



**FINAL REPORT**

APRIL 2018

## A Model Framework for a Container Refund Scheme in Tasmania

Report prepared for EPA Tasmania

**Marsden Jacob Associates**

Financial & Economic Consultants

ABN 66 663 324 657

ACN 072 233 204

Internet: <http://www.marsdenjacob.com.au>

E-mail: [economists@marsdenjacob.com.au](mailto:economists@marsdenjacob.com.au)

Melbourne office:

Level 4, 683 Burke Road, Camberwell

Victoria 3124 AUSTRALIA

Telephone: 03 9882 1600

Perth office:

Level 1, 220 St Georges Terrace, Perth

Western Australia, 6000 AUSTRALIA

Telephone: 08 9324 1785

Sydney office:

119 Willoughby Rd

Crows Nest NSW 2068

Copyright © Marsden Jacob Associates Pty Ltd 2018

This professional analysis and advice in this report has been prepared by Marsden Jacob Associates for the exclusive use of the party to whom it is addressed the Client.

This report is supplied in good faith and reflects the knowledge, expertise and experience of the consultants involved. In conducting the analysis for this report Marsden Jacob Associates has endeavoured to use what it considers is the best information available at the date of publication, including information provided by the Client.

Although Marsden Jacob Associates exercises reasonable care in its analysis and when making forecasts or projections, factors in the process (such as future market behaviour) are inherently uncertain and cannot be forecast or projected reliably. Marsden Jacob Associates makes no representation or warranty as to the accuracy of any calculation, projection, assumption or estimate contained in this report.

The report must not be published, quoted or disseminated to any other party without Marsden Jacob Associates' prior written consent.

**ECONOMICS | POLICY | MARKETS | STRATEGY**

Brisbane

Melbourne

Perth

Sydney

## TABLE OF CONTENTS

	Page
<b>Key findings</b> .....	<b>v</b>
<b>Recommendations</b> .....	<b>vi</b>
<b>Executive summary</b> .....	<b>xi</b>
<b>1. Introduction</b> .....	<b>1</b>
1.1 Background.....	1
1.2 Scope of analysis .....	2
1.3 Structure of this report .....	5
<b>2. Major features of a CRS</b> .....	<b>6</b>
2.2 Overall scheme structure.....	8
2.3 Objectives of a CRS scheme.....	16
2.4 Eligible containers and beverages .....	20
<b>3. Scheme governance and administration</b> .....	<b>23</b>
3.1 Overview of alternative governance models .....	25
3.2 Governance in other jurisdictions.....	25
3.3 Potential Tasmanian model .....	33
<b>4. Scheme operations</b> .....	<b>37</b>
4.1 Refund and donation points.....	39
4.2 Logistics .....	51
4.3 Processing and sale of material to recyclers .....	51
4.4 Interaction with the existing kerbside system.....	53
4.5 Audit and record keeping processes.....	57
<b>5. Planning and implementation</b> .....	<b>59</b>
5.1 Implementation timing.....	59
5.2 Advisory group .....	60
5.3 Scheme information and education .....	61
5.4 Start-up funding .....	61
<b>6. Financial and material flows modelling</b> .....	<b>63</b>
6.1 Modelling purpose and approach.....	63
6.2 Material flows.....	65
6.3 Scheme financial analysis .....	69
6.4 Costs of the scheme for state government.....	74
<b>References</b> .....	<b>76</b>
<b>Appendix 1:Stakeholder engagement</b> .....	<b>78</b>
<b>Appendix 2:Material flows assumptions</b> .....	<b>79</b>
<b>Appendix 3: Cost assumptions</b> .....	<b>83</b>



