Department of Environment, Land, Water and Planning

Regulatory impact statement - Container deposit scheme

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Executive Summary

Context

Victoria's circular economy plan, *Recycling Victoria: a new economy,* is driving fundamental changes in Victoria's waste and recycling industry to avoid and reduce waste, make better use of our resources and establish a recycling system Victorians can rely on, including the establishment of a container deposit scheme (CDS). A CDS provides consumers with a financial incentive to encourage them to return used beverage containers for recycling

Problem analysis

Litter causes significant harm to the environment and people of Victoria. Beverage containers contribute significantly to Victoria's litter stream, comprising about half of the volume of litter found in Victoria.

Most beverages come in glass, plastic, aluminium and carboard packaging that can be recycled and remanufactured into new products. However, when beverage containers are placed in commingled recycling bins, disposed to landfill or littered, their potential recyclable value is reduced or lost.

Objectives

The overarching objectives considered in this regulatory impact statement (RIS) are:

- to promote Victoria's transition to a circular economy
- to create the conditions for a better functioning and more reliable waste and recycling market by increasing transparency and accountability
- to minimise the cost to households, businesses and government of the intervention chosen to achieve the above objectives.

Options

Five options have been analysed in the RIS:

1. **Option 1 – Consistency of Victorian CDS with other Australian jurisdictions:** This option will involve national consistency on key scheme elements such as a 10-cent refund amount and containers eligible for refund. It also includes a community access standard of an average of one refund collection point per 11,604 people.
2. **Option 2 – Extended scope of eligible containers:** This option is the same as Option 1 except that the scope of eligible containers is extended to include glass wine and spirit bottles.
3. **Option 3 – 20-cent refund:** This option is the same as Option 1 except that a 20-cent refund is provided for eligible containers.
4. **Option 4 – Lower community access standards**: This option is the same as Option 1 except that there is a lower community access standard of an average of one refund collection point per 16,098 people.
5. **Option 5 – Maximum regulations**: This option combines the extended scope of eligible containers and the 20-cent refund amount with a higher community access standard of an average of one refund collection point per 9,932 people.

Analysis

A cost-benefit analysis (CBA) was used to assess the cost and benefit impacts of each option. Using a 7% discount rate and 20-year analysis period, it was found that all options are likely to deliver a net community benefit. The net present values (NPV) of the options are shown in Table 1.

	Option 1	Option 2	Option 3	Option 4	Option 5
Net Present Value (NPV - $ million)	**269.3**	**282.8**	**341.9**	**232.4**	**384.5**

Table 1: Net present value (2021/22 $millions – 20-year analysis period)

Key drivers of the results from the CBA were:

- **Avoided litter benefits:** All options are expected to reduce the quantity of littered beverage containers, with Option 5 expected to have the greatest potential reduction in beverage container litter volumes.
- **Increased value of recycled materials**: All options will increase the quantity and value of recycled materials. Option 5 has the greater recovery of materials, with Option 4 having lower redemption rates.
- **Refund collection point costs**: The most significant costs are those associated with processing eligible containers at refund collection points. These costs include variables such as the refund collection point type, how they operate and the location and number of refund collection points. Option 5 has the highest refund collection point costs, with Option 4 having the lowest.
- **Transport, aggregation and disposal costs, and avoided costs:** The CDS will introduce baling and transport costs due to the shifting of recovered material from collection points to aggregation sites in preparation for the sale of materials.
- **Household and business participation costs:** All options will incur costs to households and businesses to participate in the scheme, such as the time spent travelling to a refund collection point.
- **Scheme administration costs:** There will be costs for setting up the scheme and other systems and operational costs. Options 2 and 5 are likely to have slightly higher administration costs due to the inclusion of wine and spirit bottles.

The economic model of the CBA was integrated with a material flows analysis (MFA) to take into consideration the costs, benefits, and distributional impacts of the physical flow of beverage containers post consumption, including their disposal. A sensitivity analysis was undertaken to test the sensitivity of results to changes in key assumptions, such as an alternative analysis period, changes to the willingness to pay for litter reduction and alternative collection point costs. It was found that the options are not sensitive to any of the changes in assumptions.

Given the importance of litter values in the CBA analysis, a litter reduction-break even analysis was undertaken. Results from this analysis suggested that any of the five options will reduce beverage container litter sufficiently to achieve a net benefit to the community.

Distributional analysis was undertaken to assess the impact of each of the options on key industry and societal groups by allocating costs and benefits from the CBA across the groups with transfers between these groups. Under each option, each group will either enjoy net benefits or incur net losses.

Competition and small business impacts of each option were considered. The CDS regulations are not expected to significantly impact competition or greatly restrict a beverage supplier's ability to market or price their products. Options 2 and 5 were expected to have the most significant costs on small businesses due to the inclusion of spirit and wine bottles, since there are many small suppliers of spirits and wine.

Preferred option

A preferred option was determined by three criteria:

1. a benefit cost ratio significantly greater than one, which will provide a high benefit per unit of cost
2. national consistency, which will reduce scheme compliance and operating costs for industry, and reduce confusion for industry and consumers
3. high community access standards, which will drive high redemption rates, and provide equity, so that all Victorians are able to participate in the scheme.

All options will more likely than not deliver a net benefit to the community.

While Options 3 and 5 could have higher redemption rates, due to the 20-cent refund amount, the lack of consistency with all other Australian jurisdictions could cause confusion for retailers and consumers as well as introduce an additional flow of containers from other jurisdiction into Victoria which would increase scheme costs for Victorian beverage suppliers. These concerns are also relevant to Option 2 and 5, which has an expanded scope of eligible containers.

Options 2, 3 or 5 provide similar benefit cost ratios, which indicates that they are similarly efficient. However, the practical implications of the options may decrease the actual benefits relative to the modelled benefits and could undermine support for the scheme.

Option 4 will have a lower net community benefit than all other options. Although it will lower scheme costs, it will likely have lower redemption rates, beverage container recycling and increased litter.

Option 1 is the preferred option because it meets all the criteria.

Implementation and evaluation

The *Circular Economy (Waste Reduction and Recycling) Act 2021* (the Act) establishes the legal framework for the CDS, including the roles of the scheme coordinator and network operator(s).

The Victorian Government is conducting a competitive two-stage tender process to appoint the scheme coordinator and network operator roles. This involves an open Expression of Interest (EOI), followed by a closed Request for Tender (RFT). The appointment is expected to be finalised in September 2022.

Upon appointment, network operator(s) are expected to meet the mobilisation requirements of the phased rollout of operational refund collection points to ensure the scheme commences with an accessible network for all Victorians.

The scheme regulator, Recycling Victoria, will have oversight of the CDS to ensure integrity and the achievement of policy objectives. This will be achieved by monitoring the scheme and managing the performance of the scheme coordinator and network operator(s).

An evaluation framework with performance measures will determine the performance and effectiveness of the scheme. Additional measures, performance targets and evaluation mechanisms will be outlined in contracts of scheme participants.

Feedback on RIS and draft regulations

Public comment and submissions are invited on this RIS and the draft regulations. Opportunities for participation include:

- completing the online survey on the Engage Victoria page https://engage.vic.gov.au/container-deposit-scheme
- sending a written submission to container.deposit@delwp.vic.gov.au
- attending an online information session.

All comments and submissions will be treated as public documents unless the comment or submission clearly indicates that the comment or submission is confidential.

Feedback must be received no later than 11:59pm Sunday 26 June 2022. Your feedback will inform the final regulations, and help Victoria prepare for the implementation of the CDS.

Glossary

Abbreviation	Definition
ACT	Australian Capital Territory
BCR	Benefit cost ratio
CBA	Cost benefit analysis
CDS	Container deposit scheme
CIE	Centre for International Economics
CP	Collection point
DELWP	Department of Environment, Land, Water and Planning
FTE	Full time equivalent
GST	Goods and services tax
HDPE	High-density polyethylene
LPB	Liquid paperboard
MFA	Material flows analysis
MRF	Material recovery facility
NLI	National Litter Index
NPV	Net present value
NSW	New South Wales
NT	Northern Territory
OTC	Over the counter
PET	Polyethylene terephthalate
PV	Present value
QLD	Queensland
RIS	Regulatory impact statement
RVM	Reverse vending machine
SA	South Australia
WA	Western Australia
WTP	Willingness-to-pay

1. Introduction

1.1 Background to the container deposit scheme

In February 2020, the Victorian Government committed to implementing a Victorian container deposit scheme (CDS) by 2023. This is a key commitment under the Victorian Government's 10-year circular economy policy and plan, *Recycling Victoria: A new economy,* designed to transform Victoria's recycling system.

A CDS is a form of product stewardship used across Australia and around the world. It places the costs of recovering and recycling beverage containers on the producers and purchasers. Like all Australian CDSs, beverage first suppliers will fund Victoria's scheme, and consumers will receive a financial incentive to encourage them to return used beverage containers for recycling.

There was overwhelming public support for Victoria's CDS during the public consultation which took place in November 2020, with 93% of survey respondents supporting the objectives proposed to underpin Victoria's scheme design (circularity of beverage containers, enabling a product stewardship approach model that fosters shared responsibility and delivering a best practice scheme for Victoria). Eighty-five per cent of survey respondents supported the split responsibilities governance model as the right one for Victoria.

A CDS will result in fewer beverage containers littered or sent to landfill. A CDS ensures lower levels of contamination compared to kerbside recycling and materials collected can be easily sorted. Maximising the quantity of clean, sorted material increases the value extracted from these materials and supports their remanufacture into new items. A CDS is an effective initiative to help reform Victoria's recycling system and work towards a circular economy.

1.2 Overview of the regulations

The draft *Circular Economy (Waste Reduction and Recycling) (Container Deposit Scheme) Regulations 2022* (draft regulations) have been developed to support Part 6 of the *Circular Economy (Waste Reduction and Recycling) Act 2021*. The draft regulations outline the detailed administrative and operational aspects of the CDS. Broadly, the draft regulations cover the following issues:

Issue	Approach in the draft regulations
Eligible and exempt beverage containers	This specifies the types of beverage containers included in the CDS, and able to be returned for a refund. These beverage containers are broadly consistent with other Australian schemes.
Refund amount	10 cents refund will be paid per container returned through the scheme.
Conditions of appointment for scheme coordinator	Conditions of appointment for the scheme coordinator, include that: • the scheme coordinator must as soon as reasonably practicable, notify of an adverse matter. • an 'adverse matter' is a matter related to the scheme coordinator's ability to enter into and enforce contracts, its ability to meet performance targets, pay and receive amounts under a scheme coordinator agreement, and notifications regarding public confidence in the Victorian CDS.
Condition of appointment of network operator(s)	Conditions of appointment of network operator(s) include that: • only one network operator is assigned to each network operation zone that the network operator appointed to that network operation zone must meet its performance requirements (described below) within the network operation zone it is appointed to.

Payment of refund amount	Refunds can be paid via: • cash • an electronic funds transfer; or • a voucher redeemable for cash, goods or services.
Labelling and barcode requirements	All eligible containers must display the following text—'*10c refund at collection depots/points in participating State/Territory of purchase',* and must be marked with the required barcode.
Content of annual assessment report	The scheme coordinator will be required to report annually on the outcomes of the scheme, including: • scheme revenue • scheme expenses • amount of network fees and refund amounts paid to network operator(s) • amount paid to material recovery facilities (MRFs) • amount received from beverage first suppliers • number and weight of eligible containers collected • number of refund collection points • amount of refunds paid to charities and community groups.
Prescribed operation and performance requirements	Network operator(s) must adhere to minimum performance standards for the number, location and opening hours of refund collection points.
Network operator data and reporting requirements	Network operator(s) must collect, retain and disclose prescribed information to the Minister, including information from contracted collection point operators.
Methodology for determining beverage supplier payments	The methodology outlines how payments into the scheme by beverage first suppliers are to be calculated.
Prescribed fee for approval of eligible containers	Beverage first suppliers must pay a set fee to the Victorian Government for approval of every eligible container for inclusion in the CDS.
Application for landfill disposal exemption	This requires an application to be made before any containers received in the CDS can be disposed to landfill.
Circumstances for refusal of refund for a container	There are limited circumstances when a container can be refused at a refund collection point. It is unlikely that refusal will occur often, however this allows for protections at the refund collection point level.
Identification requirements for bulk deposits	Provides that certain information must be provided when a consumer redeems more than 1,500 containers in 24 hours (a 'bulk' amount).

Table 1.1 Overview of draft regulations

1.3 Victoria's circular economy policy

Recycling Victoria: A new economy is Victoria's circular economy policy and plan for a cleaner, greener Victoria with less waste and pollution, more jobs and a sustainable and thriving circular economy. The Victorian Government has invested $380 million to deliver the circular economy policy to:

- increase the quality and volume of recycling and reuse of our precious resources
- reduce waste, landfill and litter
- reduce emissions and contribute to Victoria's net-zero emissions by 2050
- create new jobs
- build a sustainable and thriving circular economy for a cleaner, greener Victoria.

The CDS is a key part of the Victorian Government's circular economy policy and will play a critical role in reaching the goals set out in the policy.

1.4 Legislative context

The *Circular Economy (Waste Reduction and Recycling) Act 2021* (the Act) was enacted on 14 December 2021. Part 6 of the Act sets out the legislative framework for the CDS, including a split responsibilities governance model that will see a single scheme coordinator manage the administrative and financial elements of the scheme, and a separate network operator function, involving one or more network operators, that will be responsible for establishing and maintaining a convenient, accessible network of refund collection points across Victoria

The Act establishes a new statutory person employed under Part 3 of the *Public Administration Act 2004* called the Head, Recycling Victoria, who will oversee and regulate Victoria's waste, recycling and resource recovery services. Recycling Victoria will be part of the Department of Environment, Land, Water and Planning (DELWP) and will be responsible for the regulation and the administration of the CDS including contract management.

The Act also determines:

- that beverage first suppliers (beverage suppliers that *first supply* an eligible beverage container into Victoria for the purpose of sale) are liable to pay financial contributions to cover the costs of the scheme
- the process for the approval of eligible containers into the scheme
- the circumstances that allow for redeemed eligible containers to be disposed to landfill
- the requirements of the MRF Protocol, which requires the scheme coordinator to pay a MRF operator for eligible containers, which they process
- the requirements of the local government refund sharing protocol, which will determine how councils and MRFs share the refund amount set out in the MRF Protocol
- that refund markings must be included on eligible containers
- some of the enforceable offences once the CDS begins.

The objective of the Act is to promote Victoria's transition to a circular economy, which reduces waste, supports recycling and promotes circularity in the use and reuse of products for as long as possible, supporting the transition to a net-zero and resilient Victoria.

1.5 Victoria's container deposit scheme governance framework

The Victorian scheme will have a split responsibilities governance model, as outlined in the Act. Under this model, the responsibilities for managing Victoria's CDS are split between a scheme coordinator and up to six network operators.

Scheme regulator (Recycling Victoria)

- provide regulatory oversight and ongoing evaluation of the scheme
- contract the scheme coordinator and network operator(s), through a competitive tender process
- determine the outcome of applications from beverage first suppliers for containers to be included in the CDS
- determine the refund sharing arrangements between MRFs and local governments
- use authorised officers to ensure beverage suppliers register eligible containers, and retailers only sell eligible containers.

A scheme coordinator

- appointed by the Victorian Government to operate the scheme efficiently
- manage the scheme's finances, including allocating scheme costs to beverage first suppliers
- pay refund amounts and handling costs for returned eligible container to the network operator(s) and MRFs
- monitor and report against the scheme requirements and performance targets set in regulations
- ensure that beverage first suppliers register eligible containers, and that retailers only sell registered eligible containers.

One or more network operators

- appointed by the Victorian Government to manage a network of refund collection points
- establish and maintain a network of refund collection points, including by entering arrangements with collection point operators
- meet government performance requirements to enable high participation and redemption rates
- pay refund amounts and handling costs for returned containers to collection point operators.

Figure 1.1 Victorian CDS governance arrangements

It is the role of the scheme coordinator to minimise overall scheme costs and create efficiencies. The network operator(s) are driven to collect as many containers as possible because it is their revenue source. Separating the network operator(s) from the scheme coordinator creates a direct incentive to collect the highest number of containers while minimising scheme costs, and therefore will promote convenience and accessibility in the network of refund collection points. The split responsibilities model also increases system transparency, as the scheme coordinator is driven to validate and audit the network operators' collection claims.

To ensure reasonable access to the scheme for all Victorians—including those in regional or remote parts of Victoria—network operators will be required to adhere to community access standards for the state-wide network of refund collection points.

The Victorian CDS will provide opportunities for a range of organisations to manage refund collection points as subcontractors to the network operator(s), including community organisations, charities, sporting groups and small to medium enterprises. This will create positive social outcomes by encouraging new local jobs throughout Victoria and enabling community-based organisations and small businesses to share the financial benefits of the scheme.

1.6 Victoria's container deposit scheme contractual framework

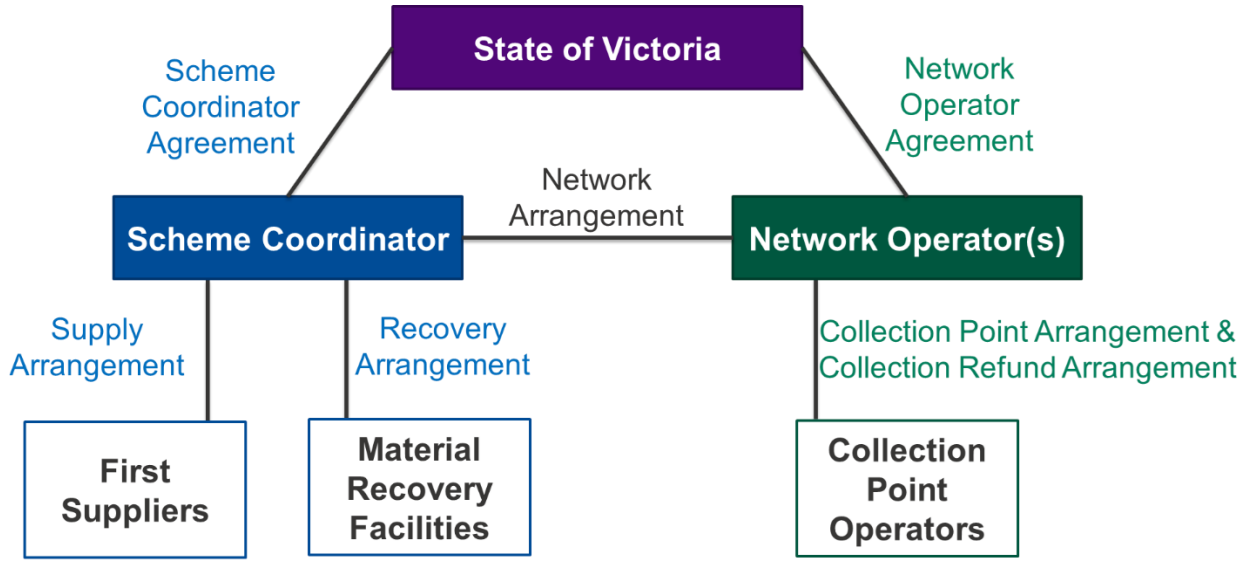


Figure 1.2 CDS contractual framework

The Victorian Government will have a direct contract with the scheme coordinator and network operator(s). The contracts outline detailed requirements that the scheme coordinator and network operator(s) will need to adhere to, including requirements for:

- payment flows through the scheme
- branding, communication and community education
- ownership and sales of materials collected through the scheme
- scheme coordinator board composition
- the phased rollout of Victoria's network.

The scheme coordinator and each network operator will enter into a network arrangement, which will require the scheme coordinator to pay the network operator(s) refund amounts and associated administration and handling costs for containers that are collected at refund collection points.

The scheme coordinator must also enter into:

- supply arrangements with beverage first suppliers, which require beverage first suppliers to pay the scheme coordinator contributions towards the cost of management, administration and operation of the CDS
- recovery arrangements with MRFs, which require the scheme coordinator to pay a refund amount to the MRF for the recycling and resource recovery of eligible containers.

Beverage first suppliers will fund the CDS. The scheme coordinator will calculate the per-container pricing of the beverage first suppliers' contributions to fund the scheme. The scheme coordinator will publish the prices on a website, which is accessible to all beverage first suppliers. Beverage first suppliers are to be notified of prices in advance of scheme commencement.

The MRF Protocol (issued by Recycling Victoria) will outline the methodology for the scheme coordinator to determine the amounts payable to a MRF, and the process for MRFs to claim and receive these refunds.

The Local Government Refund Sharing Protocol (issued by Recycling Victoria) will outline the minimum share of any refund amount between a local government and a MRF, as determined by the MRF Protocol. This includes the method for determining the minimum share.

The network operator(s) must also enter:

- collection point arrangements with collection point operators for the establishment and operation of refund collection points
- collection refund arrangements with collection point operators to pay refund amounts and associated handling costs for containers collected at those collection points.

