy Act 2021* bans the supply of rinse-off personal care products containing microbeads in NSW from 1 November 2022.¹⁰⁸ With NSW being a major economy and market within Australia, this ban further incentivises industry to phase-out microbeads.

In summary, microbeads appear to have a high environmental cost associated with their use. Governments have taken policy action in other jurisdictions, and there are existing industry commitments to phase-out their use which will see the level of microplastics consumption approach zero in the ACT.

While a significant proportion of microbeads will exit the market due to voluntary bans, a small proportion will continue to exist. There is evidence to suggest that there are human and wildlife health benefits associated with the total phase-out of microbeads.

¹⁰² New South Wales Environment Protection Authority, *What are microbeads? - NSW Environment Protection Authority*, <https://www.epa.nsw.gov.au/your-environment/waste/reducing-your-household-waste/what-are-microbeads>

¹⁰³ Department of Agriculture, Water and the Environment, *Plastic microbeads – DCCEEW*, <https://www.dcceew.gov.au/environment/protection/waste/plastics-and-packaging/plastic-microbeads>

¹⁰⁴ ELGA LabWater, *Microbeads: Tiny Plastics Creating Big Problems*, <https://www.elgalabwater.com/blog/microbeads-tiny-plastics-creating-big-problems>

¹⁰⁵ Australian Government, *Plastic Microbeads*, accessed 7 March 2023, <https://www.dcceew.gov.au/environment/protection/waste/plastics-and-packaging/plastic-microbeads>

¹⁰⁶ *Ibid.*

¹⁰⁷ Department of Agriculture, Water and the Environment 2020. *Assessment of the presence of microbeads in rinse-off personal care, cosmetic and cleaning products currently available within the Australian retail market*. <https://www.dcceew.gov.au/environment/protection/waste/publications/assessment-presence-microbeads-pccc>

¹⁰⁸ NSW Environment Protection Authority 2022. *NSW Microbeads Ban*. <https://www.epa.nsw.gov.au/your-environment/waste/reducing-your-household-waste/what-are-microbeads>

7.3.2 Reduced contamination of recycling streams

Many SUPs are misplaced in recycling bins by consumers.¹⁰⁹ Where this occurs, the recycling system is said to be contaminated. This contamination can impose major costs on recycling facilities through additional requirements for sorting and damage to machinery.¹¹⁰ EPS and other fragmentable items can also contaminate organic recycling streams or home compost systems.¹¹¹

Removing SUPs from sale will reduce the amount of recycling contamination that occurs and reduce the need for sorting. This will make recycling more efficient and reduce recycling costs.

No suitable data exists on the efficiency gains associated with removing SUPs from recycling systems. As such, this benefit (although real) has not been modelled.

7.3.3 Policy and strategy alignment

Several benefits of alignment to current policy and strategy, both within the Territory and nationally, have been identified by stakeholders during the consultation process for tranche 3 items. In particular, the regulation would support alignment with the following strategies, policies and targets (see Section 2.3 for more details):

- ACT Circular Economy Strategy 2022-2025
- National Waste Policy Action Plan 2019
- National Plastics Plan 2021
- 2025 National Packaging targets
- APCO's EPS Roadmap
- BeadRecede Voluntary Industry Code

Given the relatively small market of the ACT and its reliance on national supply chains for SUPs and alternatives, economic benefits are associated with ensuring alignment to national strategies and targets.

7.4 Transboundary impacts

7.4.1 Mutual recognition principle

In Australia, the *Mutual Recognition Act 1992* and the *Trans-Tasman Mutual Recognition Act 1997* aim to remove regulatory barriers to the free flow of goods and labour between Australian states and territories. In the ACT, the *Mutual Recognition Act (ACT) 1992* and the *Trans-Tasman Mutual Recognition Act (ACT) 1997* apply as laws.

These Acts apply the 'mutual recognition principle': goods produced or imported into one Australian jurisdiction can be distributed and sold freely throughout Australia, and in, extension, to New Zealand.