## Glossary

Term	Description
CDS	Container deposit scheme. A scheme through which a deposit is applied to beverages sold to consumers in all eligible containers. When empty eligible containers are then returned to a redemption point for recycling a refund of the deposit is provided to the redeemer.
CRS	Container refund scheme. Similar to a CDS except that deposit values and scheme costs only apply to redeemed eligible containers.
Collection point	A place, formal or informal, where consumers can take their containers. Informal or donation points are not obliged to pay a refund.
Donation point	A deposit point for containers that is not obliged to pay a refund.
Eligible container	A container for which a consumer is eligible to receive a refund
First supplier vs brand owner	First supplier is typically the manufacturer of a beverage. The brand owner in contrast is the business that owns the brand; in the case of beverages made under contract these two entities will differ.
Liable entity	A container may enter Tasmania from a manufacturer, a wholesaler or a retailer. The liable entity is the one that must pay towards the provision of the Scheme.
MRF	Material recovery facility. Typically provides facility for kerbside recycled materials to be processed
Network operator	Organisation responsible for running the operations of the Scheme. The network operator may be the Scheme Co-ordinator. The network operator is responsible for ensuring containers are efficiently processed from refund point to recycler
Processors	Businesses or organisations that are registered to receive redeemed containers and process them, through sorting and baling/crushing, ready for recycling
PSO	Product stewardship organisation
Recycled containers / recycling rate	This is the number of containers that are sent for recycling from MRFs or Processors through the Scheme. It will be less than the number of redeemed containers where these latter are not of sufficient quality to be recycled.  The recycling rate is the proportion of recycled containers to eligible containers
Recyclers	Usually businesses that receive recyclable material and put it to a beneficial use. A type of recycler is a re-use facility which takes recyclable objects and processes them for original use.  Recyclers under the Scheme will be those businesses registered to receive recyclable material.
Redeemed containers / Redemption rate	A redeemed container is one for which a payment is made for a returned container either through a refund point or via a MRF  The proportion of total eligible containers consumed that are returned for a refund payment either through a refund point or via a MRF
Refund point	A formal authorised collection point which is obliged to pay consumers their deposit.

Refund rate	The proportion of eligible containers that are redeemed via a refund point
Refund-based vs deposit-based scheme	A refund-based scheme is where suppliers pay for redeemed containers (and costs associated with the scheme). A deposit-based scheme is where suppliers pay for each eligible container irrespective of whether redeemed.
Retailer obligation	A situation where retailers selling beverages in eligible containers are obliged to accept empty containers and pay a refund. This obligation may be limited to only some retailers.
RVM	Reverse vending machine. An automated process for accepting containers and providing refunds. Typically comprises a front component to receive and validate the container, and provide a refund; and a rear component that undertakes sorting.
Scheme co-ordinator	Organisation that is responsible for running the Scheme, particularly for ensuring moneys are collected from suppliers, container throughput is audited and moneys are paid correctly. This oversighting body is typically accountable to the government

# Key findings

---

## Characteristics of a CRS for Tasmania

- Common features with other jurisdictions including eligible containers and deposit amount.
- CRS to be run by a single co-ordinator and operator set up as a product stewardship organisation (PSO).
- The PSO to be overseen by a Board of Directors that is representative of the industry but ensures access to relevant expertise.
- Transparent responsibilities and performance objectives of the PSO to be set out in the enabling legislation.
- Redemption and access targets should be established in the regulations:
  - Target at least 60 refund points
  - Target a redemption rate of at least 80%
- Graduated sanctions for failing to meet those targets.
- Let the market determine operational details of the system.
- Verifiable auditing and tracking systems required to ensure objectives and targets are met.
- Allow 18 months to set up scheme.
- Potential cost savings to local councils.
- Total funding requirement of the scheme over 20 years of \$239 million of which \$138 million are refunded deposits. Real costs of running the scheme are about \$101 million or around 4c per eligible container.
- Nominal price impacts on consumers who don't redeem containers start at around 10 cents per container and rise over time to about 16 cents per container. Cost impacts on consumers who redeem containers (price impact less refund) start at around 0 cents per container and rise to about 6 cents per container.
- Beverage container litter falls by approximately 50% with a redemption rate of 80%.

# Recommendations

## Recommendation 1 – General scheme structure

It is recommended that any container scheme introduced in Tasmania should have a structure that is consistent with schemes operating elsewhere in Australia. This means that it is a container refund scheme (CRS) that places strict liability on brand owners to:

- register and label eligible containers;
- pay the refund value on redeemed containers; and
- pay for the costs of operating the scheme.