1.7 Other Australian container deposit schemes

All jurisdictions in Australia except Victoria and Tasmania have operational schemes. Both states have announced scheme commencement in 2023. South Australia (SA) was the first jurisdiction to implement a CDS in 1977, followed by the Northern Territory (NT) in 2012. Since then, New South Wales (NSW), the Australian Capital Territory (ACT), Queensland (QLD) and Western Australia (WA) have also implemented schemes.

The QLD and WA schemes have a single coordinator governance model, where a single coordinator runs the scheme administration and finance, and the network of refund collection points.

The NSW and ACT schemes have a split responsibilities governance model. Victoria and Tasmania have both committed to a similar model.

Certain scheme elements are harmonised across all existing schemes, such as the refund amount and labelling requirements, as well as broadly similar eligible containers. There is ongoing work across jurisdictions to further harmonise elements of all Australian schemes, such as container eligibility and a common portal for container approvals.

1.8 About the regulatory impact statement

The draft regulations have been developed to support Part 6 of the Act and outline the detailed administrative and operational aspects of the CDS.

The objectives of the draft regulations are to prescribe matters and impose conditions on participants of the Victorian CDS, including:

- imposing conditions on the appointment of a scheme coordinator and one or more network operator(s)
- outlining the types of beverage containers are eligible and ineligible for inclusion in the Victorian CDS, and labelling requirements for those containers
- prescribing fees for beverage first suppliers to apply for their containers to be approved
- determining the operation and performance requirements for network operator(s).

A regulatory impact statement (RIS) presents analysis based on evidence that enables the government to consider all relevant information before making a policy or regulatory change. This RIS has been prepared in accordance with the *Victorian Guide to Regulation,*[1] which provides a best practice approach to analysing any proposed regulatory intervention.

This RIS outlines the range of regulatory options considered and assesses the impacts of each. Analysis is provided in quantitative terms where practicable, to ensure the costs of each option are not disproportionate to

[1] Commissioner for Better Regulation (2016). *Victorian Guide to Regulation: A handbook for policy-makers in Victoria*, Accessed at: http://www.betterregulation.vic.gov.au/Guidance-and-Resources

the benefits. The quantitative analysis and broader context are used to describe why the Victorian Government's proposed regulations for the CDS are the preferred option.

This RIS will determine a preferred option by assessing the options considered against three criteria:

1. a benefit cost ratio significantly greater than one, which will provide a high benefit per unit of cost
2. national consistency, which will reduce scheme compliance and operating costs for industry, and reduce confusion for industry and consumers
3. high community access standards, which will drive high redemption rates, and provide equity, so that all Victorians are able to participate in the scheme.

The RIS supports effective consultation by enabling stakeholders to comment on the detailed analysis, evidence and judgements being considered by the Victorian Government. There has been consultation with key industry, community and local government stakeholders to inform the RIS. A detailed description of the stakeholder consultation process is provided in Chapter 9.

This RIS will be released for a 4-week period to provide industry, community and local government stakeholders and the public the opportunity to provide feedback. Public consultation will close at 11.59pm, Sunday 26 June 2022.

The RIS will be made available on Engage Victoria, the Victorian Government's online consultation platform. Opportunities for participation include:

- completing the online survey on Engage Victoria
- sending a written submission to container.deposit@delwp.vic.gov.au
- attending an online information session.

DELWP will consider all submissions received during the period of public review and will prepare a formal Response to Public Comment summarising the submissions received during the consultation. The Response to Public Comment document will be made available on Engage Victoria.

2. Problem analysis

2.1 Litter

Litter causes significant harm to the environment and people of Victoria. Beverage containers contribute significantly to Victoria's litter stream, comprising about half of the volume of litter found in Victoria.[2]

2.1.1 Environmental harm

Litter is a significant contributor to environmental degradation. Although all types of litter can impact the environment, plastic is one of the most littered material types and is particularly detrimental to the environment.

Globally, 8 to 12.7 million tonnes of plastic are estimated to enter oceans each year – the equivalent of dumping a garbage truck of plastic into the ocean every minute.[3] Without action, the quantity of plastic litter entering aquatic ecosystems is projected to double by 2030, and triple by 2040.[4]

Australians consume 3.5 million tonnes of plastic annually, of which 130,000 tonnes leaks into the marine environment as litter.[5] This represents five kilograms of plastic entering our oceans per person each year – more than three times the global average.[6]

In Victoria, litter is becoming increasingly prevalent in many significant waterways including both the Yarra and Maribyrnong rivers, as well as the popular tourist destination of Port Phillip Bay. Litter in the Yarra River more than doubled in 2019 compared to 2018 levels[7]. Between June 2018 and February 2020, over 30 tonnes of litter were collected from the Yarra River.[8]

Given the quantum of plastic litter entering our waterways, and the lengthy lifespan of plastic products,[9] litter poses a clear risk to the environment and wildlife.

Over time, plastic litter breaks down into smaller pieces known as microplastics. These tiny plastic fragments persist in the environment and are considered to be one of the most serious problems affecting the marine environment.[10] Marine animals including turtles, seabirds and dolphins can mistake plastic debris for food,[11] leading to intestinal blockages, starvation and death.[12] Plastic litter is a key threat to the Burrunan dolphin, a critically endangered species which has just two known populations in Victoria – totalling around 183 individuals.[13] Plastic debris is also becoming a vector for the spread of invasive species and pathogens which can pose a major threat to biodiversity and ecosystem services.[14] Across Australia and the Pacific, plastic

2 Keep Australia Beautiful National Litter Index report, 2018-19

3 Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A., & Law, K. L. (2015). Plastic waste inputs from land into the ocean. Science, 347(6223), 768-771.

4 United Nations Environment Programme (2021). From Pollution to Solution: A global assessment of marine litter and plastic pollution. Nairobi.

5 O'Farrell, K., (2020). 2018–19 Australian Plastics Recycling Survey National report. Envisage Works, Melbourne: Australian Government Department of Agriculture, Water and the Environment.

6 Charko, F., Blake, N., Seymore A., Johnstone C., Barnett E., Kowalczyk N & Pattison M. (October 2020). Clean Bay Blueprint – Microplastics in Melbourne. Port Phillip EcoCentre

7 Charko, F., Blake, N., Seymore A., Johnstone C., Barnett E., Kowalczyk N & Pattison M. (October 2020). Clean Bay Blueprint – Microplastics in Melbourne. Port Phillip EcoCentre.

8 Kowalcyk, N. & Kelly A. (2021). Litter and Flows - Connecting the Yarra and the Bay. The Yarra Riverkeeper Association.

9 Chen, Y., Awasthi, A. K., Wei, F., Tan, Q., & Li, J. (2021). Single-use plastics: Production, usage, disposal, and adverse impacts. Science of the total environment, 752, 141772.

10 Masó, M., Garcés, E., Pagès, F., & Camp, J. (2003). Drifting plastic debris as a potential vector for dispersing Harmful Algal Bloom (HAB) species. Scientia Marina, 67(1), 107-111.

11 Poli, C., Mesquita, D. O., Saska, C., & Mascarenhas, R. (2015). Plastic ingestion by sea turtles in Paraíba State, Northeast Brazil. Iheringia. Série Zoologia, 105, 265-270.

12 Roman, L., Schuyler, Q., Wilcox, C., & Hardesty, B. D. (2021). Plastic pollution is killing marine megafauna, but how do we prioritize policies to reduce mortality?. Conservation Letters, 14(2), e12781.

13 Victorian Government. (2021). Conserving threatened species – Burrunan dolphin. Available at: https://www.environment.vic.gov.au/conserving-threatened-species/threatened-species/burrunan-dolphin.

14 Audrézet, F., Zaiko, A., Lear, G., Wood, S. A., Tremblay, L. A., & Pochon, X. (2021). Biosecurity implications of drifting marine plastic debris: current knowledge and future research. Marine Pollution Bulletin, 162, 111835.

pollution is contributing to significant declines in albatross and petrel populations.[15] Ninety nine per cent of all seabird species are predicted to ingest marine debris by 2050.[16]

2.1.2 Human health

Litter can impact on human health. Littered items with sharp edges, such as broken glass or metal fragments, can cause physical injury.

Several studies have also shown that humans are ingesting plastics via the food that we eat, the water we drink and even the air we breathe. Current research suggests that humans are ingesting several milligrams of plastics daily. These plastic particles, and the chemicals that they consist of, can pose significant risks to human health including cytotoxicity, acute reactions and immune responses.[17] The long-term health impacts that ingested plastics are having on human populations are currently being investigated,[18] however it may take some time to fully understand these impacts. Since there is some evidence of toxicity (long-term toxicity may not become evident for some time), taking a precautionary approach now, and addressing plastics pollution, will reduce any potential negative impacts on human health.

2.1.3 Economic cost

There are significant economic consequences of litter. Clean-up activities can be expensive and resource intensive, and sometimes rely on volunteers. The presence of litter in popular locations impacts amenity and tourism economies.

It is costly to remove litter from parks, waterways and oceans.[19] In 2019-20, Victoria's local governments spent more than $100 million on litter clean up services and street sweeping.[20] Clean Up Australia Day costs the Australian economy $35 million annually – including volunteer time, management and administration. In many cases, particularly in marine environments, litter clean-up is not practically achievable. Evidence suggests that cleaning up litter in marine environments could be up to 60 times the cost of cleaning up land-based litter.[21]

2.1.4 Public amenity

Litter creates visual pollution and damages the aesthetics of a place. This can impact the enjoyment of open and public spaces, and make our communities appear uncared for and unpleasant to be in. Areas with high levels of litter have been shown to attract further litter and other anti-social behaviours such as vandalism and theft.[22]

2.2 Resource recovery

When beverage containers become litter or landfill, the value of the materials are lost and are unlikely to be recycled or reused.

Kerbside recycling and a CDS allow products to be recycled into new products. While kerbside recycling is currently an efficient system for the collection of some recyclables, such as metals, other material types can be contaminated due to commingling and mixing of different materials. For example, glass can break during the collection process and when collected with other materials, broken glass can contaminate otherwise recyclable paper and cardboard or recyclable plastics. Food scraps and items that aren't recyclable can also contaminate kerbside recycling and lead to lower quality material.

15 Gilmour, M., Lavers, J. (2021). Latex balloons do not degrade uniformly in freshwater, marine and composting environments. Journal of Hazardous Materials, 403. Balloon report – UTAS.

16 Wilcox, C., Van Sebille, E., & Hardesty, B. D. (2015). Threat of plastic pollution to seabirds is global, pervasive, and increasing. Proceedings of the national academy of sciences, 112(38), 11899-11904.

17 Kannan, K. & Vimalkumar, K. (2021) Microplastics and insights into microplastics as obesogens. Frontiers in Endocrinology.

18 Charko, F., Blake, N., Seymore A., Johnstone C., Barnett E., Kowalczyk N & Pattison M. (October 2020). Clean Bay Blueprint – Microplastics in Melbourne. Port Phillip EcoCentre.

19 CSIRO, Circular economy roadmap for plastics, glass, paper and tyres.

20 Sustainability Victoria (2021). Waste and recycling in Victoria - Local government waste services report 2019-20. Available at: https://assets.sustainability.vic.gov.au/susvic/Report-Waste-Local-Government-Waste-Services-Report-2019-20.pdf.

21 Marsden Jacob Associates (2016). Plastic Bags Ban Options – Cost Benefit Analysis. Report prepared for the Victorian Department of Environment, Land, Water and Planning, (p. 12).

22 James Q. Wilson and George L. Kelling, 1982, Broken Windows.

A CDS separates glass, plastics and other materials into streams that are significantly cleaner and more valuable than recyclables obtained through kerbside recycling. The cleaner, higher value streams of recyclable materials created by a CDS will attract new investment and offer opportunities to create new, high-value recycled products in Victoria. Increasing the recovery of materials will decrease the amount of waste sent to landfill and help to reduce the need for new or expanded landfills in Victoria.

There are clear, net environmental benefits to recycling beverage containers via a CDS. Avoiding the use of virgin aluminium, PET and glass to make beverage containers will help reduce greenhouse gas emissions associated with climate change, reduce water volume use, save energy and reduce reliance on landfills. It is estimated that every 1,000 containers recycled through a CDS will prevent the release of 121 kilograms of carbon dioxide emissions.[23]

2.3 Case for government intervention

An estimated 3.31 billion beverage containers are consumed in Victoria each year, with consumption increasing by about 1% per year.[24] Of these, approximately 89%, or an estimated 2.96 billion are containers that are typically covered by a CDS. In 2018-19 alone, these beverage containers made up 47% of the litter stream in Victoria.[25]

Beverage suppliers and individual consumers do not bear the costs of disposal of containers once the beverage has been consumed, including the cost of landfilling or recycling, or potential harm to the environment through containers being littered. The costs are borne by society and the environment instead of the producer or the consumer and are not reflected in the price. This creates a negative externality.

A CDS can address this externality by requiring beverage first suppliers to pay for the recovery and recycling of beverage containers. The cost of reducing litter, increasing recycling, and reducing waste going to landfill is shifted from society and the environment back to the producer. Data from other jurisdictions shows that a CDS is likely to significantly reduce the volume of litter and increase recycling rates of beverage containers. For example, NSW and QLD reported a 57%[26] and 54%[27] decrease in beverage container litter respectively following the implementation of their schemes.

2.4 Design considerations

Through *Recycling Victoria: A new economy,* the Victorian Government has committed to introducing a CDS which is designed to reduce litter, increase resource recovery and produce high-quality recycled material for manufacturing. Scheme design will strongly influence the benefits and costs of a CDS and the distribution of those costs. It can also significantly impact how effectively the objectives of the scheme are met.

2.4.1 Balancing scheme costs with scheme performance

Maximising convenience while ensuring costs are minimised is an important goal in the design of Victoria's CDS.

Community access standards will ensure Victoria's CDS has sufficient refund collection points to meet consumer demand, has an accessible and convenient network of refund collection points across the state and enables consumers to return eligible containers at a time that suits them. This is expected to increase the redemption rate of containers, drive higher recycling rates and lower litter rates.

However, community access standards, and the associated redemption rate, is also a key driver of the overall costs to the scheme. To minimise economic impacts, it is important that the scheme is not overly costly to consumers, retailers, the hospitality industry, and other relevant businesses.

[23] Grant, T., and Berenyi T, (2021) Life Cycle Assessment of the Return and Earn Container Deposit Scheme, Lifecycles, September 2021, Melbourne

[24] MJA analysis for this work

25 Keep Australia Beautiful National Litter Index report, 2018-19

[26] Exchange for Change Return and Earn Annual Report 18/19, as at end of June 2019. https://www.exchangeforchange.com.au/_cache_1cc0/content/6531970000008037.pdf

[27] COEX Annual report 2019-2020. https://containerexchange.com.au/wp-content/themes/coex/annual-report/dist/img/ce-report.pdf

2.4.2 National harmonisation

Key aspects of the scheme will need to be consistent with schemes in other Australian states and territories. A lack of consistency with other jurisdictions will at a minimum cause confusion for retailers and consumers, particularly those that interact with multiple Australian schemes. In addition, differences in key scheme elements, such as the refund amount, could cause additional scheme costs for Victorian beverage first suppliers and disproportionately affect small Victorian businesses.

3. Objectives for action

3.1 Objectives for a container deposit scheme for Victoria

Objective 1: To help promote Victoria's transition to a circular economy

By creating a highly accessible scheme to collect the maximum number of beverage containers and support their circularity

Objective 2: To create the conditions for a better functioning and more reliable waste and recycling market by increasing transparency and accountability

By ensuring the CDS mitigates against fraud, is best practice and is accountable to the community and government.

Objective 3: To minimise the cost to households, businesses and government of the intervention chosen to achieve the above objectives

By delivering a scheme that is adaptable and fit for purpose to Victoria's context, while harmonising with other jurisdictions to reduce the administrative and financial costs to households, businesses and government.

4. Options

This section describes the proposed CDS regulatory options that have been assessed. The options have been designed to address the objectives in the previous section.

4.1 Options definition

As part of the RIS, it is necessary to examine different options that could achieve the Victorian Government's objectives for the CDS.A non-regulatory option is unlikely to reduce litter and improve resource recovery compared a CDS. Non regulatory approaches considered include:

- An information and education campaign alone was not considered sufficient for removing beverage containers from the environment. This type of campaign was considered in the economic analysis undertaken for Victoria's plastic bag ban. In that analysis, it was recognised that litter reduction education programs could help to mitigate the impacts of plastic bag litter, but that such programs are often expensive, require ongoing work, and would be difficult to target plastic bag litter specifically. It was noted that an education campaign could complement other policies by informing the public of new rules and influencing behaviour change, but education alone would either be ineffective or prohibitively expensive in achieving the objectives. Furthermore, this approach would be inconsistent with other Australian jurisdictions, given most other jurisdictions have a CDS.
- Litter clean-up programs are resource intensive and have not been able to decrease beverage container litter adequately across Victoria. Litter clean-up programs also do not improve resource recovery outcomes—with most litter being sent to landfill—and they do not address litter behaviour.
- The provision of more public bins is also considered inadequate to address the problem of beverage container litter and would not increase the recovery of materials.

The following process was used to inform options to be assessed for this RIS:

- consulting with stakeholder groups and the community via a discussion paper, written submissions and a survey of community members
- establishing a Container Deposit Scheme Industry Advisory Group, and a Community Organisations Reference Group to share information and expertise to help inform the design of the scheme
- modelling the collection network system design
- discussing scheme design options across Victorian Government and with other Australian jurisdictions
- analysing the design and performance of schemes in other jurisdictions including the benefits and risks of different scheme governance models.

Outcomes from this process provided valuable insights to guide the development of options including that:

- A co-regulatory CDS, like those operating in other jurisdictions, is the model most likely to cost-effectively achieve the Victorian Government's objectives.
- Key stakeholder groups, including the beverage industry, strongly support a Victorian CDS being as consistent as possible with other Australian schemes. This will reduce scheme compliance and operating costs.
- Splitting responsibilities for managing Victoria's CDS between a scheme coordinator and network operator function will assist with minimising costs and achieving high redemption rates.
- Specific scheme design features should be examined to determine if they have the potential to increase scheme effectiveness, encourage consumer participation in the scheme and/or reduce scheme costs. These include:
    - expanding the scope of the CDS to include more eligible containers than other Australian schemes

- considering a refund amount other than the 10-cent refund that is applied in other schemes
- examining the impact of network access on scheme effectiveness and scheme costs.

Drawing on these insights five options were assessed for this RIS, in addition to the base case. All options will involve:

- funding by the beverage industry under a 'first supplier' model—that is those who own, manufacture, or distribute beverage containers are responsible for funding the scheme
- a scheme coordinator responsible for scheme finances, auditing, sale of CDS materials, scheme promotion, and reporting to Recycling Victoria
- the operation of a network of refund collection points, transport and aggregation of CDS materials by one or more network operators
- refund marking requirements consistent with other jurisdictions, which reads '*10c refund at collection depots/points in participating State/Territory of purchase'*
- that CDS materials collected through the scheme are sold to the broad market for recycling

An overview of the base case and options is provided in Table 4.1 Options assessed for the RISTable 4.1. Further details of each option are provided in subsequent sections.

Option	Description
Base case	The situation that will exist in the absence of CDS regulations.
Option 1	**Consistency of Victorian CDS with other jurisdictions**. Option 1 includes: - A 10-cent refund is provided for eligible containers. - Eligible containers will include most beverage containers between 150 millilitres and three litres excluding milk containers, wine and spirit bottles, juice bottles over one litre and cordial bottles. - The scheme regulator will approve eligible containers included in the CDS and charge a per container type approval fee. - There will be an average of one refund collection point per 11,604 people.
Option 2	**Extended scope of eligible containers**. As per Option 1 except that: - The scope of eligible containers is extended to include wine and spirit bottles.
Option 3	**20-cent refund.** As per Option 1 except that: - A 20-cent refund is provided for eligible containers.
Option 4	**Lower community access standard.** As per Option 1 except that: - There is a lower community access standard of an average of 1 refund collection point per 16,098 people.
Option 5	**Maximum regulation**. Combines elements of Options 1, 2 and 3 with a high community access standard, including: - The scope of eligible containers is extended to include wine and spirit bottles. - A 20-cent refund is provided for eligible containers. - There is a higher community access standard of an average of 1 refund collection point per 9,932 people. - All other elements remain as per Option 1.

Table 4.1 Options assessed for the RIS

4.2 Base case

The base case is the situation that will exist in the absence of regulations that will support the CDS under Part 6 of the Act. Importantly, this does not mean a static situation. The base case will involve significant changes, through the Victorian Government's circular economy policy and the Act including:

- establishment of Recycling Victoria to regulate Victoria's waste and recycling sector
- adoption, progressively between 2023-27, of a separate kerbside bin or service for glass
- mandatory sorting requirements for the commercial sector
- additional investment in processing infrastructure and recycling education.

These initiatives are expected to lead to increased recycling rates of packaging materials, including beverage containers.