The principle of these Acts is that when goods are sold across borders, they do not need to meet 'additional requirements' that the importing jurisdiction might otherwise impose under its laws. These include standards for quality or performance, inspection criteria and labelling rules.

¹⁰⁹ Department of Agriculture, Water and the Environment, 2021, *National Plastics Plan 2021*

¹¹⁰ Green Industries South Australia 2021, *Turning the Tide: The future of single-use plastic in South Australia*.

¹¹¹ Australian Packaging Covenant Organisation (APCO), 2020, *Action Plan for Problematic and Unnecessary Single-use Plastics*.

7.4.2 Impacts of the Regulation on mutual recognition

Several jurisdictions have already achieved temporary exemptions under Mutual Recognition legislation; however, no jurisdiction has achieved a permanent exemption for their SUPs ban at the time of writing this RIS. The ACT has signalled its intention to achieve this exemption with other jurisdictions, and no issues or points of contention have been raised to date.

As other Australian jurisdictions also move forward with phasing out SUP items and cross-jurisdictional cooperation continues, the ACT Government should make required amendments as needed.

As discussed in Section 4.2.3 and shown in Table 4.1, several other jurisdictions have been or looking to ban the SUPs considered in this RIS. While progress is being made in most jurisdictions on at least some of these items, jurisdictions have also developed bespoke actions on SUP items identified as problematic in their own jurisdiction. Jurisdictions continue to identify any issues or opportunities for shared action.

The phase-out of SUP in the ACT may also positively impact phase-outs in other states and territories and New Zealand. For instance, prohibiting items in the ACT that are not yet prohibited in other jurisdictions may allow other jurisdictions to learn from the challenges and opportunities in introducing bans for specific SUPs. It may also encourage the development of industries and markets for alternative products.

In addition, the phase-out of SUPs will have a positive environmental impact on some other states (most likely NSW) because of the problems concerning litter and pollution of the environment (e.g. in the waterways and river systems connecting ACT to other jurisdictions) caused by SUP are not restricted by jurisdictional boundaries. While most of the litter and waste from SUP supplied in the ACT is likely to occur within the ACT, it may also occur in surrounding areas of NSW or further afield.

Banning the sale and supply of these SUPs in the ACT will affect other Australian states and territories and New Zealand in situations where the supply of these products occurs across multiple jurisdictions. However, as noted in Section 7.1.2, the plastic manufacturing industry of the ACT occupies approximately 0.5% share of the market in Australia.¹¹² It is unlikely that any ban on the production and supply of plastic within the ACT will have a major impact on other territories.

Canberra is the main regional hub for the surrounding area in NSW. Therefore, those living in NSW and working or accessing services in the ACT will be subject to different rules in each jurisdiction, as will businesses on either side of the border. Businesses in the ACT may be impacted by being subject to different rules from competing businesses across the border. However, NSW's ban on SUPs from 2022 onwards means that a ban in the ACT is unlikely to have significant long-term implications for NSW.

In summary, the impacts on other jurisdictions from the ban in the ACT will only arise in a jurisdiction where an item that is banned in the ACT is not banned in that jurisdiction. Because most items are likely to be banned in most jurisdictions, these impacts are not expected to be large. Also, because of the small size of the ACT, if an item is banned but continues to be supplied elsewhere, this will likely only result in a small reduction in the market for these products. In the context of the overall economic impact of banning items, which will mainly affect businesses supplying relevant products in the ACT, and the positive environmental impact of the ban, the impact on other jurisdictions will likely be relatively small.

¹¹² IBISWorld 2021, *Plastic Pipe and Plastic Packaging Material Manufacturing in Australia*, April. IBISWorld 2021, *Plastic Bag and Film Manufacturing in Australia*, March.

the extent to which the proposed Regulation will impinge these rights, exemptions for medical, scientific or health requirements have been provided for. While the reform will introduce additional strict liability offences, the offences are intended to deter people from failing to comply with the Act and are considered necessary to achieve the objectives of the reform.