There will also be defined roles for other participants in the scheme including (but not limited to):

- a scheme co-ordinator / network operator;
- refund point operators and processors; and
- Material Recovery Facilities (MRFs).

## Recommendation 2 – Deposit amount

The container deposit should be set at a level that provides sufficient incentive to encourage redemption. It is desirable that the deposit amount in Tasmania aligns with the deposit amount elsewhere in Australia, both now and in the future. At present this is 10c/ eligible container.

However, there is some doubt as to whether this amount provides a sufficient incentive to promote high redemption rates. Further, the value of this incentive can be expected to erode over time. To ensure the quantum of the deposit provides sufficient incentive for beverage consumers in the future, Tasmanian government regulators should seek a suitable channel to enable a periodic interjurisdictional review of the deposit amount applying to all schemes in Australia.

## Recommendation 3 – Scheme objectives

The scheme should have litter reduction as its primary objective, with recycling of container material as a secondary objective. To realise these objectives will require:

- Explicit reference to the objectives in the relevant Act.
- Legislated mechanisms to achieve high container redemption and refund rates including:
  - redemption targets;
  - container refund point access targets; and
  - sanctions for failing to meet the targets.
- Baseline & ongoing monitoring of litter and recycling data.
- Legislated mechanisms requiring containers redeemed through the scheme to be recycled including requirements that:
  - approved containers are made of material that is suitable for recycling or reuse; and
  - the scheme co-ordinator/ operator, refund point operators, processors and MRF operators ensure that redeemed containers are not disposed to landfill and instead are sent to recyclers for approved processing.

## Recommendation 4 – Eligible containers

As with schemes operating elsewhere in Australia, a Tasmanian CRS should apply to 'litterable' beer, carbonated soft drink, juice and water containers (typically glass, PET, aluminium, and liquid paperboard) with a volume of between 150 millilitres and 3 litres, but with a range of exclusions.



The State Government should engage with other jurisdictions to develop a mechanism for consistency/ harmonious changes to eligibility of containers, refund amounts and tracking of containers across borders.

#### **Recommendation 5 – Scheme governance**

Consistent with schemes operating elsewhere in Australia and with most overseas schemes, the beverage supply industry should have responsibility for running a CRS scheme in Tasmania. To ensure that scheme operations are at ‘arms length’ from the industry though, and that the industry is not seen to profit from the scheme, the responsible organisation should in essence operate as a product stewardship organisation (PSO), within a co-regulatory framework. This means that it is a not-for-profit company (limited by guarantee) that has been established under the relevant Act. The PSO will have a Board structure and a constitution and will be required to report to parliament against responsibilities and outcomes defined in the Act.

Suppliers of beverages in eligible containers in Tasmania (Brand Owners) should be required to contract or otherwise sign an agreement with the PSO. They should also be encouraged to participate as members of the organisation.

#### **Recommendation 6 – Board of Directors**

The PSO should be overseen by a Board of Directors. The Board should include representation from the beverage industry but, consistent with good practice governance models, should largely be skills based. To that end, the Board should consist of up to 9 directors, a majority of whom are independent of the beverage industry including:

- an independent chair;
- representatives of beverage manufacturers, both large and small; and
- directors with specialist skills, potentially including legal, financial, marketing, waste management and/or local government expertise.

Board membership should be approved by the relevant Minister after assessment of nominees against a skills matrix that has been developed for Board positions.

#### **Recommendation 7 – Single scheme co-ordinator/network operator**

To achieve consistency of objectives and to avoid duplication of roles and administrative complexities, the scheme should be operated by the PSO as a single co-ordinator and network operator in a combined role.