4.3 Option 1: CDS consistent with other Australian jurisdictions

Option 1 involves a Victorian CDS that is broadly consistent with schemes operating in other Australian jurisdictions. Major elements of the option are discussed below.

4.3.1 10-cent refund

The Act states that the refund amount is to be prescribed by the regulations. The proposed regulations prescribe this amount to be 10 cents. This is consistent with the refund amount in all other Australian jurisdictions. National consistency on the refund amount will make it easier for consumers and the beverage industry. Harmonisation will also reduce the problem of interstate transference, that is the movement of containers purchased under one scheme across state borders to claim a higher refund amount.

4.3.2 Eligible containers

Under Option 1, Victoria's CDS will include beverage containers that most commonly contribute to litter by focussing on containers that are often consumed away from home. By introducing a financial incentive to return beverage containers, the CDS will help reduce litter and increase recycling.

Under Option 1, it is proposed that containers eligible for a refund in Victoria's CDS are consistent with those eligible in other Australian jurisdictions. Most other Australian schemes include beverage containers between 150 millilitres and three litres in volume.

- Cans (e.g. soft drinks)
- Bottles (e.g. beer bottles)
- Cartons
- Juice boxes or poppers

Figure 4.1: Typical eligible containers, as proposed under Option 1

Containers excluded from the Victorian CDS (those not eligible for a 10-cent refund) are also proposed to align with other Australian jurisdictions. Excluded containers are those generally consumed at home and less likely to be littered. Beverage containers below 150 millilitres are less commonly seen in the litter stream. Similarly, milk containers and glass wine and spirit bottles are commonly consumed at home or at commercial

premises already serviced by kerbside recycling. As previously noted, Victorian Government initiatives to reform kerbside recycling collections and introduce mandatory sorting requirements for the commercial sector will improve the collection and recycling of these materials.

- Milk containers
- Glass wine bottles
- Glass spirit bottles
- Juice bottles over 1 litre
- Cordial bottles

Figure 4.2: Typical excluded containers, as proposed under Option 1

4.3.3 Container approvals

Under Option 1, every eligible container type will need to be approved by the Victorian Government scheme regulator, the Head, Recycling Victoria, to be sold onto the market. The regulator will charge a fixed fee to beverage first suppliers for each container type approval, with the aim of achieving full cost recovery for the approvals process.

4.3.4 Community access standards

Community access standards will ensure that the Victorian CDS has sufficient refund collection points to meet consumer demand, that refund collection points are accessible and conveniently located across the state, and consumers can return eligible containers at a time that suits them. This is expected to increase the redemption rate of eligible containers, driving higher recycling rates and lower litter rates.

Community access standards will apply to the network operator(s) because they are responsible for establishing, operating and maintaining the network of refund collection points. Only fixed refund collection points may be used to meet the community access standards to ensure Victoria has a stable and consistent service across the year. Fixed refund collection points include:

- reverse vending machines (RVMs)
- over the counter (OTC) points, often located in supermarkets and small retail outlets
- automated and manual depots, which are designed to take large volumes of containers.

The financial incentives for network operator(s) to collect more beverage containers may drive them to establish more refund collection points than required by community access standards and deliver a more accessible service for Victorians. This could be through additional fixed collection points or flexible or temporary collection points such as on-demand or pop-up services. In NSW the network operator has established more fixed collection points than required by the regulations.

The following community access standards are being proposed to drive accessibility, equity of access and convenience:

- **Population standards** drive accessibility by determining the number of refund collection points in urban, regional and remote locations to ensure there is sufficient capacity in the network to meet consumer demand. It also manages equity of access for communities living in less populated areas.

- **Distance standards** drive accessibility and convenience by ensuring refund collection points are located close to population centres or towns people frequently visit to shop or access other services.
- **Operating standards** drive accessibility and convenience by ensuring that refund collection points are operating at times that suit consumers, including weekends. As observed in other schemes, weekends are among the most popular time to return containers.

Three community access standards were modelled[28], for analysis: medium, lower and higher (Table 4.2).

Proposed community access standard	Major cities	Inner regional areas	Outer regional areas	Remote areas	Victoria total
Population	5,237,495	1,205,836	250,240	3,079	6,696,650
Medium access standard (Options 1, 2, 3)	1 CP per 14,500 people	1 CP per town of minimum 750 people, and 1 CP per 14,500 people		1 CP per town of minimum 300 people, and 1 CP per 14,500 people	Estimated state-wide average of 1 CP per 11,604 people
Indicative number of refund collection points	378	162	35	2	577
Lower access standard (Option 4)	1 CP per 20,000 people	1 CP per town of minimum 1,000 people, and 1 CP per 20,000 people		1 CP per town of minimum 500 people, and 1 CP per 20,000 people	Estimated state-wide average of 1 CP per 16,098 people
Indicative number of refund collection points	263	128	24	1	416
Higher access standard (Option 5)	1 CP per 11,500 people	1 CP per town of minimum 600 people, and 1 CP per 11,500 people		1 CP per town of minimum 300 people, and 1 CP per 14,500 people	Estimated state-wide average of 1 CP per 9,832 people
Indicative number of refund collection points	443	190	46	2	681

Table 4.2: Community access standards assessed in options

Option 1 (and Options 2 and 3) applies the medium access standard**.** This standard assumes 577 refund collection points will be provided state-wide, or an average of one for every 11,604 people. This is a higher standard than is currently provided in NSW (approximately one refund collection point per 13,000 people) and WA (approximately one refund collection point per 12,400 people) and significantly better than in QLD (approximately one refund collection point per 16,500 people) and SA (approximately one refund collection point per 14,000 people).

A medium access standard will enable 98% of consumers to be within: three kilometres of a refund collection point in urban areas, 18 kilometres of a refund collection point in inner regional areas, 54.5 kilometres of a refund collection point in outer regional areas, and 105.5 kilometres of a refund collection point in remote areas (Table 4.3).

[28] PWC (2021) *Collection network system design and modelling*, Final Report, October 2021

Region	Population	Indicative number of collection points	50% of people	90% of people	98% of people
Victoria	6,696,650	577	Under 1km	2.5km	13km
Major urban areas	5,237,495	378	<1km	1.5km	3km
Inner regional areas	1,205,836	162	1.5km	9km	18km
Outer regional areas	250,240	35	2km	29km	54.5km
Remote areas	3,079	2	5km	100.5km	105.5km

Table 4.3: Distance as the crow flies with medium access standard

4.4 Option 2: Expanded container scope

Option 2 differs from Option 1 in one respect:

- The scope of the CDS regulations is expanded to include glass wine and spirit bottles.

The most significant implications of the expanded scope are:

- There is a relatively small increase in the quantity of in-scope containers relative to Option 1 (3.25 billion containers under Option 2 in 2022 compared with 2.96 billion containers under Option 1).
- There are minimal reductions in litter under Option 2 compared with Option 1 because wine and spirit bottles have a much lower litter rate than other beverage containers[29].
- Option 2 will involve higher scheme administration costs and operating costs than Option 1 but minimal additional infrastructure costs, because the CDS infrastructure set up to collect eligible containers under Option 1 would be able to handle the additional eligible containers under Option 2.

Schemes in other Australian jurisdictions do not currently operate with this expanded container scope, although at least two other jurisdictions (SA and NT) are considering expanding the scope of their schemes to include glass wine and spirit containers and milk bottles.

4.5 Option 3: 20-cent refund

Option 3 differs from Option 1 in one respect:

- A 20-cent refund will be provided for each eligible container returned, rather than a 10-cent refund.

The practical implication of this option would be a likely increase in the redemption rate, an increase in the recycling rate and a decrease in the litter rate. The increase in redemption rate is estimated to be approximately 10 percentage points for Option 3 relative to Option 1 once the scheme is fully operational (see section 0 for further discussion).

While there is a positive correlation between setting a higher refund amount and increased redemption, the increase in the refund amount will result in higher scheme operating and compliance costs for beverage suppliers, who are currently operating with a 10-cent refund in other jurisdictions.

4.6 Option 4: Lower community access standards

Option 4 differs from Option 1 in one respect:

- The lower community access standard, as detailed in Table 4.2: Community access standards assessed in optionsTable 4.2, is applied.

The lower community access standard assumes 416 collection points will be provided state-wide, or an average of one for every 16,098 people. Lower community access standards will reduce redemption rates

[29] This can be explained by the fact that a much lower proportion of wine and spirits are consumed in public open spaces (which is the source of most littering) than other beverages.

relative to Option 1 (see section 5.4.1). They will also reduce costs borne by beverage suppliers from reduced payments of refund amounts and reduced scheme operating costs.

4.7 Option 5: Maximum regulation

Option 5 differs from Option 1 in the following respects:

- The scope of the CDS regulations is expanded to include glass wine and spirit bottles.
- A 20-cent refund will be provided for each eligible container returned, rather than a 10-cent refund.
- The higher access standard, as detailed in Table 4.2, is applied.

Option 5 combines Options 2 and 3, with the inclusion of the higher access standard. The higher access standard assumes 681 collection points will be provided state-wide, or an average of one for every 9,832 people. This would deliver a more extensive scheme than any other scheme operating in Australia.

Relative to Option 1, the combined effects of the changes proposed under Option 5 would significantly increase redemption rates, associated recycling rates, and significantly reduce litter rates. The effects of the changes will also increase scheme operating, administration and compliance costs.

Option 5 is the least harmonised with other Australian schemes.

5. Impact Analysis

5.1 Approach

The purpose of the cost-benefit analysis (CBA) is to assess the costs and benefits of each of the options incrementally to the base case. Economic impacts (costs and benefits) are assessed in an economic model by aggregating discounted annual estimates of each cost and benefit over the analysis timeframe. The aggregated costs and benefits are expressed using two key metrics: Net Present Value (NPV) and Benefit Cost Ratio (BCR)[30]. The NPV measures the expected benefit (or cost) to society of implementing the policy in monetary terms. An option with the highest NPV is expected to deliver the highest scale of benefits to society, whereas the option with the highest BCR provides the highest benefit per unit of cost.

The CBA has been undertaken in accordance with the Victorian Guide to Regulation[31] and the Economic Evaluation for Business Cases Technical Guidelines[32]. Major features of the CBA are:

- analysis was undertaken over a 20-year timeframe, with a sensitivity of 10 years
- use of a central discount rate of 7% real, with sensitivity analysis using discount rates of 4% and 9%
- further sensitivity analysis was undertaken based on changes to other key variables
- distributional analysis was applied to assess the impacts of costs, benefits, and transfers on major stakeholder groups.

Table 5.1 provides a description of the costs and benefits assessed. Further explanation of each cost and benefit item is provided in section 5.3.2. Detailed unit values and sources are provided for each value in Appendix A – Cost and benefit assumptions.

Cost / benefit assessed	Description
Government costs	Government costs include ongoing staffing cost, maintaining a container registry, regulation, enforcement and compliance, and managing the scheme coordinator and network operator(s). The costs associated with container approvals will be recovered through a container approval fee. Other costs are borne by the government.
Scheme administration (scheme coordinator)	The scheme coordinator is primarily responsible for the administration of the scheme and managing the ongoing financial viability of the scheme. The costs are broken down into business set up costs, system and IT costs and ongoing operating costs.
Industry compliance/ production costs for beverage suppliers	The compliance and transitional costs for beverage first suppliers including labelling, compliance reporting, submitting container approval applications and other ongoing data reconciliation and reporting to the scheme coordinator.
Consumer participation costs (household and business)	The cost incurred to participate in the scheme includes accumulating beverage containers and transporting them to refund collection points.
Refund collection point operation (network operator(s) and collection point operators)	The actual cost to operate refund collection points. The network operator(s) are primarily responsible for delivering a network of refund collection points to the public, managing subcontracted collection point operators, and paying refunds to consumers. The cost varies between different types of refund collection points and locations and includes capital and operating expenses. Collection point operators will be paid a per container handling fee by the network operator to cover these costs.
Transport and aggregation costs	The cost of transporting the containers from refund collection points to a site for aggregation. The cost varies by location and material type being transported, which affects the vehicle operating costs.

[30] The NPV is the present value (PV) of benefits delivered by the option, less the PV of costs incurred. The BCR is the ratio of the PV of benefits to the PV of costs.

[31] Commissioner for Better Regulation (2016). *Victorian Guide to regulation: A Handbook for Policy Makers in Victoria*, State of Victoria, Melbourne

[32] Department of Treasury and Finance (2013). *Economic Evaluation for Business Cases Technical Guidelines*, State of Victoria, Melbourne

Cost / benefit assessed	Description
Value of recovered material	The long run average market price for recovered materials varies based on the quantity and quality of material, and whether materials are collected through a MRF or refund collection points.
Avoided litter impacts	The community places a value on the avoidance of litter. The methodology and analysis approach are discussed in section 5.4.2.
Avoided waste collection, transport and disposal costs.	Costs of landfilling will be avoided due to the CDS, including landfill operation costs, environmental externalities and landfill development.

Table 5.1: Summary of costs and benefits assessed

The CBA integrates an economic model with a material flows analysis (MFA), noting that physical flows of beverage containers post consumption, including their disposal pathways, ultimately drive many of the costs, benefits, and distributional impacts of the options relative to the base case (Figure 5.1).

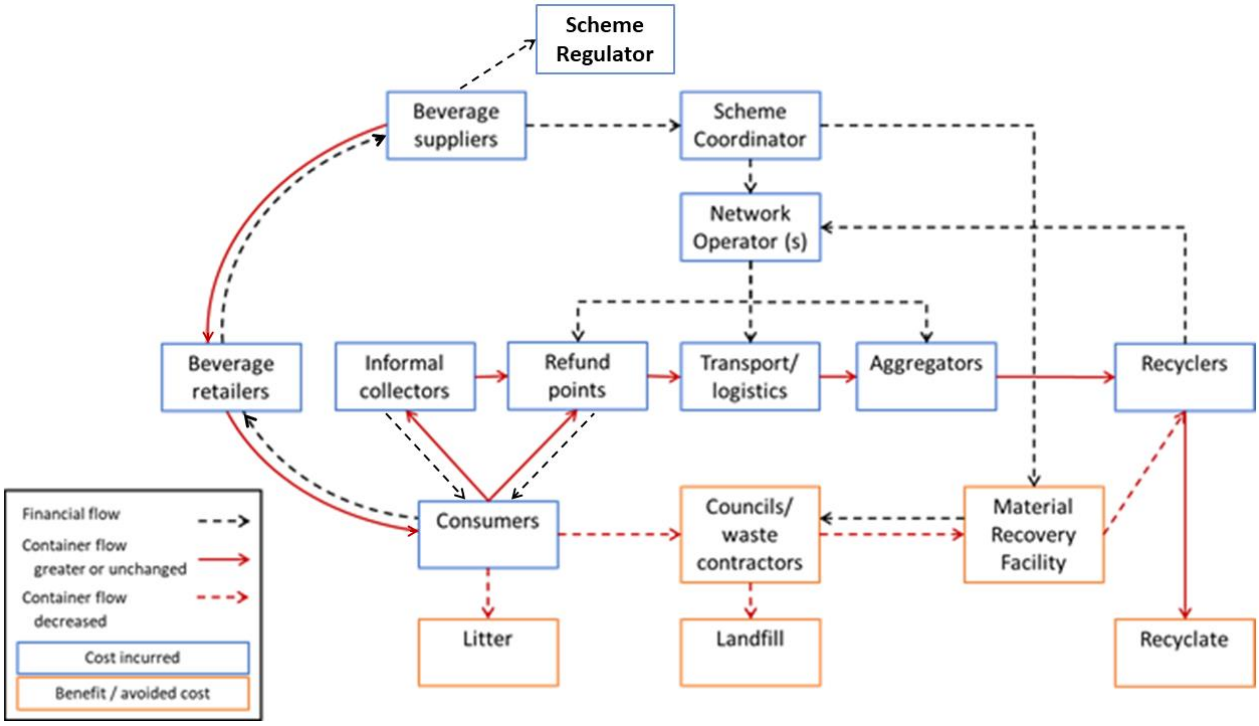


Figure 5.1 Costs and benefits linked to changes in flows of beverage container materials post consumption

5.2 Material flows analysis

The physical flows of waste and recycling ultimately drive many of the costs and benefits of the options, so, a conceptual 'physical flow' of materials is used as the basis for identifying many of the impacts.

Both the base case and the options include the gradual roll out of a glass kerbside recycling service across Victoria. However, the base case does not include the introduction of regulations that support the CDS under the Act. The introduction of CDS regulations with redemption of eligible containers beginning in 2023 is assumed for each of the options.

Detailed assumptions and quantities used in the material flow analysis are provided in Appendix B. The following sections provide an overview of the analysis.

5.2.1 Consumption of beverage containers

Total consumption of beverage containers by material type was estimated through analysis of a wide range of data sources including Victorian resource recovery data, NSW resource recovery data, NSW kerbside data, ABS data on the apparent consumption of alcohol, and industry-supplied benchmarking data on beverage container sales.

It is assumed that the average annual per-capita consumption of beverage containers remains static over the analysis period, so annual consumption increases in line with the latest ABS forecast for projected population growth.[33] Although there may be a fall in consumption of beverages due to the price increase of beverages, this is expected to be a small effect and would not affect the ranking of options. Figure 5.2 shows the estimated number of containers consumed by material type: liquid paperboard (LPB), glass, polyethylene terephthalate (PET), high-density polyethylene (HDPE), and aluminium.

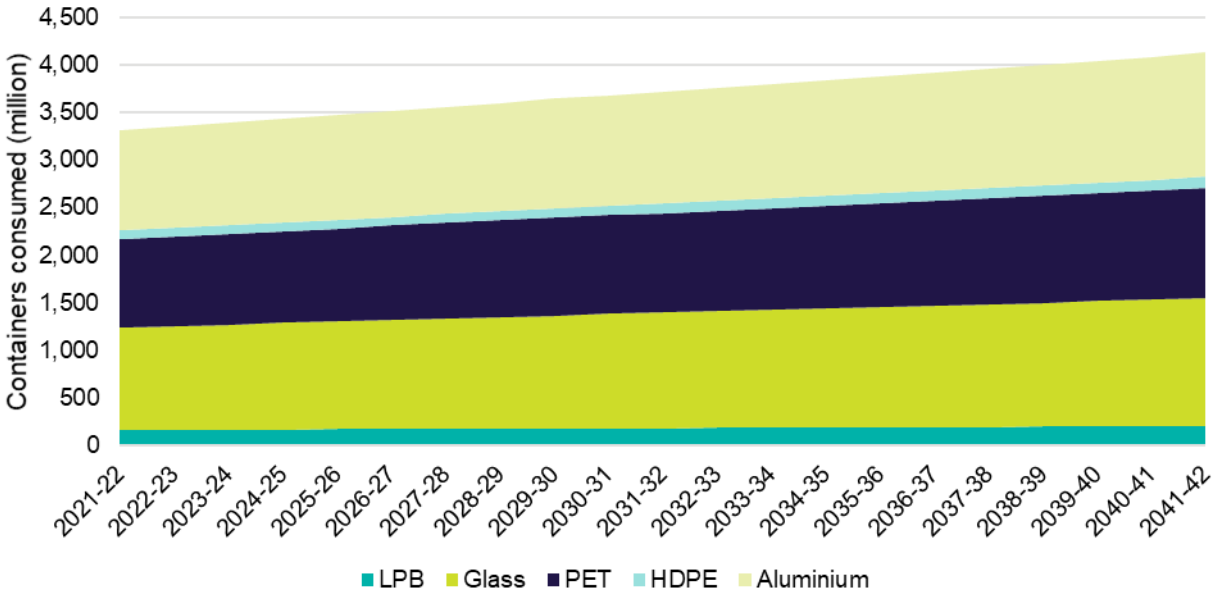


Figure 5.2: Consumption of beverage containers (million)

5.2.2 Disposal pathways

Figure 5.3 illustrates the total number of containers disposed by each disposal pathway, over the analysis period. Option 5 is expected to achieve the highest redemption rates, so achieves the greatest quantity of beverage containers returned through refund collection points. Option 5 is also expected to result in the greatest reduction in litter. The reduction in litter for each option relative to the base case is shown in section 5.2.7.

For all options, some eligible containers would continue to be recycled through kerbside recycling, disposed of in bins or be littered instead of being returned to refund collection points.