7.5 Human Rights Analysis

Directorates are obliged under the Human Rights Act 2004 (HR Act) to act and make decisions consistently with human rights.

This includes ensuring any amendments result in a law that is proportionate (as per s28 of the HR Act) – that is, that it limits rights in the least restrictive way possible to achieve the purpose of the legislation. This includes considering if any amendment is going to have a disproportionate impact on low-income earners or other vulnerable people, engaging the right to equality provision under s8 of the HR Act.

The Plastic Reduction Bill 2020 engaged with a number of human rights which were examined as part of the RIS prepared for the first tranche of single-use plastic reform. The associated policy development was supported by engagement with the ACT Justice and Community Safety Directorate, Human Rights and Social Policy Unit, and the ACT Human Rights Commission via the Human Rights Team and Commissioner for Discrimination, Health Services, and Disability and Community Services.

This third tranche of proposed reform seeks to expand the regulation of prohibited items under the Act. The matters considered relevant from a human rights perspective have been considered through the development of this RIS and are discussed in the following sections.

Recognition and equality before the law

The proposed reform has been identified as engaging s8 of the HR Act, which provides a right to recognition and equality before the law, specifically s8(3) which provides protection against discrimination on any grounds.

Right to life

The proposed reform has been identified as engaging s9 of the HR Act, which provides for the right to life. This right requires government to take appropriate measures to safeguard life to protect its citizens and consider their right to life when making decisions that may affect an individuals' life expectancy.

Under Part 5 of the Act, the Minister has the ability to introduce exemptions upon application or of their own initiative. The exemption can apply to a person or a plastic product. The ability for the Minister to grant exemptions ensures that people who require single-use plastic products will still have access to the products they need.

For these reasons the proposed changes are not expected to impact this right and are considered to be reasonable and proportionate.

Right to privacy

The proposed reform has been identified as engaging s12(a) of the HR Act, which provides a right to not have one's privacy interfered with, particularly regarding any potential requirement to disclose private information (e.g., medical information).

There will be no requirement under the proposed reform for individuals to demonstrate they have a medical requirement or disability to gain access to single-use plastics.

For these reasons, the proposed changes are not expected to impact this right and are considered to be reasonable and proportionate.

Right to not have reputation unlawfully attacked

The proposed reform has been identified as engaging s12(b) of the HR Act which provides a right to not have one's reputation unlawfully attacked. This right may be engaged through the ability for an Authorised person to request the personal information, including the name, birthdate and home address, of an individual if they are suspected of selling or distributing regulated single-use plastic products in the ACT.

Given the importance of being able to accurately identify individuals in order to support investigations, requiring individuals to provide this information is considered to ultimately support this right (i.e., there will be a reduced likelihood that individuals will be incorrectly identified as being subject to an investigation). In addition, the power for Authorised people to obtain information also ensures that individuals are afforded an opportunity to provide evidence that an item is not a prohibited plastic product, supported by the abrogation of privilege against self-incrimination and that a warning must be given.

Given the serious nature of the illegal sale and/or distribution of these regulated products, these provisions are considered to be reasonable and proportionate.

Right to be presumed innocent until proven guilty

Strict liability offences engage the presumption of innocence under s22(1) of the HR Act by removing the fault elements from an offence. This means an accused will be automatically presumed guilty, unless they successfully raise the defence of reasonable and honest mistake. The strict liability approach to offences and associated penalties is outlined in the Act.

The Regulation will expand the items subject to the strict liability offences under the Act which regulate the sale, supply and/or distribution of prohibited single-use products in the ACT. These provisions will affect industry, business, community organisations and individuals who sell, supply and/or distribute these regulated products in the ACT.

While the proposed reform expands the scope of the offences, the implementation of compliance and enforcement activities will continue to be subject to the existing compliance and enforcement frameworks, and will not further expand the degree to which the right is affected.