#### **Recommendation 8 – Transparent responsibilities and performance objectives**

Roles and responsibilities of the PSO should be clearly defined in the relevant Act. These include:

- Scheme integrity – ensuring that operation and administration of the scheme is transparent is undertaken solely for the purpose of achieving scheme objectives and that this is done in a way that is transparent, fair and equitable.
- Product stewardship – ensuring that beverage suppliers fund the full costs of the scheme through payments to the PSO.
- Scheme payments – establishing the timing and basis for payments under the scheme including payments by beverage suppliers to the PSO and payments from the PSO to other scheme participants such as refund points, logistics operators, processors and MRFs.
- Redemption rates – ensuring that the scheme achieves a high rate of container redemptions.
- Scheme accessibility – establishing a network of refund points to provide consumers and community members with good access to a place for returning their empty beverage containers and receiving a refund on those containers.

- Recycling – ensuring that all beverage containers collected through the scheme are fit for recycling, are sorted and recycled in an approved process. All recyclers should be approved by government.
- Monitoring and record keeping – ensuring that effective and ongoing audit and verification mechanisms are in place to accurately track and reconcile numbers of containers going through the system and payments (refunds and fees) for those containers. Also, maintaining accurate financial and container records and a register of approved containers.
- Scheme awareness – ensuring that the scheme is effectively promoted, providing useful education and information to the community about the scheme and to scheme participants and potential participants.
- Complaints – ensuring that complaints about the scheme, by either community members or other scheme participants, are addressed. Referring any complaints relating to price gauging by beverage suppliers or retailers to the relevant regulator.

#### **Recommendation 9 – Performance targets and sanctions**

To ensure that the objectives of the scheme are being met, specific targets should be set for the PSO against those objectives including:

- redemption targets;
- possibly refund targets; and
- container refund point access targets.

To encourage transparency, these targets should be established in the relevant regulations, with a requirement that the PSO regularly report on performance against the targets to parliament via the relevant Minister.

Appropriate sanctions should be applied for failure to meet the targets. Sanctions should be graduated and proportionate, with the highest level of sanction be cancellation of appointment of the PSO. Lower level sanctions should be sufficient to encourage improved performance.

The funds, infrastructure etc. will need to be safeguarded in case of cancellation.

#### **Recommendation 10 – Defined roles and responsibilities for other scheme participants**

The Act should also establish defined roles and responsibilities for other key scheme participants including for:

- beverage suppliers;
- refund points;
- processors; and
- material recovery facilities (MRFs).

#### **Recommendation 11 – numbers of refund points**

A key responsibility of a PSO will be to ensure that there are adequate numbers of refund points, conveniently located for members of the public across urban, regional and remote areas of Tasmania. We estimate that more than 60 refund points are likely to be required to ensure reasonable access and achieve a redemption rate of 80% or greater.

Targets for access, split by region, should be established in the regulation.

#### **Recommendation 12 – types of refund points**

Decision on the types of refund points to be established should ultimately be left to the PSO.

However, the PSO should be encouraged to provide consumers with alternative means of redeeming their containers through a mix of refund point types including RVMs, manual refund points located at

existing waste facilities such as transfer stations, manual refund points located at retail outlets and other 'innovative' solutions.

The PSO and Refund Point Operators (RPOs) should also be encouraged to establish donation points as 'feeders' to refund points.

Decisions on other aspects of refund point design such as configuration and location should be left to the PSO in consultation with the RPOs.

**Recommendation 13 – method of paying refunds to consumers**

Refund points should seek to provide consumers with a range of options for receiving refund payments including cash, vouchers and/or electronic transfer. Further, the PSO should seek to ensure that a mix of payment types are provided across the network.

**Recommendation 14 – refund point handling fees**

Handling fees paid to refund points should be fair and equitable, being set at a sufficient level to enable refund points to earn a reasonable return on their investment, while encouraging a suitable mix of refund point types. Recognising the need to ensure good access across all regions – urban, regional and remote – and recognising a difference in cost of providing refund points in the different regions, it is likely that handling fees will need to vary between urban, regional and remote areas.