[33] ABS population projections 2017 (base) – 2066 https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release

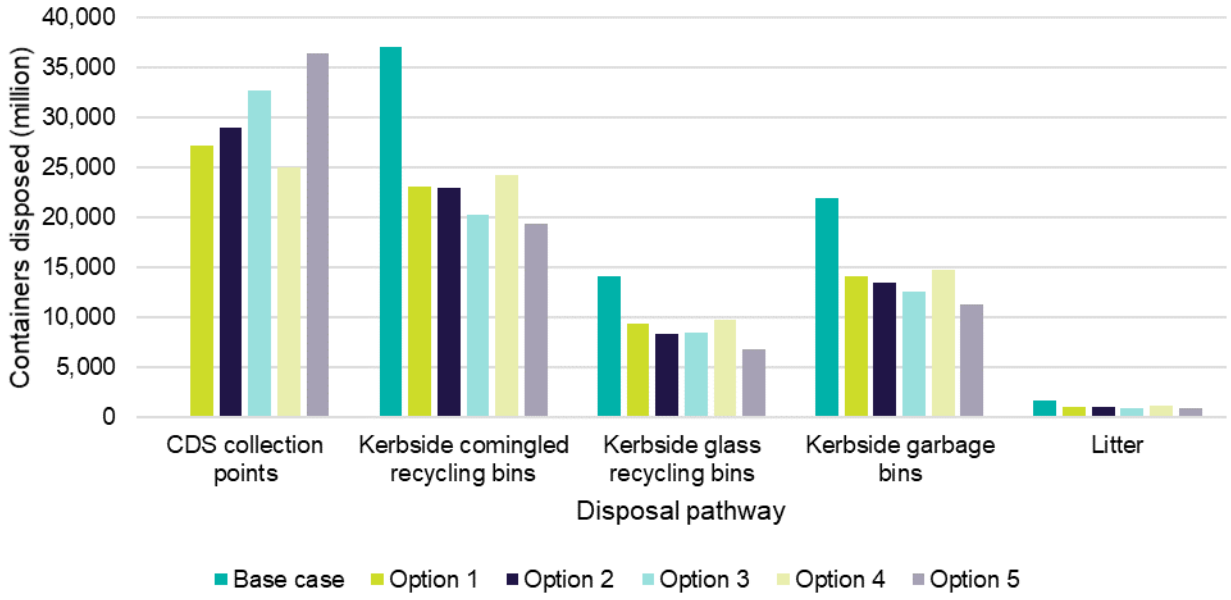


Figure 5.3: Beverage containers disposed by pathway, 2022-23 to 2041-42 (million)

The trend for eligible containers diverted to refund collection points for refund instead of being disposed of through other pathways is illustrated below for Option 1 (Figure 5.4). The trend is similar across all options. Differences in redemption rates result in slightly different levels of diversion from other disposal options. Most eligible containers will be diverted from the kerbside recycling system.

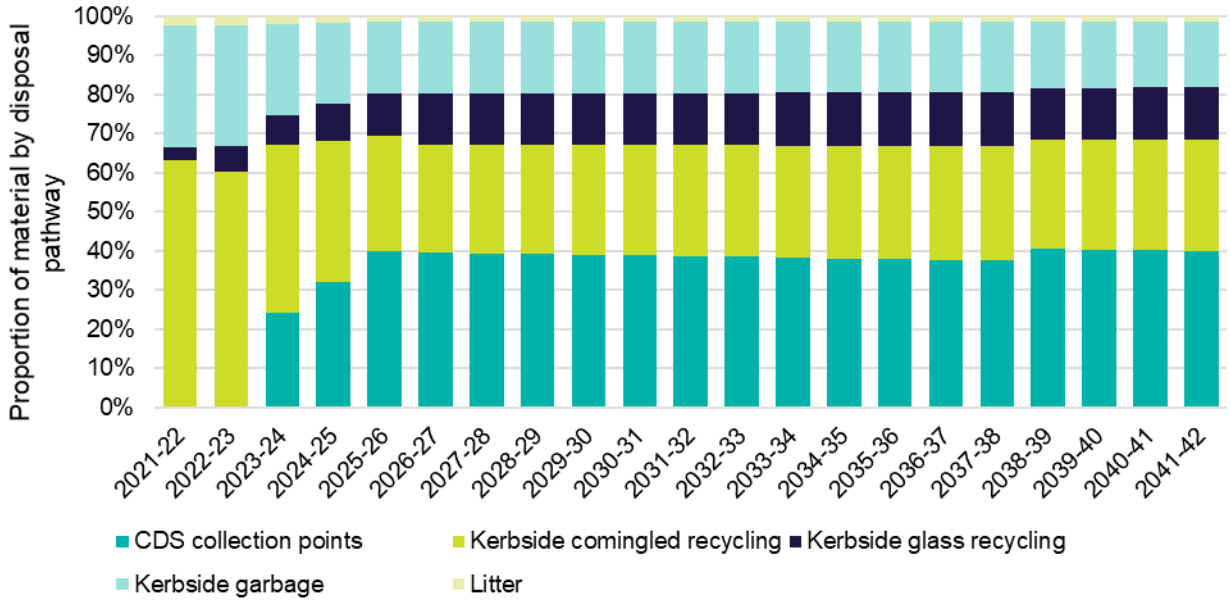


Figure 5.4: Disposal pathways of beverage containers – Option 1

5.2.3 Redemption of eligible containers

The establishment of CDS infrastructure is assumed to be undertaken in 2022-23, with the redemption of eligible containers beginning later in 2023. Scheme participation by households and businesses, referred to as redemption rates, are assumed to gradually increase from 2023-24 (60% of peak), continue in 2024-25 (80% of peak) and stabilise from 2025-26 onwards.

It is assumed that redemption rates are affected by inflation—a general increase in the price of goods and services across the economy. Inflation affects redemption rates because if the refund amount (10 cents or 20 cents, depending on the option) remains static over time while the price of goods and services increase, the refund amount becomes worth relatively less to households and businesses. As a result, the incentive to redeem beverage containers for refunds diminishes.

To align the refund amount with goods and services inflation, the modelling assumes that once prices (inflation) increase by 50% above current levels, the refund amount will be increased. This modelling assumption was chosen to lead to round numbers (multiples of 5 cents) and so that refund amount increases do not happen too frequently over the modelled period. For Options 1, 2 and 4, this means an increase in the refund amount from 10 cents to 15 cents per container. For Options 3 and 5, this increase is from 20 cents to 30 cents per container. Based on current projections of inflation, the increase in the refund amount will occur in 2038-39, which explains the noticeable increase in redemption of beverage containers at this point (Figure 5.5), bringing redemption rates back in line with redemption rates in the early years of the scheme. However, in practice, the timing of this will depend on the future path of inflation and on a government decision to amend the regulations to increase the refund amount.

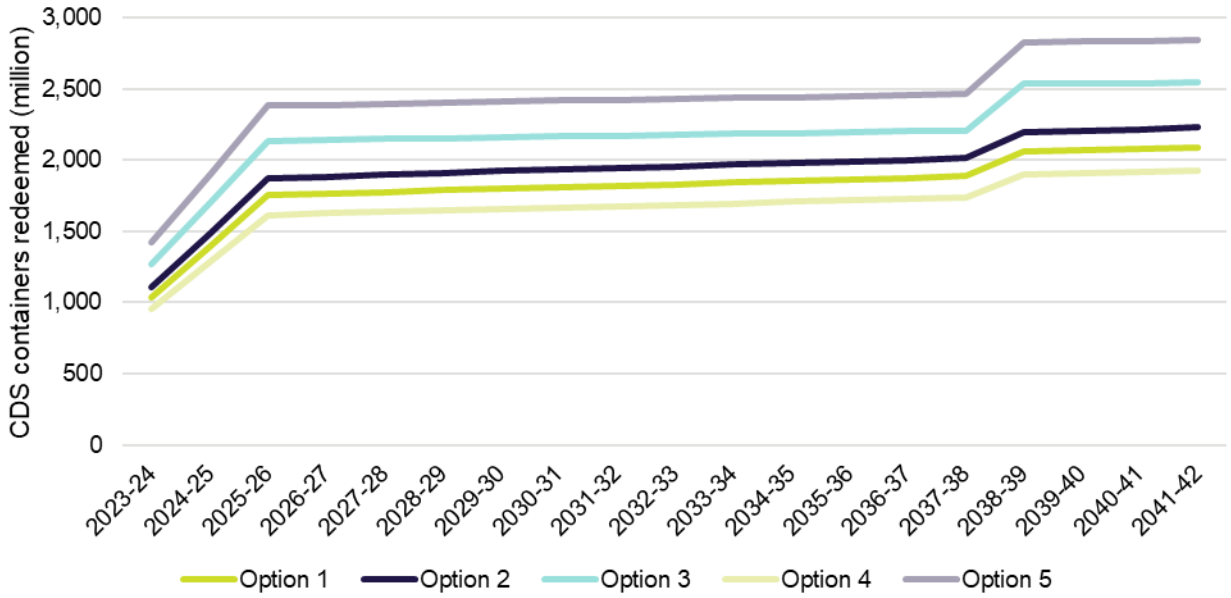


Figure 5.5: Beverage containers redeemed (million)

5.2.4 Litter impacts

The most significant benefit from the proposed options is avoided litter impacts. Modelled litter impacts are based on analysis of National Litter Index (NLI) data from Victoria and other jurisdictions that have introduced a CDS[34]. Litter impacts are determined by comparing litter observed pre-CDS with that observed several years after the introduction of a CDS, which is when the scheme has reached maturity in terms of participation.

Option 1 is very similar in scope to schemes in other jurisdictions, so assumed litter reductions for Option 1 have been calibrated based on historical data from those schemes. Available litter data indicates that since the introduction of schemes in NSW, QLD, NT and the ACT, beverage container litter in those jurisdictions has fallen by between 41% and 61%[35]. Particular emphasis has been given to calibrating the rate of litter reductions in SA, where non-beverage container litter rates most closely align to non-beverage container litter rates in Victoria. Based on that calibration, and adjusting for differences in redemption rates, the introduction of Option 1 is estimated to be associated with a decline in beverage container litter of about 44% at scheme maturity relative to the base case.

[34] Keep Australia Beautiful, National Litter Index (NLI) data, 2009-10 to 2019-20

[35] Marsden Jacob 2021, Australian Container Deposit Schemes: Performance Data Analysis and Comparison, Prepared for Department of Land, Water, Environment and Planning

For other options, assumed litter reductions are either higher or lower than Option 1, which reflects differences in key variables such as community access standards, the refund amount, redemption rates, and the scope of eligible containers.

Adjustments have also been made to account for litter in marine and estuarine locations, which is not captured in the NLI data. These adjustments are based on analysis of Key Litter Index data[36].

Available evidence, such as from trials of the glass kerbside recycling bin in Victoria, suggests that the introduction of a glass bin has no discernible impact on people's tendencies to litter (litter propensities). For this reason, litter propensities decline over time only slightly for the base case, based on assumed behavioural changes of households and businesses, whereby litter propensities are assumed to decline slowly over time for reasons other than changes in policy settings, such as increased community awareness of the costs of littering. However, reductions in litter propensities for the base case are more than offset by population growth, which results in a slight upward trend in quantities of beverage containers littered over time.

The number of beverage containers littered annually is shown in Figure 5.6, while the avoided litter incremental to the base case is shown in Figure 5.7: Avoided beverage containers littered (million). The propensity to litter is modelled to decrease over time, with most of the reduction under the options occurring in the first three years following the introduction of the CDS, before stabilising in the late 2030s. The propensity to litter in the base case slowly decreases, reflecting litter rate trends, until 2038, after which it remains constant. Figure 5.6 therefore shows a rise in litter from 2038 because of population growth. That is, the number of beverage containers littered increases due to continuing consumption growth while the propensity to litter remains the same.

[36] Unpublished data from the NSW Container Deposit Scheme Monitoring Program, Key Litter Items Study

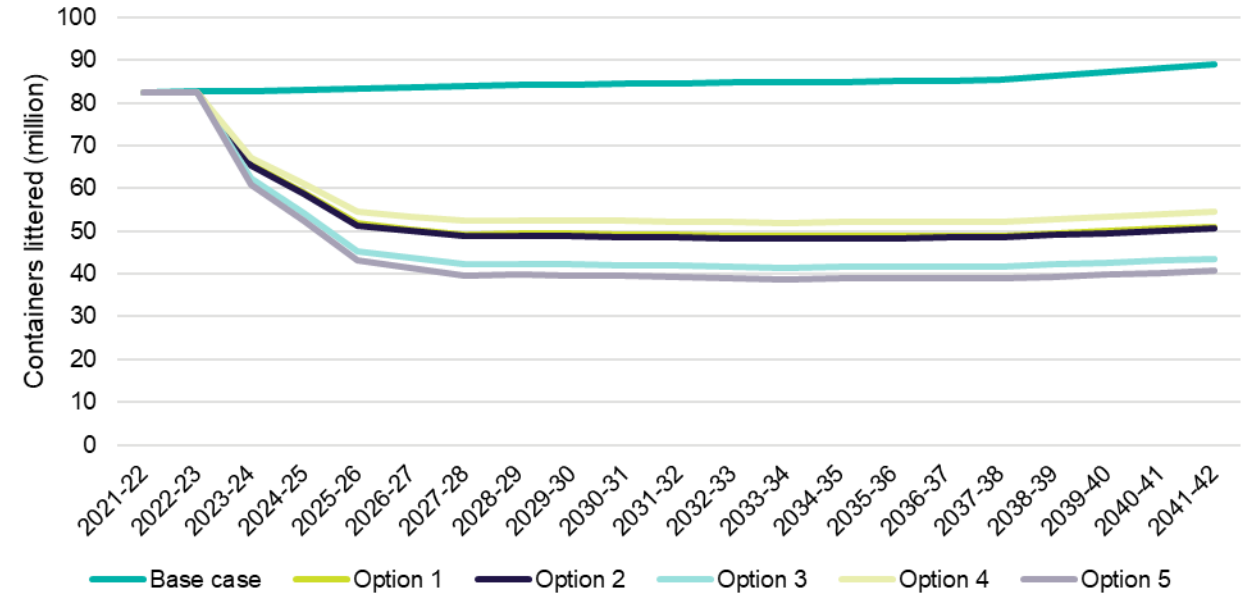


Figure 5.6: Beverage containers littered (million)

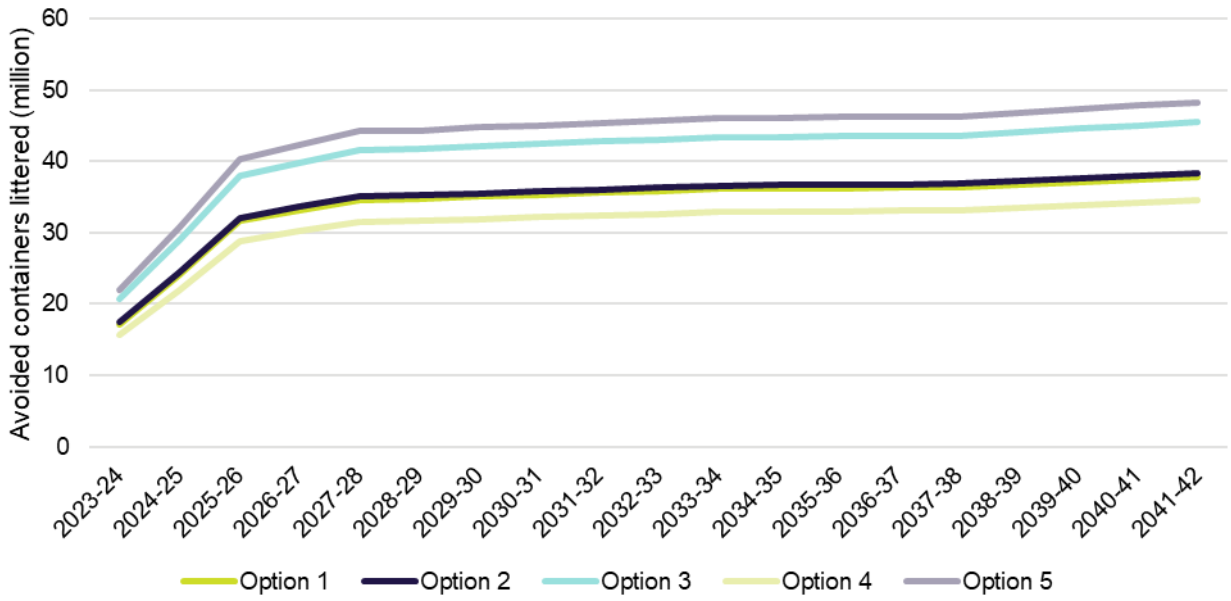


Figure 5.7: Avoided beverage containers littered (million)

5.2.5 Recovery of material

The CDS introduces three main drivers to increase beverage container recycling, which are:

- collecting clean, separated streams of beverage containers at refund collection points
- reducing contamination of materials collected through the kerbside recycling system
- providing a potential financial incentive for MRFs to sort and separate eligible containers and, in the process, providing cleaner streams of material to downstream processors, should they choose to sort and directly count their eligible containers, rather than use sampling to determine the percentage of each material type that is likely to be eligible containers.

Contamination in kerbside recycling bins will also be reduced by introduction of the glass kerbside bin, with this impact on material recovery captured in both the base case and option cases.

The number of beverage containers recovered annually is shown in

Figure 5.8, while additional beverage containers recovered incremental to the base case is shown in Figure 5.9. In Figure 5.9, the decline in 2026-27 is explained by a one-year gap between when the CDS is assumed to reach maturity of participation (2025-26) and when the rollout of glass bin or services will be completed (2026-27). This minor discrepancy in timing affects the base case which means it also affects the increments between the base case and options.

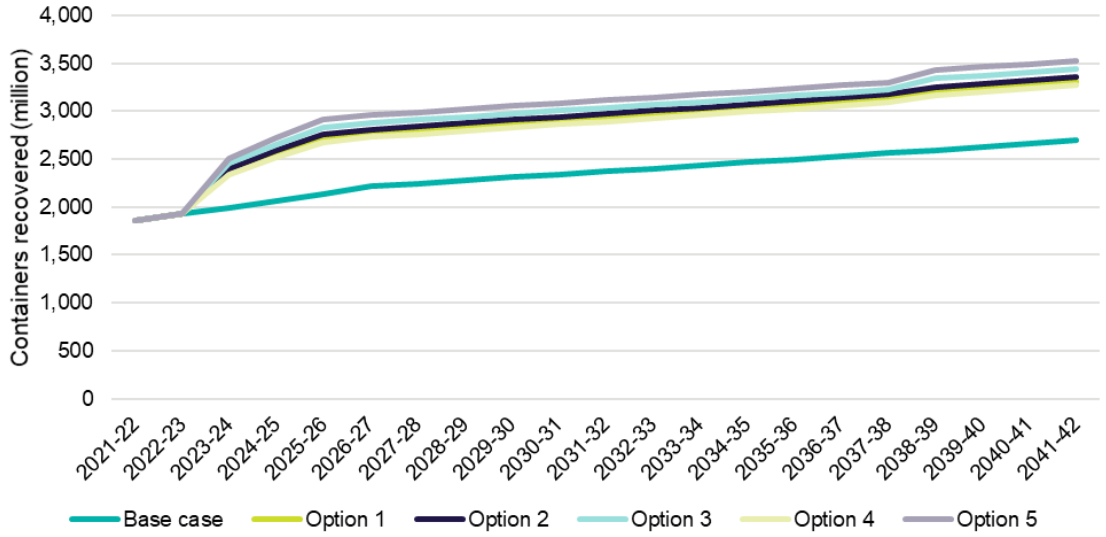


Figure 5.8: Beverage containers recovered (million)

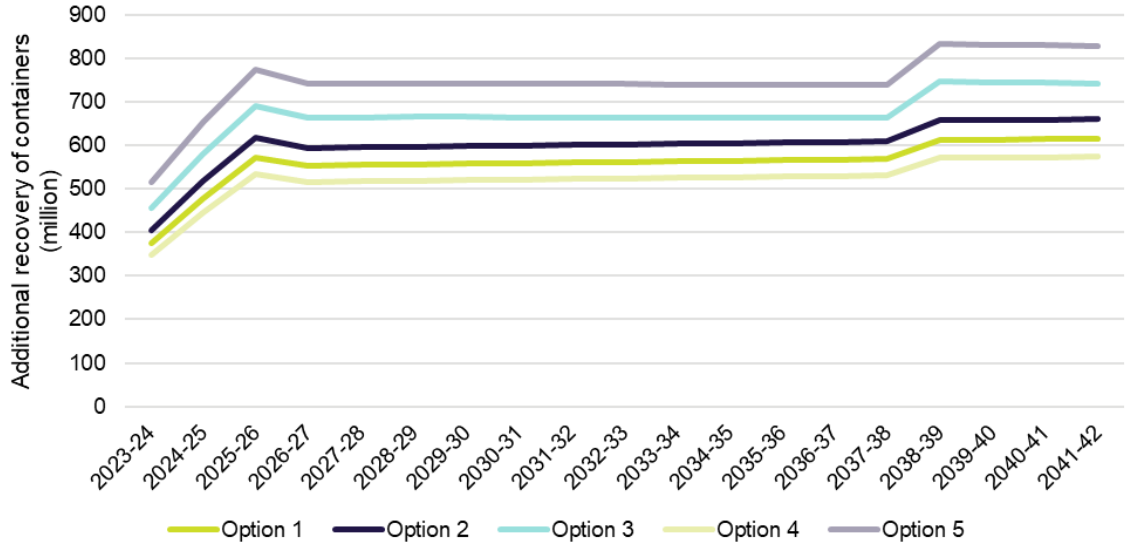


Figure 5.9: Additional beverage containers recovered (million)

5.2.6 Landfilling of material

Improved recovery of beverage container material is linked to reduced landfilling of material. Figure 5.10 illustrates the number of beverage containers being disposed of in landfill on an annual basis. This includes disposal directly to landfill, through kerbside garbage bins, and material indirectly disposed to landfill after disposal through refund collection points and kerbside recycling bins, such as contaminated materials.