Rights in criminal proceedings

The reform has been identified as engaging s22(2)(i) of the HR Act which provides rights in criminal proceedings, particularly the right not to be compelled to testify against oneself or confess guilt. The purpose of these provisions is to assist authorised officers in their function as truth-seekers and their ability to undertake full and proper investigations.

The restriction on the right against self-incrimination is proportionate. Any self-incriminating material directly or indirectly obtained as a result of a person being compelled to provide information cannot be used as evidence against that person in later court proceedings, other than an offence in relation to the falsity or the misleading nature of the answer, document or information or an offence against the Criminal Code, Chapter 7 (Administration of justice offences).

These provisions support Authorised officers to be able to fully consider all available information when exercising their functions, while protecting the people providing the information by conferring 'use immunity'.

Use immunity is a well-established practice in relation to investigative agencies in the ACT, including the Human Rights Commission, Integrity Commission and Inspector of Correctional Services. The limitation is further circumscribed by way of the Act providing that an authorised officer must satisfy the reasonable belief test in exercising powers, and that a person must be warned that failure to comply is an offence.

The proposed reform does not expand or alter the manner in which the Act engages with rights in criminal proceedings.

Consistency with legislative scrutiny principles

The proposed regulation is consistent with the legislative scrutiny principles considered by the Standing Committee on Justice and Community Safety on the basis that the proposed regulation:

- is in general accordance with the objects of the Act;
- does not unduly trespass on rights previously established by law, including consideration of rights prescribed by the HR Act; and
- does not make rights, liberties and/or obligations unduly dependent on non-reviewable decisions.

The proposed Regulation engages with a number of human rights as discussed in the human rights analysis component of this RIS. To reduce the extent to which the proposed Regulation will impinge these rights, exemptions for medical, scientific or health requirements have been provided for. While the reform will introduce additional strict liability offences, the offences are intended to deter people from failing to comply with the Act and are considered necessary to achieve the objectives of the reform.

Summary

Human rights have been considered in developing this RIS and any limits to rights have been developed in the least restrictive way possible, while achieving the objectives of this RIS and the legislation.

When considered as a complete package, which includes the ability for the Minister to grant exemptions for people who require access to single-use plastic products, the impacts on people's rights, as a result of the reform, is considered reasonable and proportionate to the objectives of the legislation and the risks and outcomes for the community.

Recommended option 8

Two options have been considered as part of this RIS: do not introduce a regulation at this time (Option 1), and progress the Regulation (Option 2).

Individual product analysis shows that for bowls, bowl lids, plates, and EPS trays a ban has a positive net impact. In contrast, the analysis shows that for boutique and heavyweight plastic bags, plastic take-away containers, and container lids a ban has a negative net impact. The aggregate analysis shows that while the aggregate quantified costs outweigh the benefits in Option 2 (in the quantitative assessment), there is a range of other policy reasons why banning the products is justified:

- The CBA was based on assumptions developed from our research, the best available information, and ACT NoWaste’s inputs. While the CBA is based on existing data sources, over time, additional data about Territorians’ WTP for environmental benefits will become available and will likely improve the CBR of options. These elements will improve over time, allowing more of the benefits to be quantified.
- The value of unquantified benefits to the environment and society, including human health, of reducing plastic waste. In particular, the environmental benefits that other jurisdictions have been able to quantify based on avoided environmental ocean impacts of SUP.
- The effect of the bans on the cost of alternatives. The analysis does not reflect the possibility for the cost of alternatives to decrease over time due to innovation and technological developments, hence assuming the costs of alternatives to be at this point in time. If alternatives’ prices were to decrease further, the NPV would improve.
- The availability of suitable alternative products to substitute SUP products.
- Feedback from stakeholders regarding the need for bans.
- The actions taken by other Australian jurisdictions and New Zealand to reduce SUP and the low level of impact a ban in the ACT will have on other jurisdictions.