**Recommendation 15 – counting and verification of container numbers**

Decisions on the most appropriate systems to be applied to sorting containers at refund points and verification of container numbers for the purpose of paying handling fees and audits should ultimately be left to the PSO. It would be preferable however, for the verification process to be applied consistently across the network. Moreover, to assist with the audit process and to avoid discrepancies and disputes between the scheme processors and refund points, it would be preferable if a verification system other than a weight based system were applied.

**Recommendation 16 – processing**

A system other than a weight based system should preferably be applied by processors to verifying the numbers of containers received from refund points.

As with both the NSW and Queensland schemes, the Tasmanian scheme should include a requirement that material sold by processors can only be sold to recyclers that have been approved and registered by the regulator. Consideration should be given to allowing processors to retain a portion of the value of the material that has been sold.

**Recommendation 17 – MRFs**

MRFs should be encouraged to play an active role in a Tasmanian CRS including allowing MRFs to claim the full refund value of containers that go through the kerbside system. To receive payment for the refunds however, they will need to comply with the PSO's requirements as to how containers are verified and processed.

MRFs should not receive a processing (or handling) fee for containers that are redeemed via the kerbside system, but should be allowed to retain the full value of material sold to recyclers.

Existing MRFs should also be encouraged to participate in a CRS in the role of processors of material that has been redeemed via refund points. MRFs should receive a fair and equitable processing fee for that role.

**Recommendation 18 – local councils**

Similar to the NSW scheme, consideration should be given to requiring a refund sharing between MRFs and local councils to share the value of refunds on containers redeemed through the kerbside system.

**Recommendation 19 – record keeping and auditing**

The enabling legislation should stipulate the record keeping and audit roles of all major scheme participants. In particular, the PSO's roles in this area should be detailed including requirements that:

- the numbers of containers going through the system are accurately tracked and reconciled;
- payments for those containers (both refunds and fees) are accurate, fair and timely;
- accurate and transparent records of all transactions relating to the containers are maintained; and
- comprehensive and ongoing audit processes are in place.

**Recommendation 20 – Implementation timing**

At least 12 months are required between passage of the relevant legislation and regulations and scheme commencement to provide sufficient time for the scheme to be effectively planned and implemented. The scheme should commence during a period of low beverage consumption, such as in the winter months.

**Recommendation 21 – Advisory group**

An advisory group should be established in the early stages of scheme implementation. The advisory body should be broadly representative.

**Recommendation 22 – Information, education and marketing strategy**

The PSO should develop and implement an information, education and marketing strategy during the implementation phase. The strategy will need to be funded to a level sufficient to ensure that community members are educated and informed about the scheme through multi-media channels and, importantly, marketed in a way that encourages them to use the scheme.

**Recommendation 23 – Seed funding**

Significant seed funding will need to be provided to enable the scheme to be established and to commence operations. Funding is needed to set up the PSO and establish administrative support and to provide a float to cover payment of refunds and operating costs for the first period. Scheme establishment costs should be covered by the beverage industry. Money for the float could be raised through the beverage industry or via a loan from the State government.

## Executive summary

A beverage container refund scheme (CRS) is a scheme through which a deposit is applied to beverages sold to consumers. When empty beverage containers are then returned to a redemption point for recycling a refund of the deposit is provided to the redeemer. A CRS is recognised as an effective way to reduce beverage container littering and increase the rate of recycling, because it creates a financial incentive to change behaviour.

The Tasmanian Government has made a commitment to consider the appropriateness of establishing a CRS in Tasmania by developing a model framework for its implementation that complements other mainland jurisdictions. This report presents results of the framework analysis.

The terms of reference for developing a model framework for a container refund scheme stipulate that a CRS in Tasmania should have a number of general attributes. The scheme should:

- be cost effective;
- give people an incentive to return their drink containers;
- target drink containers used away from home;
- complement, rather than compete with, existing kerbside services; and
- provide good access to consumers in all parts of Tasmania by providing a suitably structured network of collection points.

In considering a suitable framework for a CRS in Tasmania we identified numerous risks of the scheme from various stakeholders' perspectives and have sought to address those risks through the design features that we have recommended (Table ES 1).