The number of beverage containers landfilled declines until 2026-27 for the base case due to the gradual roll out of glass kerbside bins across Victoria. Glass bins or services are assumed to have commenced across all of Victoria by 2026-27. Beyond this point, the number of beverage containers landfilled increases with population growth.

The number of avoided beverage containers sent to landfill is shown in Figure 5.11. In Figure 5.11, the decline in 2026-27 is explained by a one-year gap between when the CDS is assumed to reach maturity of participation (2025-26) and when the rollout of glass bin or services is completed (2026-27). This minor discrepancy in timing affects the base case which means it also affects the increments between the base case and options.

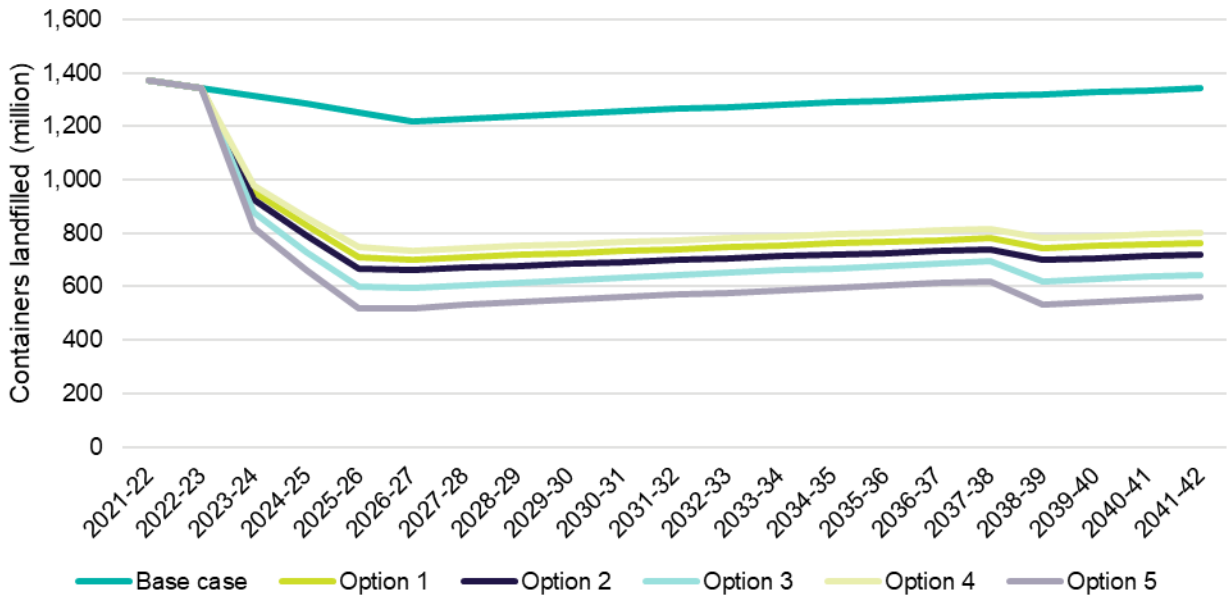


Figure 5.10: Beverage containers to landfill, by all pathways (million)

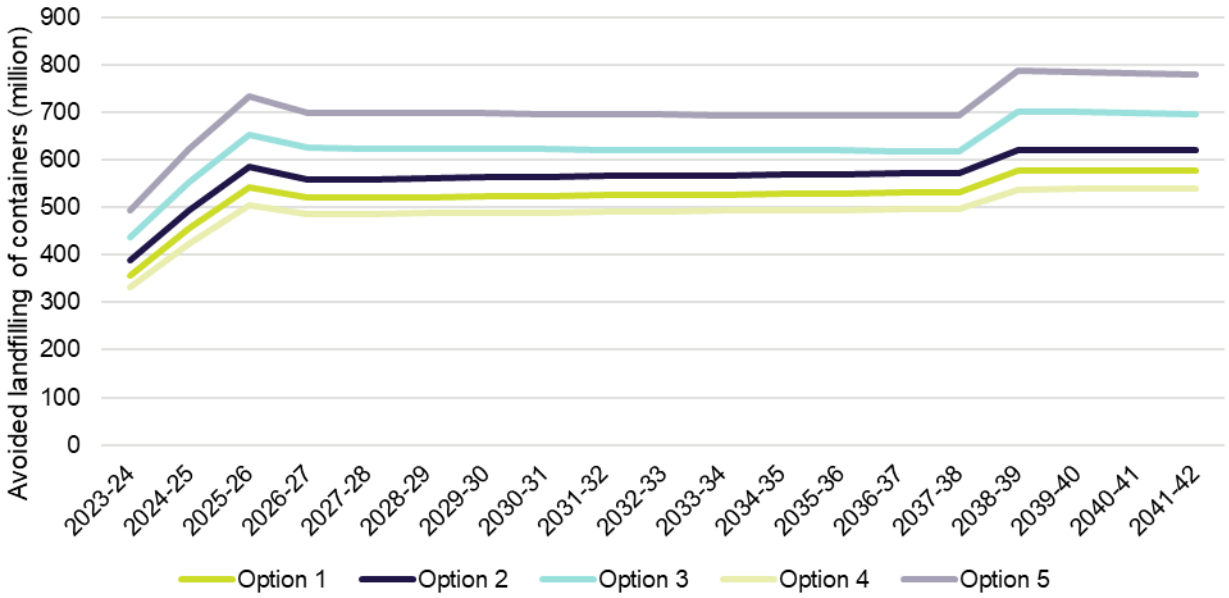
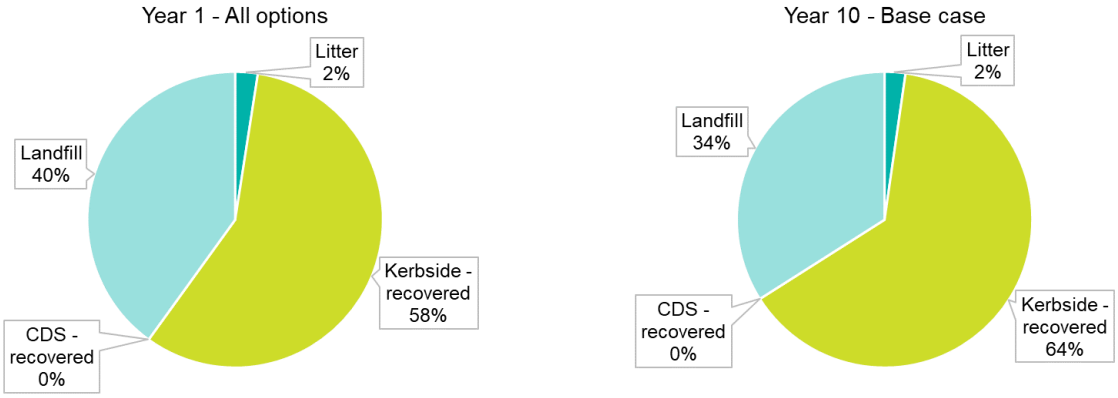


Figure 5.11: Avoided beverage containers to landfill, by all pathways (million)

5.2.7 Material fates

The fates of beverage containers are illustrated in Figure 5.12. Each pie chart provides a point-in-time view of the distribution between material recovered, either via CDS or kerbside pathways, material ultimately disposed to landfill, either directly via the kerbside garbage bin or as rejected from material recovery processes, and litter. The beverage container numbers in year 1 and year 10 are listed for each fate in Table 5.2.

Year 1 is 2022-23, which is the year in which CDS infrastructure is built, but redemption of eligible containers has not begun. Year 10 is 2031-32 and has been chosen to illustrate the impacts of a mature CDS. Option 5, with the highest community access standards and redemption rates, achieves the greatest reduction in material to landfill. All options achieve substantial improvements in reducing materials sent to landfill and littered.



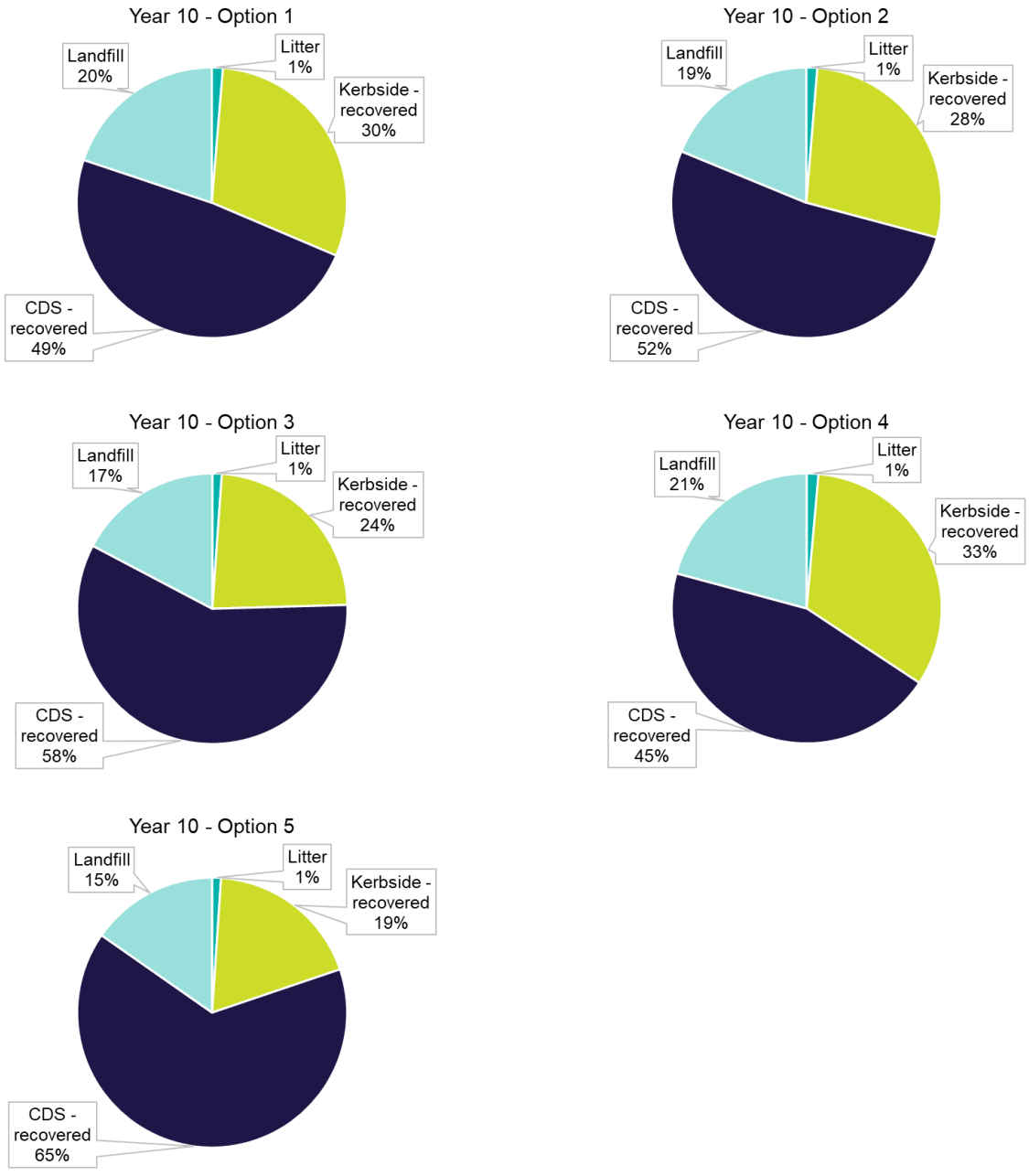


Figure 5.12: Beverage container fates

	All options (pre-CDS redemption)	Base case	Option 1	Option 2	Option 3	Option 4	Option 5
	Year 1	Year 10	Year 10	Year 10	Year 10	Year 10	Year 10
Consumed	3,351	3,722	3,722	3,722	3,722	3,722	3,722
Litter	83	85	49	49	42	52	39
Kerbside - recovered	1,927	2,372	1,119	1,036	872	1,224	698
CDS - recovered	0	0	1,814	1,937	2,164	1,671	2,416
Landfill	1,342	1,265	740	700	644	775	569

Table 5.2 Beverage container numbers by fate (millions of containers)

5.3 Results of analysis

This section presents the results of the CBA comparing the five regulatory options using the NPV and BCR[37]. The results are presented net of the base case, that is, net benefit or costs of the options relative to the base case.

5.3.1 Cost-benefit analysis

The results of the CBA, based on a 7% discount rate and 20-year analysis period, are presented in Table 5.3. All options have positive NPVs and have BCRs greater than 1. This indicates that any of the options will more likely than not deliver a net community benefit compared with the base case.

	Option 1	Option 2	Option 3	Option 4	Option 5
Net Present Value (NPV - $ million)	**269.3**	**282.8**	**341.9**	**232.4**	**384.5**
Benefit-Cost Ratio	**1.33**	**1.32**	**1.35**	**1.30**	**1.36**
Cost	**820.0**	**880.9**	**966.9**	**765.2**	**1,078.2**
Government cost	18.1	19.9	18.1	18.1	19.9
Scheme administration	87.0	94.2	87.0	87.0	94.2
Industry compliance	9.1	12.9	12.1	9.1	15.9
Household participation	132.3	141.3	159.3	121.7	177.7
Business participation	29.1	31.1	35.0	26.8	39.1
CDS – Refund collection point costs	398.5	425.7	479.8	367.8	535.4
CDS - Transport & aggregation costs	145.9	155.8	175.6	134.7	196.0
Benefits/ avoided cost	**1,089.3**	**1,163.6**	**1,308.9**	**997.6**	**1,462.6**
Avoided collection and transport (C&T) to MRF	104.9	126.6	126.3	97.3	158.6
Avoided C&T to landfill	40.5	49.2	48.7	37.6	61.9
Avoided MRF processing	78.0	93.7	93.9	71.8	117.8
Avoided landfill (operation and development)	35.7	43.3	42.9	33.0	54.4

[37] The NPV is the present value (PV) of benefits delivered by the option, less the PV of costs incurred. The BCR is the ratio of the PV of benefits to the PV of costs.

Avoided landfill (externalities)	5.0	6.0	6.0	4.6	7.5
Avoided litter	725.1	735.0	870.8	660.4	924.9
Value of recyclates	100.1	109.8	120.2	92.9	137.5

Table 5.3: Detailed CBA results (2021/22 $ millions – 20-year analysis period)

With an NPV of $384.5 million over 20 years and a BCR of 1.36, Option 5 has the highest NPV. This means Option 5 is expected to deliver benefits of $1.36 for every $1.00 of cost. This outcome reflects greater avoided litter and higher value of recyclables compared to other options. Option 3 has a similar BCR to Option 5, being estimated to deliver benefits of $1.35 for every $1.00 in cost. Options 1 and 2 have slightly lower BCRs estimated to deliver benefits of $1.33 and $1.32 respectively for every $1.00 of cost. Of these two options, Option 1 has a slightly lower NPV but a slightly higher BCR than Option 2, reflecting lower scheme benefits but also lower scheme costs in present value terms.

Option 4 has the lowest NPV and BCR of all options. This reflects higher litter rates and lower access standards which reduces the quantity of waste recycled, without a proportional decrease in costs.

It is important to note that the differences in BCRs and NPVs between the options are small and within expected margins of error.

5.3.2 Key drivers of results

Avoided litter benefits

The key benefit driving the net benefit of options is the assessed value of avoided litter, which is linked to the increased collection and recovery of beverage containers under all options relative to the base case. Under the base case, it is estimated that 82 million beverage containers will be littered in 2022, increasing to 89 million by 2042, primarily due to population growth. As shown in Figure 5.6 Options 1 to 5 are expected to reduce the quantity of beverage containers littered by between 38% and 53% relative to the base case. Option 5 is expected to lead to the greatest reduction in litter volumes (53%), followed by Option 3 (50%). This outcome reflects the impact of a higher refund amount of 20 cents on redemption rates. Better community access standards are also expected to drive higher redemption rates and lower litter rates under Option 5.

Every tonne of avoided litter has been assigned a real value in the analysis of $26,683 in 2022, increasing incrementally to $40,629 by 2042. These values have been derived from a litter willingness-to-pay study undertaken for DELWP[38]. The study used stated preference techniques to measure Victorians' maximum willingness to pay and minimum willingness to accept compensation for a range of different changes in litter outcomes. The approach is discussed further in section 5.4.2.

The value of avoided litter is subject to considerable uncertainties about both the quantity of avoided litter and the unit value assigned to each tonne of avoided litter. Recognising these uncertainties, sensitivity analysis has been undertaken to assess the impact of changes in assumptions about these variables on results of the analysis (see sections 5.3.3 and 5.3.4).

Increased value of recycled materials

All options involve an increase in the value of recycled materials relative to the base case. Under all options, redeemed beverage containers will be required to be recycled. Recycling rates of beverage container materials are at moderate levels under the base case and are expected to increase following the introduction of the CDS. Thus, options expected to achieve high redemption rates, such as Options 3 and 5, will have greater recovered material values than options achieving lower redemptions rates, such as Option 4. Moreover, most beverage container material redeemed through the CDS is expected to attract a premium value compared to beverage container material recovered through traditional kerbside systems, since CDS material is better sorted and has lower contamination rates than kerbside material. This further increases the value of recovered material under CDS options relative to the base case.

[38] Centre for International Economics (2019). *Willingness to pay for reduced litter in Victoria: Stated Preference Research*. Prepared for Victorian Department of Environment, Land, Water and Planning. May 2019.

Refund collection point costs

The costs associated with processing beverage containers at refund collection points represents the most significant CDS cost. Refund collection points costs are the capital, operating and maintenance costs incurred by collection point operators. These will vary depending on the refund collection point type (RVM, OTC or depot) and how they are operated.

As detailed further in section 5.4.1, unit costs will also vary depending on the location, numbers of refund collection points and their likely throughput. Unit costs are expected to be higher overall where throughput of beverage containers is relatively low, such as in outer regional and remote areas. Under Options 1, 2 and 3, for example, unit refund collection point costs range from three cents per beverage container for RVMs in urban areas to 3.9 cents per beverage container in inner regional areas and 5.1 cents per beverage container in outer regional and remote areas. Unit refund collection point costs for OTCs are estimated to range from 3.5 cents per beverage container in urban areas to 3.8 cents per beverage container in inner regional areas and 3.7 cents per beverage container in outer regional and remote areas. Thus, RVMs are expected to be the more prevalent in urban areas but OTCs are likely to be relatively more prevalent in regional and remote areas.

Unit refund collection point costs are expected be higher under Option 5, as higher community access standards will result in greater numbers of refund collection points. In comparison, unit refund collection point costs will be lower under Option 4, as lower community access standards will result in fewer numbers of refund collection points.

Transport, aggregation and disposal costs, and avoided costs

Introduction of the CDS will involve baling and transport costs to shift the recovered material from refund collection points to aggregation sites to prepare the materials for sale to the broad market for recycling. Offsetting some of these costs will be reductions in the cost of kerbside material being collected and transported to landfill for disposal or transported to MRFs for sorting.

Household and business participation costs

All options will involve household and business participation costs. Most of these costs are associated with time spent by householders or businesses redeeming the beverage containers they have consumed, including the time spent travelling to a refund collection point, for the small proportion of trips assumed to be taken specifically for the purpose of redeeming beverage containers, and the time spent at refund collection points.

Significant assumptions for households include:

- Cost of time is valued at $12.60 per hour, which is 35% of the median hourly wage rate
- Only additional time spent travelling and redeeming eligible containers is included, this varies depending on the type of refund collection point used and the region where travel is undertaken
- The average household participation cost is approximately 1.1 cent per eligible container in metropolitan areas, 0.9 cents per eligible container in regional areas and 0.7 cents per eligible container in remote areas.

Significant assumptions for businesses include:

- Cost of time valued at $51 per hour including on costs and margins.

Scheme administration costs

Scheme administration costs include costs incurred by the scheme coordinator in setting up the scheme, IT and other systems and operational costs, such as financial controls, auditing and marketing. These costs are expected to vary little between the options. This is because a significant proportion of the costs are fixed and do not vary according to participation in the scheme. Options 2 and 5 are expected to involve slightly higher ongoing administration costs, reflecting the significant increase in the number of beverage first suppliers being administered through the scheme due to the inclusion of wine and spirit bottles.