8.1 Recommended option

Considering the results of the CBA (which only partially quantifies the impacts associated with phasing-out SUP), other jurisdictions’ actions taken, stakeholder feedback, alignment with government policy on the phasing out of SUP, Option 2 is the preferred approach.

That said, the RIS has also identified concerns stakeholder has regarding the implementation of the regulation, including timeframes for introducing the ban and potential exemptions for certain sectors. The stakeholders-identified timeframes and possible exemptions are discussed in further detail in Appendix E.

Health, veterinary, and charity sectors that use some SUPs expressed concerns about the bans. Certain SUP products have no viable alternatives for these sectors (see Appendix Section E.6.2).

Safeguards need to be introduced to ensure the potential impacts to vulnerable members of the community and sectors are well considered and managed.

In addition, the RIS has identified that plastic microbeads have been mostly phased-out by industry; however, to eliminate the remaining microbeads in the market and the 'free-rider' problem, it is recommended that a regulatory approach (Option 2) should be undertaken.

Implementation and evaluation

9

ACIL Allen has developed a detailed business case to implement the reform efficiently and effectively. The implementation and evaluation activities are outlined in further detail below.

9.1 Implementation

A range of implementation actions or considerations is needed to support the regulations' implementation. Most mirror the considerations outlined in the tranche 2 RIS, given the similarities of the regulations that are proposed for the tranche 3 phase-out. These are discussed below.

9.1.1 Timeframes for implementation

The proposed reform is an extended application of the existing Act through the establishment of a regulation to regulate additional SUP products. The proposed option is not retrospective.

However, given the timing of this RIS and its proximity to a 1 July 2023 implementation of the regulation (Option 2), it will be important to provide industry, the wholesale and retail sectors, consumers and other SUP stakeholders time to prepare.

It is widely acknowledged in the written submissions that the introduction of the regulations should provide stakeholders with approximately 6-18 months to prepare. This delay will provide time for stakeholders to support the regulations once approved. This delay will not significantly change the costs or benefit profile of Option 2; it merely provides additional time for stakeholders to adjust to the new regulations. A summary of the timeframes suggested by stakeholders is provided in Table 9.1 below.

Table 9.1 Summary of stakeholders' suggested timeframes for regulation

Stakeholder group	Timeframe for regulation
Plastic microbeads	
Government	July 2023
Community	July 2023
Retailers	September 2023
Industry associations	September 2023
EPS loose-fill packaging and trays	
Government	July 2023
Community	July 2023
Retail and services industry	January – July 2025
Manufacturers, suppliers and distributors	January – July 2025
Industry associations	January – July 2025

Stakeholder group	Timeframe for regulation
Waste management	January – July 2025
Animal health products sector	January – July 2025
SUP take-away containers	
Government	July 2023
Community	July 2023
Retail and services industry	No sooner than September 2024
Manufacturers, suppliers and distributors	No sooner than September 2024
Not-for-profits sector	No sooner than September 2024
Waste management	No sooner than September 2024
SUP plates and bowls	
Government	July 2023
Community	July 2023
Retail and services industry	September 2023 – November 2024
Manufacturers, suppliers and distributors	September 2023 – November 2024
Industry associations	September 2023 – November 2024
Waste management	September 2023 – November 2024
Health sector	September 2023 – November 2024
Heavyweight and boutique plastic bags	
Government	July 2023
Community	July 2023
Retail and services industry	July 2024 – July 2025
Manufacturers, suppliers and distributors	July 2024 – July 2025
Industry associations	July 2024 – July 2025
Waste management	July 2024 – July 2025

Source: ACIL Allen based on a review of submissions

9.1.2 Potential exemption

Certain sectors might be disproportionately impacted by the regulation as there is no viable alternatives for certain special items. Stakeholders have identified these sectors and items, shown in Table 9.2 below. The implementation of the regulation should consider the implied impacts on these sectors.