**Table ES 1: Risks to the success of a CRS and design features proposed to address those risks**

Stakeholder	#	Risk	Proposed feature(s)
State government/ community	1	Low public participation in scheme/ low rates of container redemption	Implement targets for redemption rates Implement targets for access to refund points covering all regions Sanctions for non-compliance with targets Ensure deposit value is maintained over time
	2	Scheme does not increase recycling	Require redeemed containers to be recycled CRS scheme generates "cleaner" recyclate, thereby increasing its market value
	3	Scheme is costly to taxpayers	Promote a product stewardship approach which requires beverage suppliers/consumers to pay for scheme
	4	Beverage industry is seen to benefit from the scheme	Ensure organisation responsible for running scheme is not-for-profit and at arms-length from industry Implement transparent scheme rules Implement effective audit process Scheme to report to Parliament Refer instances of price gouging to consumer watchdog <sup>1</sup>
Beverage suppliers	5	High cost of scheme	Harmonise scheme with schemes in other jurisdictions Review drivers of cost particularly access at an early stage

<sup>1</sup> For example, Consumer Affairs and Fair Trading, Tasmania. See section 2.2.5.

			Implement a refund-based container “ <u>deposit</u> ” scheme Install a single scheme co-ordinator and network operator Encourage efficiencies in refund and sorting system
	6	Inequitable impact of scheme on different suppliers	Require all suppliers of beverages to contribute to scheme costs as condition of supply Brand owner liability (rather than first supplier liability)
	7	Cash flow problems linked to scheme contributions	Apply an arrears contribution system Investigate start-up funding options
<b>Beverage consumers</b>	8	Impact of scheme on beverage prices	Encourage scheme efficiencies as per items 5 & 6
	9	Difficulty of redeeming containers	Ensure an adequate number of conveniently located refund points in all regions Encourage a mix of refund point types including RVMs, depots, retail, mobile and donation Encourage a mix of refund payment methods
<b>Scheme co-ordinator</b>	10	Insufficient funds to cover scheme costs	Ensure a mechanism is in place to provide a cash float for initial redemptions. This may be in the form of a loan from government Ensure supplier contributions cover full scheme costs including administration, float, handling fees, logistics, and processing Ensure there are no industry ‘free riders’
	11	Fraud and/or miscounting of containers	Implement an effective container labelling and approvals process Ensure an effective audit process including procedures for reconciling containers going into and out of the system
<b>Refund point operators</b>	12	High cost of establishing and operating a refund point	Require scheme co-ordinator to pay a ‘fair and reasonable’ handling fee that covers all costs Design refund system so that refund point costs are minimised (e.g. minimal sorting, efficient counting, ease of payment) Encourage networking with low cost collectors (e.g. donation points, not-for-profit organisations)
	13	Cash flow problems	Require scheme co-ordinator to pay refunds and handling fees on a weekly basis Encourage bulk deposits to Processor sites
<b>MRF operators</b>	14	Loss of volumes / profits as containers diverted from kerbside	Allow MRF to claim refund value of containers processed via kerbside system
<b>Local councils</b>	15	Exposure to higher kerbside operating costs	Provide mechanism for refund revenue sharing with MRFs
	16	Council required to participate in system at cost to council	Ensure there is no obligation on councils to operate refund points or other parts of the supply chain. Participation based on ‘opt-in’ basis through contract/agreement with scheme co-ordinator

## Major features of a CRS

Noting that a high container redemption rate is a necessary outcome for realising scheme objectives of reducing litter and increasing recycling, there are four aspects of scheme structure that have the potential to materially impact container redemption rates and therefore need to be resolved:

1. The deposit or refund rate applied to beverage containers.
2. Whether beverage retailers have an obligation under the scheme.
3. Whether the scheme is a container deposit scheme or a container refund scheme.
4. Whether the scheme includes a regulated redemption target or targets and penalties for failing to meet those targets.