5.3.3 Sensitivity analysis

There are significant uncertainties with the results, especially around the quantity of avoided litter and the value of avoided litter. Recognising these uncertainties, analysis was undertaken to test the sensitivity of results to changes in key assumptions. Sensitivity analysis was undertaken for:

- Alternative discount rates (4% and 9%)
- Alternative analysis period (10 years)
- Changes to the willingness to pay for litter reduction (low and high)
- Changing the measure used to quantify the cost of avoided litter from willingness to pay to the avoided cost of litter clean up
- Alternative collection point costs (+/- 5%).

These assumptions and ranges were chosen for sensitivity analysis because of the level of uncertainty for these values and the relatively large impacts that they have on the impacts.

Results of the sensitivity analysis are summarised in Table 5.4 indicating the impact of changes to assumptions on the BCRs of options. The analysis indicates that the ranking of options is not at all sensitive to changes to assumptions, with Option 5 being the highest ranked option in all cases, followed by Option 3. Options are not particularly sensitive to changes in discount rates, reflecting an even spread of costs and benefits over time.

Moreover, results of the analysis overall are not particularly sensitive to changes to any of the assumptions, with all options achieving positive NPVs under all individual assumption changes.

	Option 1	Option 2	Option 3	Option 4	Option 5
Central assumptions	**1.33**	**1.32**	**1.35**	**1.30**	**1.36**
Low discount rate – 4%	1.35	1.35	1.38	1.33	1.38
High discount rate – 9%	1.31	1.30	1.34	1.29	1.34
Shorter analysis period – 10 years	1.21	1.21	1.23	1.19	1.24
WTP for litter reduction – low	1.26	1.26	1.29	1.24	1.29
WTP for litter reduction – high	1.40	1.39	1.43	1.37	1.43
Avoided litter clean-up cost (rather than WTP)	1.22	1.22	1.25	1.20	1.25
Collection point costs - low	1.36	1.35	1.39	1.34	1.39
Collection point costs - high	1.30	1.29	1.32	1.27	1.32

Table 5.4: Sensitivity analysis results by benefit cost ratio

5.3.4 Litter break-even analysis

Noting the importance of litter values to CBA results and uncertainty about impacts of options on litter rates, further sensitivity analysis on a litter reduction break-even analysis has been undertaken. This analysis tests the litter reduction required at scheme maturity for each of the options to achieve a positive NPV.

Table 5.5 shows the modelled reductions in litter following introduction of the CDS, where these litter reductions are incremental to the base case and are reported as the proportion of all beverage container litter

reduced due to the introduction of a CDS. Only litter reductions at scheme maturity (2027) are reported, with smaller reductions assumed in the first two years, as participation in the CDS gradually increases. Under central assumptions, litter reductions achieved by each of the options below the base case have been estimated at between 40.2% (Option 4) and 56.3% (Option 5) at scheme maturity, with Option 1 achieving an estimated litter reduction of 44.1%. By contrast, litter reductions of between 32.6% (Option 4) and 38.9% (Option 5) are needed to achieve breakeven results for each of the options, holding all other central assumptions unchanged. For example, the litter reduction needed for Option 1 to achieve a breakeven result is 34.6%.

Noting beverage container litter reductions achieved by schemes in other jurisdictions (section 5.2.4), results of the breakeven analysis suggest that there is a high likelihood that implementing any of the options will achieve beverage container litter reductions that are sufficient to achieve a net benefit overall to the community.

Option	Central assumption	Break-even reduction
1	44.1%	34.6%
2	44.7%	35.8%
3	53.0%	36.7%
4	40.2%	32.6%
5	56.3%	38.9%

Table 5.5: Litter reductions after reaching scheme maturity (2027)

5.3.5 Distributional impacts

Distributional analysis has been undertaken to assess the impact of implementing each of the Options on key industry and societal groups. The distributional analysis allocates the costs and benefits assessed in the CBA across these groups, with transfers[39] between these groups added into the analysis. Descriptions of these transfers are provided in Appendix C.

Figure 5.13 and Table 5.6Table 5.5 provide estimates of the distributional impacts of each of the options across the main groups. For the purposes of exposition, consumer participation costs are shown separately from price impacts on consumers in the table. Similarly, impacts on small beverage first suppliers are separated from those of large beverage first suppliers.

The major transfer under the scheme is from consumers of eligible containers to other groups. The large transfer from consumers reflects that some consumers do not redeem their refund, but pay prices that are increased by the CDS. The major beneficiaries from the scheme are collection point operators, MRFs and local government. The extent of benefit for collection points operators will reflect the negotiated price for handling containers on behalf of the network operator(s). This analysis has assumed that 50% of refunds collected by MRFs will be shared with local government.

In this main analysis, each group will either enjoy net benefits or incur net losses under every option.

Across every option:

- **Victorian Government**: could receive more goods and service tax (GST) revenue from the Australian Government which may exceed its administration and running costs and its reduction in landfill levy revenue. Government will benefit more if there is a 20-cent refund.
- **Beverage industry**: is assumed to be cost neutral. Impacts on the beverage industry are reflected in prices of beverages paid by consumers assumed to be reflected in prices.
- **Collection point operators**: benefit across all Options though they benefit more where there are higher redemption rates from a 20-cent refund or higher access. The benefit for each collection point operator will reflect its own costs of operation and throughput.

[39] Transfers are financial exchanges between groups that involve a financial benefit to one group and a corresponding loss to another group but no net economic impact. Government taxes are an example of a transfer.

- **Local government**: benefit across the board from reduced landfill costs for both landfill charges and the levy, reduced costs in waste collection and sharing refund payments with MRFs for beverage containers recycled through the kerbside recycling system.
- **MRFs**: are net beneficiaries from the refund payments for beverage containers recycled through the kerbside recycling system despite loss of collection revenue for lower quantity of material received through kerbside.
- **Beverage consumers**: all beverage consumers will pay for the costs of the scheme, passed through by the beverage industry, and the higher GST calculated on higher beverage prices. Beverage consumers who redeem refunds will be slightly better off, as the price increase of a beverage is anticipated to be less than the refund. Beverage consumers who do not redeem the refund will be worse off by the amount of the price increase.
- **Other industry** are those businesses involved in purchasing and redeeming a refund on eligible containers. These businesses will incur participation costs associated with returning eligible containers
- The **environment** is not affected by transfers.

Stakeholder	Option 1	Option 2	Option 3	Option 4	Option 5
Victorian Government	103.1	100.5	293.1	94.4	315.4
Beverage industry	0.0	0.0	0.0	0.0	0.0
Refund collection points	49.9	53.3	60.1	45.5	67.4
Local government	386.9	447.8	640.9	357.5	758.2
MRFs	69.6	81.7	258.7	64.7	297.6
Other industry	-29.1	-31.1	-35.0	-26.8	-39.1
Households/ consumers	-1,041.2	-1,110.4	-1,752.7	-967.9	-1,947.3
Participation costs	*-132.3*	*-141.3*	*-159.3*	*-121.7*	*-177.7*
Price impact	*-909.0*	*-969.1*	*-1,593.5*	*-846.2*	*-1,769.6*
Environment	730.1	741.0	876.9	665.0	932.4
Overall	**269.3**	**282.8**	**341.9**	**232.4**	**384.5**

Table 5.6: Distribution analysis in NPV terms ($ million)

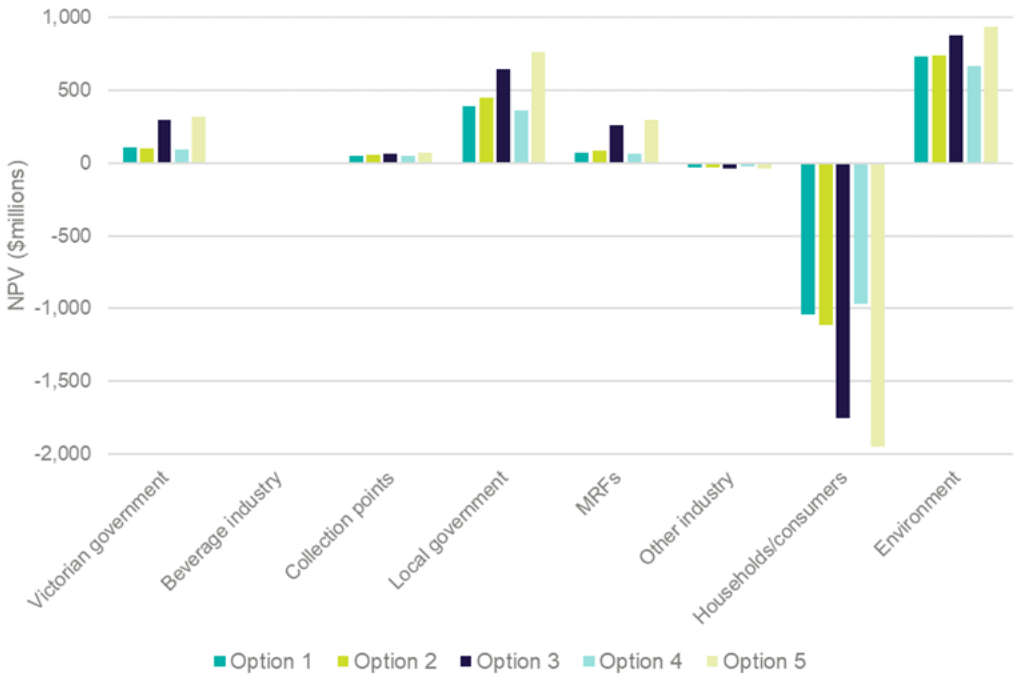


Figure 5.13 Distributional analysis ($ 2021/22)

5.3.6 Competition and small business impacts

It is good practice for a RIS to consider the likely impacts of the preferred option on competition and on small businesses. This reflects a concern that regulations could reduce competition in the market and therefore outcomes for consumers, and a concern that small businesses may experience disproportionate impacts from new regulatory obligations, for reasons such as having limited resources to interpret and comply with the new requirements.

The CDS regulations are not expected to impact on competition significantly. The scheme is expected to make entry into the beverage sector only slightly more costly for new entrants due to container registration, and it is not expected to greatly restrict a beverage supplier's ability to market or price their products. It is not expected that the CDS regulations will materially affect the market structure of the sector or to provide incumbent businesses with a material advantage over new entrants. To the extent that there are minor impacts on competition, these impacts are necessary to achieve the government's objectives and are expected to be significantly outweighed by the benefits of the CDS regulations.

The introduction of a CDS is expected to result in an increase in the retail cost of beverages included in the scheme, but consumers can offset this cost by redeeming the refund.

The market for wine and spirits has a much larger supplier base, and large suppliers are less dominant. The distinction is shown in Table 5.7. Since no other schemes currently include wine and spirit suppliers, the cost of expanding the scope to include them will disproportionately affect small suppliers and the Victorian scheme, as wine and spirit beverage suppliers, who have not previously adhered to CDS requirements in other jurisdictions, such as labelling requirements, would have higher costs

	Major players market share in Australia	Proportion of businesses in Victoria	Implied number of containers in Victoria^
Eligible containers (Option 1)*	70.0%	unknown	3 billion
Spirit	55.6%	23.1%	30 million
Wine	34.3%	27.7%	178 million

*Note: * Eligible containers include soft drink, bottled water, beer and fruit juice, ready to drink mixed sprits, and health, sport and energy drinks.*

^ Implied number of containers based on the total number of containers in the base case and scope extension options.

Table 5.7: Small versus large beverage first suppliers in Victoria and Australia[40]

5.4 Detailed methodology for key assumptions

The detailed assumptions used to assign unit rates to costs and benefits are detailed in Appendix A – Cost and benefit assumptions.

The following section provides information on how key values were derived including refund collection point costs, the value of avoided litter and redemption rates.

5.4.1 Refund collection point costs

The costs associated with refund collection points can be separated into the following:

- **The fixed capital costs of each refund collection point type:** this varies significantly between refund collection point type reflecting different levels of technology. RVMs have higher upfront costs than OTC. Automated depots are often existing facilities and so have lower upfront costs associated with set up.
- **The variable operating costs of each refund collection point type:** this includes cleaning, repairs, management, electricity, operation and maintenance, and rent. Rent and labour are assumed to be higher in metropolitan areas than regional and remote. However, these costs mainly vary based on volumes collected by the facility and the refund collection point type.
- **Collection and transport of material, including bailing for transport and aggregator costs:** bailing for transport and processing and the aggregator have a consistent cost across refund collection point type and regions. However, transport from refund collection points varies between metropolitan and regional locations.

The community access standards define the minimum number of refund collection points in each region. The analysis has not attempted to optimise the number and distribution of refund collection points based on the average operating cost of each refund collection point type. This is because the community access standards define the minimum number of refund collection points in each region which then influences the number of each refund collection point type. The selection of the optimal refund collection point type differs based on the expected volumes of containers collected in the local area.

Unit costs have been determined for each region and refund collection point type based on the community access standards, associated refund collection points and throughput of Option 1, as shown in Table 5.8. The unit costs are based on the expected average throughput based on the minimum number of refund collection points in each region and the most likely type of refund collection point. The split of refund collection point types is estimated based on NSW with adjustments for the Victorian community access standards. However, there is a degree of uncertainty in how these costs are distributed across regions and refund collection point types for different options.

It is likely that in practice, a least cost model would be put in place whereby the refund collection point type is determined by the expected throughput at each location. The refund collection points generate efficiencies of throughput, whereby higher throughput numbers maximise the distribution of fixed costs compared to lower

[40] Sources include: IBIS (2021) *Industry reports on Wine production in Australia, Spirit production in Australia*; in scope container analysis provided by DELWP; MJA analysis drawing on Department of Justice 2017-18 wholesale liquor sales data by LGA

numbers. Figure 5.14 shows this is particularly true for RVMs, whereas OTCs have a lower variation in unit cost due to changing throughput (Figure 5.15). This means the unit costs of operation are potentially overstated but are seen as a conservative estimate.

	Metro	Inner regional	Outer regional and remote
Medium community access standards			
Target refund collection points	378	162	37
Access ratio to population	13,856	7,443	6,846
Refund collection points by type			
RVM	60%	44%	5%
OTC	35%	52%	90%
Depot	5%	4%	5%
Proportion of eligible containers processed			
RVM	65%	55%	6%
OTC	19%	27%	64%
Depot	16%	18%	30%
Cost per eligible container ($)			
RVM	0.030	0.039	0.051
OTC	0.035	0.038	0.037
Depot	0.020	0.024	0.046

Table 5.8: Collection point unit cost assumptions

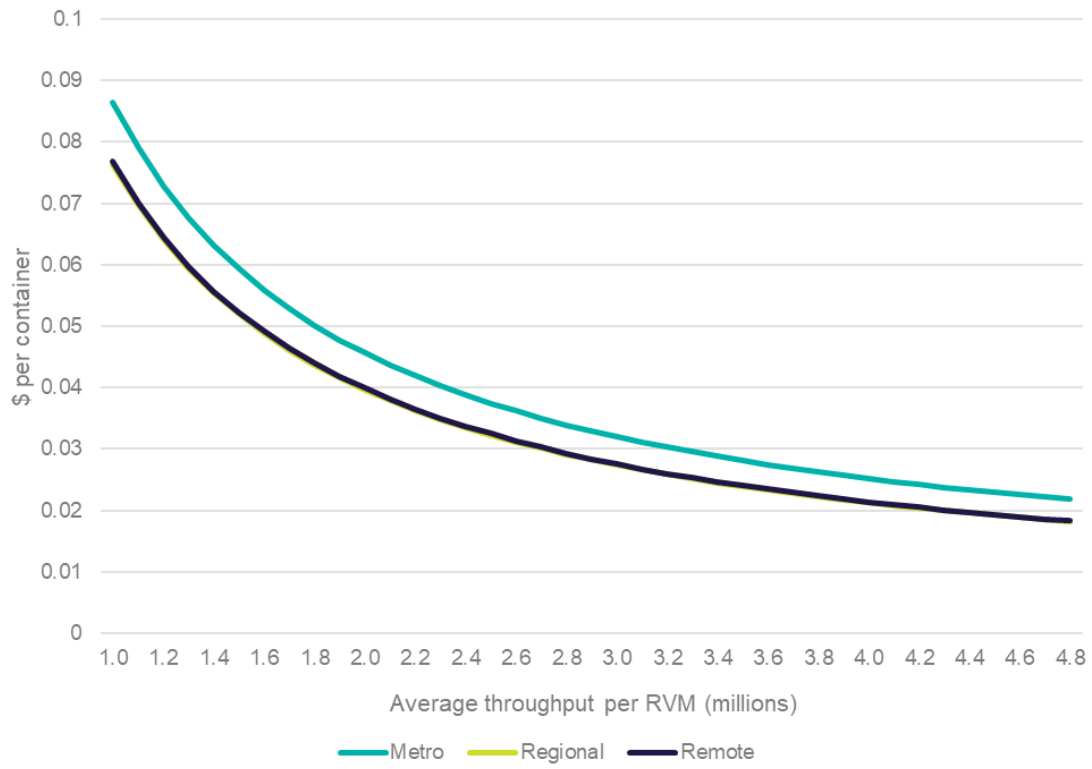


Figure 5.14: Change in RVM unit cost by throughput

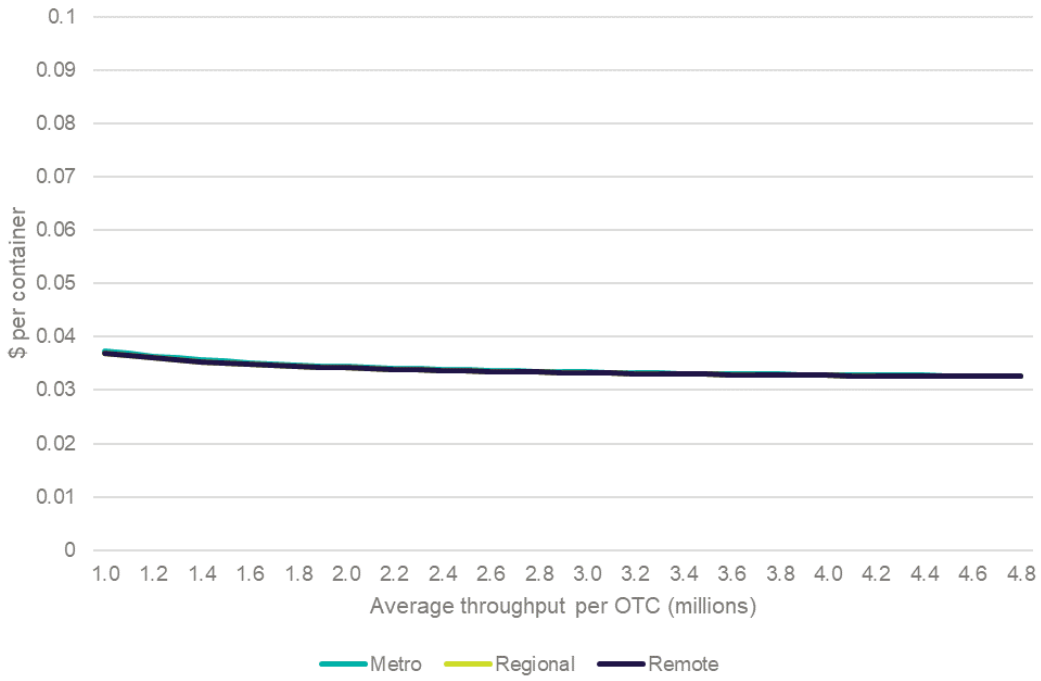


Figure 5.15: Change in OTC unit cost by throughput

5.4.2 Value of avoided litter

As discussed in section 5.3.2, every tonne of avoided litter has been assigned a value in the analysis. This value has been derived from a litter willingness-to-pay (WTP) study undertaken for DELWP by the Centre for International Economics (The CIE)[41]. WTP is a non-market valuation technique that has been used to estimate the maximum the community would be willing to pay to reduce the adverse amenity and environmental impacts of litter. It provides the most appropriate measure of the costs of litter in the absence of observed market data on the amenity and environmental impacts of litter. The CIE study applies choice modelling to estimate Victorians' WTP to reduce litter considering different household and litter attributes. The study estimates an average WTP for reducing the amount of beverage container litter from moderate to low (66% reduction) as $2.88 per month for households ($2.95 per month, $2021/22). For this analysis, a $/ tonne value has been derived from the household WTP estimate by applying estimates of the total number of households in Victoria at the time of the analysis[42], the total quantity of beverage container litter in Victoria[43], and the impact of a 66% reduction in litter on the estimated total quantity of litter. The derived value is $26,683/ tonne of beverage container litter reduced in 2021/22. This value is assumed to increase linearly in the future in line with increases in median real disposable household incomes (projected at 0.6% per year) and the total number of households in Victoria (approximately 1.6% annual growth[44]). Thus, the WTP estimate increases year-on-year from $26,683/ tonne in 2021/22 to $32,563/ tonne in 2030/31 and $40,629/ tonne in 2040/41.