Table 9.2 Summary of stakeholders’ suggested exemptions

Sector	Item	Reason
Health	Plastic kidney bowl Plastic pill cup	There are currently no suitable alternatives for these items
Veterinary	EPS packaging for animal health products	There are currently no suitable alternatives for these items
Charity and not-for-profit	SUP take-away containers SUP plates and bowls	The increased labour and time costs associated with switching to reusable alternatives

Source: ACIL Allen based on a review of submissions

9.1.3 Facilitate national legislation amendments for mutual recognition

To support the introduction of the Regulation the ACT Government will need to continue to work closely with other Australian jurisdictions to progress a permanent exemption to national legislation for mutual recognition.

This process was successfully completed for the ACT Container Deposit Scheme and plastic bag ban in earlier tranches of the phase-out. Initial consultations with other Australian jurisdictions considering similar legislative approaches to reduce plastic consumption have been positive. The ACT Government has expressed confidence in its ability to work through the process for the required amendments.

9.1.4 Plastic free events

The ACT Government has declared several events plastic-free. Through the delivery of plastic-free events, the ACT Government can inspire and empower local businesses to become early adopters of SUP alternatives and actions that support broader policy goals for recycling and waste reduction.

9.1.5 Education campaigns

The regulation should be supported by a comprehensive public campaign to educate consumers and local businesses about the reform. Education campaigns should be implemented ahead of the regulation taking effect. This will ensure affected stakeholders, including affected businesses, can make informed decisions and implement required changes. Given the importance of consumption avoidance, education campaigns will target changes in consumer behaviour.

9.1.6 Baseline data and monitoring

Data on the consumption and littering of the targeted SUP products is limited. This is not unique to the ACT because these streams are a relatively small fraction of overall waste generation and have typically been disposed of in public place bins, commercial premises or as litter in the environment. In each case, there is limited available data on composition and volume which was clearly identified by the social CBA undertaken for the Plastics Reduction Bill 2020.

The ACT Government should continue to explore opportunities to improve understanding of the impact of these products as litter and in the waste and recycling streams to support the evaluation and monitoring of the tranche 3 regulations and other SUP phase-outs.

9.1.7 Compliance and enforcement

Compliance and enforcement will be undertaken in line with the provisions of the *Plastic Reduction Act 2021*. An infringement notice framework has been established by the Magistrates Court (Plastic Reduction Infringement Notices) Regulation 2021.

9.2 Evaluation

Good regulatory practice (as recommended by ACT Treasury and the OIA) requires ongoing monitoring and review of regulation after a sensible period to ensure it remains relevant and fit-for-purpose. It is recommended that ACT NoWaste develop an evaluation framework that will assist with this purpose.

9.2.1 Evaluation framework

The regulation should have an appropriate evaluation framework to ensure its objectives are met efficiently and effectively and community expectations are maintained. Under good practice, the framework should have 2 elements:

- Performance evaluation: to assess the efficiency of the delivery of the Regulation.
- Outcomes assurance: to assess the effectiveness of the Regulation (i.e., its success in lowering the use of SUPs that are harmful or unnecessary).

Performance evaluation

Performance evaluation focuses on the efficient delivery of the Regulation. There are several approaches to measure procedural assurance, including:

- periodic evaluation of processes and systems
- provision of transitional and five-yearly reviews,
- reporting mechanisms to provide confidence and transparency to the community, and
- ongoing monitoring and continuous improvement mechanisms.

Outcomes evaluation

Outcomes evaluation will focus on the effectiveness of the regulation. Outcomes assurance may consider whether the objectives of the regulation are being achieved and whether the anticipated environmental, social and economic outcomes of the Regulation, including changes to consumer behaviour and a reduction in plastic pollution and litter, are being achieved.

Outcomes assurance will be informed by best practice standards and underpinned by clear and measurable targets. Achieving this will require the ACT to maintain access to good data and information.