## Deposit amount

All current and proposed Australian schemes currently have a deposit of 10 cents applying to eligible containers. Given the correlation between redemption rates and deposit amount there is some doubt as to whether 10 cents/ container is a sufficiently high deposit amount. We note however, that the terms of reference for this analysis stipulate that a Tasmanian scheme must be consistent with mainland jurisdictions. That requirement alone, but also practicality, dictates that the deposit amount in Tasmania should be 10 cents/ eligible container at scheme commencement and for the foreseeable future. Given the apparent impact of deposit amounts on container redemption rates however, Tasmanian government regulators should look for a suitable channel to enable a periodic interjurisdictional review of the deposit amount applying to schemes around Australia.

## Retailer obligation?

Many overseas schemes place an obligation on some or all retailers to take back and provide a refund for containers that they have sold to consumers. Table ES 2 provides a summary of the pros and cons of having a retailer obligation built into a CRS.

**Table ES 2. Pros and cons of a scheme having a CRS scheme with a retailer obligation**

Pros	Cons
<ul style="list-style-type: none"> <li>- More effective; higher redemption rates</li> <li>- Administratively simpler; easier to establish and oversee network of refund points</li> </ul>	<ul style="list-style-type: none"> <li>- Less cost effective; high numbers of refund points mean lower throughput/refund point and higher unit costs</li> <li>- Potential negative impacts on kerbside recycling system (MRFs and councils)</li> </ul>

If the overarching objective of a CRS is to achieve a very high redemption rate (i.e. greater than 85%), then including a retailer obligation in the scheme should not be ruled out. On balance though, after consideration of the competing objectives of the scheme, we believe a retailer obligation should not be included.

The lack of a retailer obligation in a Tasmanian scheme however, will mean that strong redemption and access targets will need to be established in the scheme and that suitable sanctions for failing to meet those targets are applied.

## Container deposit-based or container refund-based scheme?

Under a container deposit-based scheme beverage suppliers pay an upfront deposit to the scheme co-ordinator on all eligible containers at the time of sale. Under a container refund based scheme beverage suppliers pay a deposit to the scheme co-ordinator but only on redeemed eligible containers. All schemes currently in operation in Australia (and also the planned Queensland scheme) are container refund-based schemes. For this reason, and also because it is likely to be the more cost effective approach, we suggest that any scheme introduced in Tasmania should be a container refund-based scheme.

## Regulated redemption targets?

Achieving high container redemption rates, especially of containers that have been consumed away from home, will be crucial to lowering the numbers and volume of beverage containers that are littered. In the absence of a retailer obligation, and given the relatively low deposit rate applying to schemes in other Australian schemes (and by default in Tasmania), legislated targets will be needed to achieve high container redemption rates including:

- redemption targets;
- container refund point access targets; and
- sanctions for failing to meet the refund point access targets.

## Scheme governance and administration

All Australian schemes (current and proposed) are industry run and only one of the international schemes that has been reviewed - California - is government run. Noting the situation elsewhere in Australia, we confine our consideration of governance models hereafter to industry based models. Further, noting an earlier recommendation to not include a retailer obligation in the scheme, the discussion is confined to models that do not contain that obligation.

Table ES 3 provides an overview of the pros and cons of the NSW and Queensland models. In our view both models have strengths and weaknesses.