Acknowledging the uncertainty in WTP litter values, a separate avoided litter clean-up cost estimate has been estimated for application in sensitivity analysis (see Table 5.4). Presented in Table 5.9, the clean-up cost estimate of $29,110/ tonne has been calculated as a weighted average clean-up cost considering a proportional split of beverage container litter across different locations[45] and the cost of cleaning up litter in those locations. Marine clean-up cost estimates (bays, estuaries and oceans) have been adjusted upwards to account only for the litter that has been cleaned up. An estimated two thirds of marine litter ends up on the seabed and effectively therefore, cannot be cleaned up. Thus, the cost of marine litter clean-up has been adjusted upwards by 66%. Similarly, an estimated 20% of litter in waterways cannot be cleaned up, with the cost of waterways litter clean-up adjusted upwards by 20% of reflect this[46]. Litter clean-up costs and estimates of proportional litter splits have been derived from a range of sources[47].

41 Centre for International Economics (2019). *Willingness to pay for reduced litter in Victoria: Stated Preference Research*. Prepared for Victorian Department of Environment, Land, Water and Planning. May 2019.

42 ABS 3236.0 Household and Family Projections Australia 2016-2041

43 Marsden Jacob analysis drawing on a range of sources including the National Litter Index

44 Marsden Jacob analysis drawing on ABS 3236.0 Household and Family Projections Australia 2016-2041 and ABS data on average Household Income and Wealth. The estimated growth in real disposable incomes in Victoria of 0.6% could be conservative as the projections are based on growth in recent years, which has been quite low historically.

45 Run-off of litter from roads and similar locations is implicitly included in litter estimates for beaches, waterways, bays and estuaries, and oceans. This is because – unless caught in litter traps or similar pollution control devices – litter washed into stormwater drains will have one of the fates.

46 This is an imprecise method and may well understate litter clean-up costs in these locations.

47 Marsden Jacob analysis drawing on: National Litter Index (NLI) and Key Litter Index data; Clean-Up Australia data; APEC Marine Resources Conservation Working Group (2009). *Understanding the Economic Benefits and Costs of Controlling Marine Debris in the APEC Region*, APEC; Sustainability Victoria (2018). *Victorian Local Government Waste Services Report, 2019-20*.

Location	Clean-up cost ($/tonne)	% of litter
Urban streets and drains	808	25.4%
Parks and gardens	3,440	1.3%
Highways and bushland	21,298	35.3%
Urban beaches	3,439	2.0%
Non-urban beaches	6,987	2.0%
Waterways	16,734	17.7%
Bays and estuaries	28,551	10.3%
Oceans	254,103	6.0%
Weighted average	**29,110**	**100%**

Table 5.9: Estimated weighted average clean-up cost of beverage container litter

5.4.3 Redemption rates

Redemption rates of eligible containers under the different options are a key factor driving scheme costs, as well as potential reductions in litter. Given the multiplicity of factors affecting redemption rates it is not possible to be certain about the redemption rates that will be achieved under the different options. Factors likely to influence redemption rates include the level of access to refund collection points, the refund amount, population distribution and density, and social factors such as recycling and littering propensities. Evidence from other schemes in Australia provide some guidance on the likely redemption rates given levels of access to refund collection points and the refund amount. Redemption rates have typically been around 77-80% in SA over the last 10 years. In NSW, they are now in the range 64-68%, while in QLD they are about 60-62%[48].

Drawing on this information, data on community access standards in those jurisdictions and adjusting for differences in demographic and social characteristics between Victoria and the other jurisdictions, indicative estimates of redemption rates in Victoria have been plotted against the number of refund collection points (

[48] Source: Marsden Jacob (2021). *Australian Container Deposit Schemes: Performance Data Analysis and Comparison*.

Figure 5.16). The plots have been used to derive estimates of redemption rates under each of the options given the community access standards proposed under Options 1 and 2 (medium access), Option 4 (lower access) and Option 5 (higher access). A summary of these estimates is presented in Table 5.10. It is noted that the redemption rate in inner regional areas is equivalent or higher than in metro areas for medium and lower access levels. This reflects inner regional areas having more refund collection points per capita than metro areas, as shown in Table 4.2.

An increase in the refund amount from 10 cents to 20 cents (Option 3) is expected to significantly increase the redemption rate. Based on experience in SA when the refund amount was increased from 5 cents to 10 cents, the estimated increase in redemption rates, for any level of access has been estimated at approximately 10 percentage points.

	Estimated redemption rate			
Victorian community access standard	**Metro**	**Inner regional**	**Outer regional and remote**	**Total**
Medium access	71.7%	72.9%	64.8%	71.7%
Lower access	65.3%	70.3%	60.5%	66.0%
Higher access	75.2%	74.1%	73.0%	74.9%

Table 5.10: Estimated redemption rates in Victoria with a 10-cent refund[49]

Figure 5.16: Indicative relationship between refund collection point access and redemption rates, 10-cent refund

5.4.4 Material flows analysis model

The CBA was informed by a material flows analysis (MFA) model, which models physical container flows through the economy.

The analysis split the containers into several categories:

[49] Marsden Jacob analysis drawing on: PWC (2021) *Op Cit*; Marsden Jacob (2021) *Op Cit*

- Material (liquid paperboard (LPB), glass, polyethylene terephthalate (PET), high-density polyethylene (HDPE), and aluminium)
- Size of container (less than 150mL; 150-500mL; 500-1000mL; 1-1.5L; 1.5-3L; more than 3L)
- Region of consumption (metropolitan; inner regional; outer regional and remote)
- Place of consumption (public place; at home; commercial and industrial)
- Disposal pathway (CDS collection points; kerbside comingled recycling; kerbside glass recycling; kerbside garbage; litter)

The approach to the material flows modelling was very similar to that applied in the Packaging Impact Decision Regulation Impact Statement 2014 and discussed in detail in that report.[50] However, MFA data assumptions applied in this analysis have been substantially updated. The material flows data assumptions draw on numerous sources including audit data from the NSW CDS, Victorian waste and recycling data and Victorian demographic data.[51]

Data assumptions pertaining to beverage container consumption include:

- beverage container consumption in numbers of containers (see Appendix B, Table 11.1);
- numbers of containers per tonne for different material types, which is used to convert data on container numbers to mass of containers and vice versa (see Appendix B, Table 11.2);
- the percentage split of beverage containers by material type (see Appendix B, Table 11.3); and
- at home and away from home consumption splits (see Appendix B, Table 11.4).

Similarly, data assumptions relating to redemption rates of beverage containers and recycling rates of containers that have been redeemed were assessed for this analysis drawing on multiple data sources including data from the NSW, Queensland and South Australian schemes and NSW EPA and Sustainability Victoria MRF audit data. These include data assumptions on:

- take-up rate of participation in the CDS (see Appendix B, Table 11.5);
- redemption rates of containers under the different options (see Appendix B, Table 11.6);
- recycling/recovery rates of beverage containers redeemed through kerbside recycling bins (see Appendix B, Table 11.7); and
- recycling/ recovery rates of beverage containers that have been redeemed through CDS collection points – estimated at 99.7% for all materials.

Finally, estimates of the propensity to litter of beverage containers consumed in either public places or elsewhere (at home or at commercial and industrial sites) were based on analysis undertaken for the NSW CDS scheme, more recent analysis of NSW NLI and KLI data and adjusted based on the observed rate of litter in Victoria compared to NSW pre-CDS (see Appendix B, Table 11.8).

[50] Please reference the Packaging Impact Decision Regulation Impact Statement 2014

[51] Sources include NSW CDS and kerbside audit data, NSW Waste and Resource Recovery Data, Lion Nathan benchmarking data, Victorian kerbside data as detailed in Sustainability Victoria Annual Waste reports, ABS population projections (ABS 3222.0) and National Litter Index (NLI) and Key Litter Index (KLI) data.

6. Preferred option

A preferred option has been determined by assessing the options against three criteria:

1. a BCR significantly greater than one, which will provide a high benefit per unit of cost.
2. national consistency, which will reduce scheme compliance and operating costs for industry and reduce confusion for industry and consumers.
3. high community access standards, which will drive high redemption rates, and provide equity so that all Victorians are able to participate in the scheme.

All assessed options have positive NPVs and BCRs significantly greater than 1, indicating that any of the options will more likely than not deliver a net community benefit compared to the base case. While Options 3 and 5 have the highest NPVs and BCRs, as discussed in section 5.3.1 the differences in BCRs between the options are small and within the expected margins of error.

While there is clearly a correlation between setting a 20-cent refund amount (Options 3 and 5) and increased redemption the lack of consistency with other jurisdictions could cause confusion for retailers and consumers, particularly those that interact with schemes in multiple jurisdictions. It could also cause a flow of additional eligible containers from other jurisdictions into Victoria, as consumers seek a higher refund for their containers—this could increase scheme costs for Victorian beverage first suppliers and disproportionately affect beverage first suppliers that only supply into Victoria, such as small Victorian businesses. These concerns are also relevant to a scheme that has an expanded scope of eligible containers (Options 2 and 5).

Thus, while the CBA results indicate a case for introducing a CDS with a 20-cent refund, and an expanded scope, the lack of harmonisation of Options 2, 3 or 5 may have practical implications that could decrease the actual benefits relative to the modelled benefits. This could undermine support for the scheme and introduce risks to the scheme. However, the Victorian Government is working with other Australian states and territories to harmonise schemes across Australia, and these options could be considered as part of a coordinated approach in the future.

Option 4 (lower community access standards) seems likely to lead to a lower net community benefit than the other options. Under this option there would be lower scheme costs but also lower redemption rates beverage container recycling, and increased litter compared to other options. Furthermore, the lower community access standards will not achieve equitable access for all Victorians. For this reason, Option 4 also fails to meet all criteria.

By assessing options across all criteria, Option 1 is the only option that meets all three criteria and is the preferred option (Table 6.1). Changes to the CDS in the future, including a higher refund amount and expanded scope, could be considered at a later stage, as part of a nationally co-ordinated approach.

Option	BCR significantly greater than 1	National consistency	Community access
Option 1	✓	✓	✓
Option 2	✓	✗	✓
Option 3	✓	✗	✓
Option 4	✓	✓	✗
Option 5	✓	✗	✓

Table 6.1: Preferred option criteria

7. Implementation plan

The implementation of Victoria's CDS is outlined in Table 7.1. DELWP is responsible for achieving all aspects of the delivery of this project. Recycling Victoria, a new business unit of DELWP, will be responsible for the scheme once it has commenced.

Areas of work	Key outputs	Timing
Legislation *(complete)*	• Public consultation on scheme design • *Circular Economy (Waste Reduction and Recycling) Act 2021* enacted	November 2020 December 2021
Regulations	• Public consultation on draft regulations and RIS • Introduction of Circular Economy (Waste Reduction and Recycling) (Container Deposit Scheme) Regulations 2022	May 2022 September 2022
Tender and contracts	• Expression of Interest (EOI) for the scheme coordinator and network operator(s) roles closed • Request for Tender (RFT) for the scheme coordinator and network operator(s) roles closes • Appoint scheme coordinator and network operator(s)	December 2021 June 2022 September 2022
Network deployment	• Guidelines and refund collection points permitted under the *Victoria Planning Provisions* • Rollout of refund collection points	October 2022 By scheme commencement in 2023
Monitoring and evaluation	• Annual scheme reports • Annual litter reports • An independent review of pricing impacts	Ongoing once the scheme commences

Table 7.1 Staged implementation of Victoria's CDS

7.1 Legislation

In April 2021, the Minister for Energy, Environment and Climate Change formally announced key elements of the scheme design, including the split responsibilities governance model, a competitive tender process, an in-arrears payment model, the 10-cent refund amount, and the broad alignment of eligible containers with other schemes.

Extensive consultation in 2020 informed the *Circular Economy (Waste Reduction and Recycling) Act 2021*. The Act establishes the legal framework for the CDS, including the roles of the scheme coordinator and network operator(s).

7.2 Regulations

The Victorian Government has prepared draft regulations and this RIS, outlining the analysis behind some policy decisions. The regulations will outline specific requirements of the CDS, including eligible containers, the refund amount, refund marking requirements, requirements of the scheme coordinator and network operator(s) in carrying out their functions, reporting requirements, community access standards and penalties.

Before the Victorian CDS commences, a permanent exemption from the *Commonwealth Mutual Recognition Act 1992* (MRA) and the *Trans-Tasman Mutual Recognition Act 1997* (TTMRA) is needed. These Mutual Recognition Acts allow for goods lawfully produced in or imported into one jurisdiction to be sold in another jurisdiction without compliance to 'further requirements' that might otherwise be required under the laws of the importing jurisdiction.

When the Victorian CDS commences, it will require all eligible containers sold in Victoria to carry a label that meets the requirements prescribed in regulations. Further, beverage first suppliers will need the eligible

containers to be approved and will need to enter into a supply arrangement with the scheme coordinator. These requirements, and some other elements of the scheme, may be considered to impose 'further requirements' under the MRA and the TTMRA. For this reason, an exemption from the MRA and TTMRA is required.

7.3 Tender and contracts

The Victorian Government is conducting a competitive two-stage tender process to appoint entities to the scheme coordinator and network operator roles. This involves an open Expression of Interest (EOI) followed by a closed Request for Tender (RFT).

In August 2021, DELWP conducted an online market update forum, which was designed to promote and provide an overview of the upcoming EOI process, provide an opportunity for questions and answers, and generate industry interest.

Following this, an advanced tender notice was posted on the Buying for Victoria website, to further ensure that any interested organisations registered on the Buying for Victoria website were aware of the upcoming procurement process.

The EOI for the scheme coordinator and network operator roles was held from 18 November 2021 to 23 December 2021. This process was advertised on the Buying for Victoria website and was open to any interested parties. During this period, DELWP held an EOI Stakeholder Briefing, which provided an overview of the EOI specifications, clarified the process and provided an opportunity for questions and answers.

In early 2022, DELWP evaluated EOI responses, and notified respondents of the outcome. Shortlisted respondents were invited to participate in the RFT process for either a scheme coordinator or network operator role. The RFT was issued on 28 April 2022 and will be open for six weeks.

The Victorian Government expects to appoint the scheme coordinator and one or more network operators by September 2022 and the State will have a direct contract with each of the appointed parties.

7.4 Network deployment

Upon appointment by the Victorian Government, the network operator(s) will be responsible for establishing and managing collection points, including subcontracting directly with collection point operators as required. It will take time to establish the refund collection point infrastructure and ensure systems are fully operational before the scheme can commence. Network operator(s) must meet the mobilisation requirements of the phased rollout of operational refund collection points to ensure Victoria's scheme commences with an accessible network for all Victorians. The network operator(s) will also be responsible for organising logistics including transport between refund collection points, processors, MRFs and recyclers.

Network operator(s) will also be responsible for obtaining any necessary approvals, including planning permits where required, to operate refund collection points and for negotiating site access with landowners and occupiers.

DELWP is reviewing the Victoria Planning Provisions to ensure that Victoria's planning system addresses and supports the timely delivery of the CDS in Victoria. In mid-2022, DELWP will consult with targeted stakeholders on the approach to facilitate a consistent and fit-for-purpose state-wide approach to establish refund collection points in Victoria. Post-consultation, DELWP will develop planning provisions for CDS infrastructure which will assist in the prompt roll out of refund collection points from October 2022.

After the appointment of the scheme coordinator and network operator(s), the Victorian Government will provide more information about Victoria's CDS and deliver state-wide public education to help consumers make best use of the scheme when it commences in 2023.

Both the scheme coordinator and network operator(s) will have roles to play in communication and community education to deliver a scheme with a simple, effective, and positive customer experience for Victorians. The scheme coordinator will be responsible for scheme-wide communications and promotion to ensure Victorians have a sufficient understanding of how the scheme works and how to participate. The network operator(s) will be responsible for providing the payment platform technology that enables

consumers to receive refunds for eligible containers returned to a refund collection point; this may be in the form of a mobile application.

7.5 Recycling Victoria

Recycling Victoria will have a key role in establishing and running Victoria's CDS.

Before the CDS begins, Recycling Victoria will publish guidelines for scheme participants. This will include guidelines on the obligations for beverage first suppliers, which will define which beverage suppliers will need to make financial contributions to the scheme, the approval process for eligible containers, and the MRF and Local Government Refund Sharing Protocols for estimating and sharing refunds between MRFs and local government for eligible containers collected through kerbside services.

Recycling Victoria will need to ensure that scheme participants adhere to their obligations under the CDS legislation, regulations and contracts, including that the scheme coordinator and network operator(s) achieve their contractual key performance indicators, fulfil their data and reporting requirements, use the appropriate scheme branding, and interact with all other scheme participants fairly. The Head of Recycling Victoria and the Minister can give written directions to the scheme coordinator and network operator(s) relating to the performance of their functions.

Recycling Victoria will also be responsible for compliance and enforcement across the scheme. This will include ensuring beverage first suppliers only provide and retailers only sell eligible containers that meet the scheme's labelling requirements, investigating reports of beverage first suppliers that have failed to fulfil their obligations under the scheme, and ensuring that collection point operators adhere to their requirements for paying refunds to consumers.

Recycling Victoria will be responsible for establishing and maintaining a database of container types approved by the scheme. This will require developing an online portal for beverage first suppliers, and a process for approving or rejecting container registrations.

8. Evaluation Strategy

The Victorian Government via Recycling Victoria will have oversight of the CDS to ensure the scheme is being managed with integrity and the desired policy objectives are achieved.

Recycling Victoria will have sufficient powers to monitor the scheme and manage the performance of the scheme coordinator and network operators, including access to scheme data and an ability to perform audits of scheme participants as required.

Table 8.1 outlines an evaluation framework with indicative high-level performance measures to determine the performance and effectiveness of the scheme. This is a non-exhaustive list of measures with the scope to further define additional measures, performance targets and evaluation mechanisms in the contracts between scheme participants.

Evaluation measures and provider	How will it be done?	When will it be done?
Redemption rates provide a high-level indication of overall scheme performance.		
Scheme coordinator: • Scheme redemption rate	Comparison to other Australian schemes	Annual reporting to Recycling Victoria
Beverage container litter reduction rates demonstrate the effectiveness of scheme for litter reduction.		
Scheme coordinator: • Beverage container litter rates	Victorian litter audits will be conducted each year to measure beverage container litter in Victoria. A national methodology will be used.	Annual reporting to Recycling Victoria. *DELWP will undertake baseline litter audits prior to scheme commencement*.
Accessibility of the collection network indicates equity of consumer access across state.		
Network operator(s): • Number of refund collection points • Operating hours of collection points • Each collection point fulfils minimum operational requirements, such as accepting all eligible containers, signage and branding requirements and occupational, health and safety requirements.	Assessment against performance targets prescribed by regulations and contracts	Monthly reporting to Recycling Victoria
Pricing impacts on beverages measure how scheme costs have been passed on by the beverage sector to industry and consumers.		
Victorian Government: • Pricing impacts on beverages	An independent review of pricing impacts	During the first 12 months of scheme operation
Scheme rollout ensures the scheme is ready at scheme commencement		
Network operator(s): • Minimum network requirements for scheme commencement	Assessment against performance targets prescribed by regulations and contracts	At scheme commencement
Scheme coordinator:		

Evaluation measures and provider	How will it be done?	When will it be done?
• Preparedness of scheme for commencement, including beverage first suppliers are signed up, and online platform, website, and required instruments are ready		
Consumer awareness ensures the scheme is meeting the needs and expectations of consumers.		
Scheme coordinator: • Scheme awareness	Assessment against requirements prescribed by contracts, using an independent survey	Annually
End fates of materials measures that circularity is being achieved.		
Network operator(s): • Percentage of containers sold for recycling	Assessment against requirements prescribed by legislation, regulations and contracts	Annually
Scheme audits measure the integrity of the scheme.		
Network operator(s): • Refund collection points audits	Assessment against requirements prescribed by contracts.	Network operator(s) to audit all refund collection points annually.
Scheme coordinator: • Network operator audits • MRF audits • Refund collection point audits • Beverage first supplier audits • Correct and timely payment flows		Scheme coordinator to conduct all audits quarterly. Scheme coordinator to report to Recycling Victoria about payment flows weekly.

Table 8.1 Proposed evaluation measures for CDS

9. Consultation

There has been strong support for a CDS in Victoria from stakeholders and the public. Consultation with stakeholders and the public has informed the draft regulations and this RIS.

9.1 Public consultation on scheme design

In November 2020, DELWP consulted on a discussion paper detailing the proposed governance model of the Victorian CDS and some key design elements of the scheme. The public consultation comprised two online surveys via the Engage Victoria website, formal written submissions, and workshops with the general community, industry, environment and community groups, and local government. We received valuable feedback from more than 3,000 respondents.

During the consultation, we heard that all stakeholder groups (and 93% of survey respondents) supported the objectives proposed to underpin Victoria's scheme design (circularity of beverage containers, enabling a product stewardship approach model that fosters shared responsibility and delivering a best practice scheme for Victoria). Most stakeholder groups (and 83% of survey respondents) supported the split responsibilities governance model as the right one for Victoria. The consultation report is available at: https://engage.vic.gov.au/container-deposit-scheme.

9.2 Ongoing stakeholder consultation

9.2.1 Container Deposit Scheme Industry Advisory Group

In June 2020, the Container Deposit Scheme Industry Advisory Group (Advisory Group) was established to gather feedback from key stakeholder groups to provide expert advice and knowledge to ensure the scheme is the best fit for Victoria. The Advisory Group includes representatives from the beverage and recycling industry, local government, community and environmental groups.

DELWP has consulted with the Advisory Group on the following regulatory issues (meetings held in other months did not involve discussions about the design of regulations):

Date	Topic
August 2021	CDS commercial model, including ownership of materials and network operation
September 2021	Beverage first supplier responsibilities and requirements for small beverage first suppliers, refund making and barcode requirements, eligible containers and considerations for containers that are damaged, contaminated or are missing their label.
October 2021	Eligible container approvals, scheme coordinator governance and refund collection point agreements and requirements
December 2021	Community access standards, MRF Protocol and Local Government Refund Sharing Protocol
March 2022	Material sales process

Table 9.1: Regulatory topics discussed with the Advisory Group

9.2.2 Community Organisations Reference Group

In June 2021, DELWP established a Community Organisations Reference Group (CORG) comprised of senior representatives from charities, sporting associations and community organisations. The group provides information and feedback to help maximise their participation in Victoria's CDS. DELWP has consulted with the CORG about how community organisations can participate in the CDS, including receiving donations, hosting refund collection points, and managing refund collection points.

9.3 Public consultation on CDS regulations

The RIS supports informed and effective consultation by enabling stakeholders to comment on the detailed analysis, evidence and judgements being considered by the Victorian Government. There has been consultation with key industry, community and local government stakeholders to inform the RIS.

DELWP will consider all submissions received during the period of public review. DELWP will prepare a formal Response to Public Comment summarising the submissions received during the consultation. The Response to Public Comment document will be made available on Engage Victoria.

10. Appendix A – Cost and benefit assumptions

	Unit	Unit value	Notes / comments	Source
Government costs				
Development cost (scheme wide)	Lump sum	5,715,000	Cost incurred over two years (2022/23 and 2023/24). Development costs are based on budget allocated to the establishment of the CDS. Cost is assigned to each region based on container throughput	Cost estimates provided by DELWP
Ongoing administrative cost (scheme wide)	$/year	923,900	Cost is assigned to each region based on container throughput. Ongoing administrative costs are based on analysis of other jurisdictions and expected scheme overheads	
Container approvals	$/container	105.2	Container approvals apply to existing and new containers into the scheme. Once a container is approved, there is no reapplication process. This assumption is based on modelling of Year 1 approvals and draws on the experience of the introduction of the NSW scheme. It assumes an average of 60.5 minutes per container approval averaged across staff at different VPS levels (resulting in a wage and overheads estimate roughly equivalent to that of a VPS 4.2 staff member). This accounts for a range of supporting activities including administration, assessment, correspondence and stakeholder liaison. This also includes $540k of overheads such as establishing and maintaining IT systems to manage container registrations. Year 1 assumes 24,989 containers approved.	
Industry costs				
Scheme coordinator capex - systems / IT (scheme wide)	Lump sum	7,890,512	Incurred every 3 years based on the asset life estimate.	MJA analysis of NSW CDS costs data (unpublished), recalibrated to Victorian conditions
Scheme coordinator - business setup cost (scheme wide)	Lump sum	9,587,238		
Scheme administration – ongoing (scheme wide)	$/year	4,170,699		
Compliance - labelling (scheme wide)	$/year	5,000	Cost per supplier for new labelling.	

	Unit	Unit value	Notes / comments	Source
Compliance - reporting (scheme wide)	$/year	669,410		
Scaling factor - scheme administration - extended scope		1.2	Factor to account for extended scope requiring more scheme administration given the larger numbers of beverage first suppliers. Applied to ongoing scheme administration costs and ongoing industry compliance costs.	
Container approvals	$/container	43	Time taken by industry to complete container approvals is estimated at one hour on average per container at an FTE cost of $85,000 per year.	Based on DELWP analysis of NSW scheme
Participation costs				
Consumer participation (metro)	$/container	0.0107	Based on travel time cost, actual participation time at collection point and container throughput. Travel costs and redemption costs are higher per trip for regional consumers, but on average more containers are collected per household and less trips are dedicated for the purpose of CDS collection.	MJA analysis
Consumer participation (regional)	$/container	0.0092		
Consumer participation (remote)	$/container	0.0073		
Business participation (scheme wide)	$/year	3,409,404	These costs are re-scaled in the CBA based on throughput/ redemption vs. Option 1 (i.e. the base cost is calibrated against Option 1 throughput)	MJA analysis of NSW CDS cost data, recalibrated to Victorian conditions
Collection and transport costs				
Recyclables (metro)	$/tonne	102		MJA analysis drawing on previous analysis for ESC Victoria, EPA Tasmania, IPART NSW and City of Moreland
Recyclables (non-metro)	$/tonne	157		
Garbage (metro)	$/tonne	78		
Garbage (non-metro)	$/tonne	108		
MRF/CDS reject to landfill	$/tonne	30		
MRF Processing				
Processing - redemption of CDS material (metro)	$/tonne	113	Processing costs at the MRF are higher for CDS material because it is processed to a higher quality. Kerbside material has higher contamination rates and in turn receives a lower value in the market.	MJA analysis drawing on previous analysis for ESC Victoria,
Processing - kerbside (metro)	$/tonne	98		

	Unit	Unit value	Notes / comments	Source
Processing - redemption of CDS material (Regional)	$/tonne	124		EPA Tasmania, IPART NSW and City of Moreland
Processing - kerbside (Regional)	$/tonne	108		
CDS infrastructure				
RVM (metro)	$/container	0.03018	Per container cost based on capital and operating costs, collection point type split, and access standards.	MJA analysis drawing on evidence from schemes operating in other jurisdictions[52] and unpublished industry data
RVM (regional)	$/container	0.03894		
RVM (remote)	$/container	0.05119		
OTC (metro)	$/container	0.03510		
OTC (regional)	$/container	0.03812		
OTC (remote)	$/container	0.03733		
Depot (metro)	$/container	0.02049		
Depot (regional)	$/container	0.02417		
Depot (remote)	$/container	0.04359		
Baling for transport	$/container	0.00367		MJA analysis drawing on analysis for NSW CDS scheme, re-calibrated to Victorian conditions
Transport depot - supercollector (metro)	$/container	0.0061		
Transport depot - supercollector (regional)	$/container	0.0086		
Transport depot - supercollector (remote)	$/container	0.0109		
Processing cost aggregator	$/container	0.001		
Landfill operation, development and externalities				
Landfill operation (metro)	$/tonne	51		MJA analysis drawing on industry data
Landfill operation (non-metro)	$/tonne	70		
Landfill avoided development cost	$/tonne	14.7		
Landfill externalities - non-greenhouse gas	$/tonne	8.55		MJA analysis for NSW EPA[53]
Landfill externalities - greenhouse gas (metro)	$/tonne	37	Higher cost in non-metro areas reflects assumed lower rate of landfill gas capture or flaring	MJA analysis

[52] Marsden Jacob 2021, Australian Container Deposit Schemes: Performance Data Analysis and Comparison, Prepared for Department of Land, Water, Environment and Planning

[53] Marsden Jacob Associates, 2021. 20-Year Waste Strategy, Economic Analysis, Report to NSW EPA, March 2021

	Unit	Unit value	Notes / comments	Source
Landfill externalities - greenhouse gas (non-metro)	$/tonne	88		
Value of recyclates via MRF				
Paper/ cardboard	$/tonne	0	Projected medium term values	MJA analysis drawing on various sources[54]
Glass	$/tonne	-30	Once glass bin is introduced, it is assumed the value for glass increases to the CDS glass value to reflect the higher quality of material with less contamination.	
PET	$/tonne	300	Projected medium term values	
HDPE	$/tonne	450		
Aluminium	$/tonne	1,250		
Value of recyclates via CDS				
Paper/ cardboard	$/tonne	140	Projected medium term values	MJA analysis drawing on various sources[55]
Glass	$/tonne	70		
PET	$/tonne	450		
HDPE	$/tonne	550		
Aluminium	$/tonne	1,250		

Table 10.1: Detailed cost and benefit assumptions (all values are in $2021/22)

[54] Sources include: Australian Packaging Covenant Organisation (APCO), et al. 2018. *Market Impact Assessment Report Chinese Import Restrictions for Packaging In Australia*, March 2018; Envisage Works, IndustryEdge and Sustainable Resource Use, Recovered Resources Market Bulletins, various; Marsden Jacob Associates and Envisage Works, 2018. Analysis of CDS materials and reprocessing opportunities, prepared for Reloop Pacific, October 2018; SRU, 2019. Recycling market situation Summary Review, Report to the Australian Government Department of Energy and Environment, September 2019.

[55] Ibid

11. Appendix B – Material flow assumptions

Item	Unit	Unit value	Notes / comments
Quantity of containers consumed in 2021-22	billion items	3.31	These quantities are scaled each year based on forecast population growth

Table 11.1: Consumption of beverage containers in base year, 2020-21[56]

Material type	Number of containers (per tonne)
Paper/Carboard	46,629
Glass	3,311
PET	37,167
HDPE	17,911
Aluminium Cans	82,041
Steel Cans	15,102
Other plastic	27,300

Table 11.2: Number of containers per tonne[57][58]

Material type	≤ 1 litre	> 1 litre
LPB	5%	0.2%
Glass	28%	0.1%
PET	18%	12%
HDPE	0.4%	2%
Aluminium	34%	0.2%

Table 11.3: Eligible containers percentage by material type[59]

[56] Source: MJA analysis of multiple data sources, as described in Section 2.2.1

[57] Source: MJA analysis of multiple data sources

[58] Source: MJA analysis of multiple data sources including NSW EPA, Return and Earn and Sustainability Victoria CDS, MRF and bin audit data

[59] Note: Only Option 1 is included here, but the proportions are very similar across all options.

Material	At home	Public Place	Commercial and industrial
LPB	30.0%	60.0%	10.0%
Glass	75.0%	15.0%	10.0%
PET (<= 1 Litre)	50.0%	40.0%	10.0%
PET (> 1 Litre)	80.0%	10.0%	10.0%
HDPE (<= 1 Litre)	80.0%	10.0%	10.0%
HDPE (> 1 Litre)	80.0%	10.0%	10.0%
Aluminium Cans	70.0%	20.0%	10.0%
Total Beverages (# of containers)	**67.9%**	**22.1%**	**10.0%**
Total Beverages (tonnes)	**73.6%**	**16.4%**	**10.0%**

Table 11.4: At home and away from home consumption splits[60]

Year	2023-24	2024-25	2025-26 onward
Participation	60%	80%	100%

Table 11.5: Ramping of CDS participation (maturity of scheme participation = 100%)[61]

Option	Metro	Inner regional	Outer regional & remote
1	71.7%	72.9%	64.8%
2	71.7%	72.9%	64.8%
3	89.2%	90.7%	80.6%
4	65.3%	70.3%	60.5%
5	93.5%	92.1%	90.8%

Table 11.6: Redemption rates of eligible containers (through both CDS collection points and kerbside/MRFs)[62][63]

[60] *Source: MJA analysis of multiple data sources*

[61] Source: MJA analysis drawing on assessment of schemes in other jurisdictions

[62] Under all options 79% of redemptions are assumed to occur through CDS collection points, with 21% of redemptions occurring through kerbside bins.

[63] Source: MJA analysis as described in section 5.2.3

	All scenarios	Base case	Option 1	Option 2	Option 3	Option 4	Option 5
	Pre-glass bin	Post-glass bin	Post-glass bin & post-CDS	Post-glass bin & post-CDS	Post-glass bin & post-CDS	Post-glass bin & post-CDS	Post-glass bin & post-CDS
LPB	85.4%	92.8%	96.8%	96.8%	98.0%	96.8%	98.0%
Glass	65.4%	65.4%	65.4%	65.4%	65.4%	65.4%	65.4%
PET	82.9%	91.9%	96.4%	96.4%	97.8%	96.4%	97.8%
HDPE	82.9%	91.9%	96.4%	96.4%	97.8%	96.4%	97.8%
Aluminium	96.4%	96.4%	98.4%	98.4%	99.0%	98.4%	99.0%

Table 11.7: Recovery rates for kerbside/collection – commingled recycling[64][65]

Table 11.8 Propensity to litter beverage containers, base case and options[66]

Public place propensity to litter	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038-42
Base case	8.72%	8.64%	8.57%	8.49%	8.41%	8.34%	8.26%	8.19%	8.12%	8.04%	7.97%	7.90%	7.83%	7.76%	7.69%	7.62%	7.55%
Option 1	8.72%	8.64%	6.72%	5.93%	5.09%	4.90%	4.71%	4.67%	4.60%	4.54%	4.48%	4.42%	4.36%	4.32%	4.28%	4.24%	4.21%
Option 2	8.72%	8.64%	6.69%	5.89%	5.05%	4.85%	4.66%	4.62%	4.56%	4.49%	4.43%	4.37%	4.31%	4.27%	4.23%	4.20%	4.16%
Option 3	8.72%	8.64%	6.35%	5.41%	4.42%	4.21%	3.99%	3.96%	3.90%	3.84%	3.78%	3.72%	3.66%	3.63%	3.60%	3.56%	3.53%
Option 4	8.72%	8.64%	6.88%	6.16%	5.39%	5.21%	5.03%	4.98%	4.92%	4.86%	4.79%	4.73%	4.67%	4.63%	4.59%	4.55%	4.50%
Option 5	8.72%	8.64%	6.21%	5.22%	4.17%	3.95%	3.73%	3.70%	3.63%	3.58%	3.52%	3.46%	3.40%	3.37%	3.34%	3.31%	3.28%
All other propensity to litter	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038-42
Base case	0.11%	0.11%	0.11%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.09%	0.09%	0.09%
Option 1	0.11%	0.11%	0.11%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.09%	0.09%	0.09%
Option 2	0.11%	0.11%	0.11%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.09%	0.09%	0.09%
Option 3	0.11%	0.11%	0.11%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.09%	0.09%	0.09%
Option 4	0.11%	0.11%	0.11%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.09%	0.09%	0.09%
Option 5	0.11%	0.11%	0.11%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.09%	0.09%	0.09%

[64] Source: MJA analysis of multiple data sources including NSW EPA and Sustainability Victoria MRF audit data

[65] Note, removing glass contamination from the comingled bin is assumed to increase recovery of other materials (because there is less contamination of those materials) but does not improve the recovery rate of glass that is still being deposited in the comingled bin. However, glass deposited in the glass only kerbside bin is assumed to have a recovery rate of 95%.

[66] Source: MJA analysis. Note propensities continue to fall under the base case and options after 2030

12. Appendix C – Details of distributional and price impacts

Distributional analysis has been undertaken on the impact of implementing each of the options on key industry and societal groups. The distributional impact analysis builds on the costs and benefits assessed in the CBA across these groups, with transfers[67] between these groups also added into the analysis. For the purposes of the distributional analysis, the beverage industry is assumed to include the net costs and transfers incurred by scheme and network operator(s).

The transfers estimated for this analysis comprise (with payee and recipient in parenthesis):

- Landfill levy paid for eligible container waste sent directly from waste collections to landfills in each of metropolitan and regional levy areas (paid by local government and businesses to Victorian Government). This would decline under the CDS.
- Landfill levy paid for eligible container waste sent to landfill via CDS collections and recycling collections in each of metropolitan and regional levy areas (paid by MRFs to the Victorian Government). This should decline under a CDS.
- Fee payments from the network operator (and funded by the beverage industry) to collection point operators for each eligible container collected by each collection point operator using RVMs, automated depots and OTC (paid by beverage industry to collection point operators).
- Value of refund for eligible containers that are not returned through refund collection points[68] (paid by non-redeeming consumers to beverage industry).
- Value of refunds paid to MRFs by the scheme coordinator (and funded by the beverage industry) for eligible containers collected through kerbside recycling[69] (paid by beverage industry to MRFs). This represents part of the transfer identified above for consumers.
- Value of refunds paid to MRFs and then shared with local government. This is assumed to be one-half of the amount received by MRFs.
- Value of GST paid on the refund. This value is paid to the Commonwealth Government but is assumed to return entirely to the Victorian Government.[70] (Paid by all consumers to Commonwealth and then to Victorian Government)

In the above explanation, it is noted that consumers pay the deposit to beverage suppliers (through retailers). The actual change in the price of beverages supplied through eligible containers may or may not equal the value of the deposit (either 10-cent or 20-cent). As discussed above, the cost impact on beverage companies decreases (increases) in line with the rate of redemption (higher redemption rates lead to higher funding requirement for beverage first suppliers, lower redemption rates lead to lower funding requirement or possibly savings for beverage first suppliers).

67 Transfers are financial exchanges between groups that involve a financial benefit to one group and a corresponding loss to another group but no net economic impact. Government taxes are an example of a transfer.

68 Consumers pay a deposit on all beverages supplied in eligible containers, with the deposit being transferred to beverage producers (via retailers). Where the 'consumer' redeems the deposit, the deposit is transferred back to the consumer and there is no net transfer. Where the 'consumer' does not redeem the deposit, either from the container being sent to landfill/litter or being recycled through the kerbside recycling bin, there is a net transfer from the consumer to the beverage supplier or to the MRF (in the case of containers disposed via the kerbside recycling bin). Note, redeeming 'consumers' represent beverage purchasers who directly redeem their deposit, groups that collect eligible containers, say, from litter or bins, and donations to charitable organisations. Further transfers are shown in following points.

69 This comprises part of the transfer from consumers via beverage suppliers.

70 We note that the actual recovery of GST by Victoria may be slightly lower than 100%. If this were explicitly modelled, this difference would be transferred to other States and Territories without changing the quantum of transfer from consumers. Therefore, a trivial amount of this transfer to the Victorian Government leaks to other jurisdictions.

The analysis does not explicitly model the price change paid by consumers for beverages resulting from introduction of the CDS (sometimes referred to as the 'ticket' price impact).[71] Instead, the modelled impacts on consumers shows the average impact faced by consumers, including both those consumers who redeem their refund (i.e. the ticketed price increase less the deposit) and those consumers who do not redeem their refund (i.e. the actual price increase). The figures presented in the table are therefore the average impacts across all consumers. These have been estimated over the entire period of analysis.

	Option 1	Option 2	Option 3	Option 4	Option 5
Consumers	-$0.0342	-$0.0341	-$0.0600	-$0.0318	-$0.0624

Table 12.1: Overall cost impact of CDS on consumers ($/container) after accounting for consumers who redeem their refund – (assuming neutral impact on beverage industry)

Price impacts have been modelled on the basis that the net impact of the scheme on beverage first suppliers, after allowing for scheme costs and transfers, is neutral. This neutral position is premised on an assumption that the industry operates in a competitive market. They will therefore pass on all costs of the scheme and but also deduct from these costs any savings (e.g. resulting from unredeemed containers). This is consistent with post-implementation reviews of other schemes, which indicate that there has not been any price gouging by beverage suppliers.

In the case of the NSW scheme, for example, IPART reported analysis suggests that the impact of the scheme there has been to increase average ticket prices for beverages supplied in eligible containers by 7.7 cents per eligible container.[72] IPART then compared this price change with its analysis of the change in financing for beverage first suppliers.[73] The cost of financing the scheme in the first year was estimated to be 9.3 cents per eligible container.[74]

Notionally, this 7.7 cents per eligible container ticket price impact is the equivalent of a 3.7 cents per eligible container overall impact on consumers after allowing for the value of the redeemed refund by 60% of consumers who redeem the refund (and therefore effectively pay 2.3 cents per eligible container less as a result of the scheme) and the 40% of consumers who do not redeem their refund (and therefore pay the full 7.7 cents per eligible container price impact). This 3.7 cents per eligible container quite closely approximates the 3.4 cents per eligible container overall impact that has been modelled in this analysis for Option 1[75].

Reversing this approach, for Option 1 the notional 'ticket' price impact averages 7.6 cents per eligible container across the entire analysis period.[76]

[71] Prices are more likely to reflect the actual costs for low value items, while for products such as higher value wine and spirits which typically set their price at higher price points ($25.99), the deposit may not be reflected in the price.

[72] This comprised 10.1c/container for non-alcoholic beverages and 5.1c/container for alcoholic beverages. IPART (2018), *NSW Container Deposit Scheme: Monitoring the impacts on container beverage prices and competition*, p.31

[73] This comprised the funding provided by the beverage suppliers for deposit redemption and the cost of its scheme.

[74] IPART (2018), p, 27.

[75] Note, the small difference between the two figures can largely be explained by the analysis for this period covering the entire analysis period whereas the IPART analysis was only for the first year of the NSW scheme.

[76] Note, all of these calculations use NPV estimates.