**Table ES 3. Pros and cons of NSW and Queensland models**

Scheme feature	Pros	Cons
<b>NSW</b>		
Separation of scheme co-ordinator and network operator roles	<ul style="list-style-type: none"> <li>- Balances competing scheme objectives (cost effectiveness v redemption rates) without concentrating authority in a single organisation</li> <li>- Increases potential for involving waste sector specialists in scheme operations</li> </ul>	<ul style="list-style-type: none"> <li>- Adds extra layer of administration and creates complex contractual arrangements</li> <li>- Potential for organisations to not work well together due to competing objectives</li> </ul>
Competitive tendering process	<ul style="list-style-type: none"> <li>- Increases transparency of process</li> <li>- 'Tests the market' for low cost and/or innovative service providers</li> </ul>	<ul style="list-style-type: none"> <li>- Reduces transparency of outcome</li> <li>- Adds extra layer of administration</li> </ul>
Roles, responsibilities and financial arrangements and targets detailed in contracts	<ul style="list-style-type: none"> <li>- Necessary to establish necessary level of detail and synchronise administrative arrangements</li> </ul>	<ul style="list-style-type: none"> <li>- Not transparent</li> </ul>
Scheme targets limited to access targets, sanctions limited or unclear	<ul style="list-style-type: none"> <li>- Reduces compliance burden on scheme co-ordinator and network operator</li> <li>- Extra targets may not be necessary with separation of roles</li> </ul>	<ul style="list-style-type: none"> <li>- Risk that key scheme objective (redemption rates) is not achieved</li> </ul>
<b>Queensland</b>		
Integration of scheme co-ordinator and network operator roles	<ul style="list-style-type: none"> <li>- Risks concentrating authority in single organisation with limited interest in maximising redemption rates</li> </ul>	<ul style="list-style-type: none"> <li>- Administratively less complex</li> </ul>
Product Stewardship Organisation appointed by government	<ul style="list-style-type: none"> <li>- Not-for-profit, Board run model can operate independently of industry</li> </ul>	<ul style="list-style-type: none"> <li>- Scheme seen to be beholden to beverage industry</li> </ul>
Roles, responsibilities, and targets detailed in regulations	<ul style="list-style-type: none"> <li>- Transparent</li> </ul>	<ul style="list-style-type: none"> <li>- May be difficult to amend, should circumstances change</li> </ul>
Scheme targets limited to access targets, sanctions limited or unclear	<ul style="list-style-type: none"> <li>- Reduces compliance burden on scheme co-ordinator and operator</li> </ul>	<ul style="list-style-type: none"> <li>- High risk that key scheme objective (redemption rates) is not achieved</li> </ul>

Tasmania is a small jurisdiction with a smaller market. This is an important overlay to reviewing the pros and cons of the Queensland and NSW governance models outlined, and other aspects of scheme design discussed in earlier sections. Hence, the following key attributes are proposed for a CRS in Tasmania:

- A single co-ordinator and operator set up as a product stewardship organisation (PSO).



- The PSO to be overseen by a Board of Directors that is representative of the industry but should also ensure access to relevant expertise and ensure a strong level of independence.
- Transparent responsibilities and performance objectives of the PSO set out in the enabling legislation.
- Redemption and access targets established in the regulations and graduated sanctions for failing to meet those targets.

## Scheme operations

### Refund point numbers and distribution

Our analysis has been based on an assumption that an overall container redemption rate of at least 80% is desirable in the longer term. Given this, and considering the competing goals of reducing litter and increasing recycling on the one hand, and ensuring that scheme costs are not excessive on the other, we consider that a minimum of 60 refund points are likely to be needed to achieve a redemption rate of 80%. An indicative number of 63 refund points across Tasmania means each refund point services on average about 8,300 people. This ratio is substantially better than in NSW, South Australia, the Northern Territory, and proposed for Queensland. There are two reasons why a higher rate of access is proposed for Tasmania than other jurisdictions though:

- First is the relatively decentralised population of Tasmania.
- Second, in our view, the number of refund points in other jurisdictions is unlikely to be to be sufficient to achieve and sustain a redemption rate of 80%.

On the other hand, it is worth noting that the modelled number of redemption points (63) is only about half or less than might be expected under a scheme that has a retailer obligation.

Further analysis was undertaken to assess the potential regional distribution of refund points. Based on that analysis, a notional regional distribution of refund points is presented in Table ES 4.

**Table ES 4: Notional distribution of refund points – proportion and number**

Waste management region	Area			All areas
	Urban	Regional	Remote	
<b>Southern</b>	23.8% (15)	20.6% (13)	3.2% (2)	<b>47.6%</b> <b>(30)</b>
<b>Northern</b>	12.6% (8)	17.5% (11)	1.6% (1)	<b>31.7%</b> <b>(20)</b>
<b>Cradle Coast</b>	6.3% (4)	6.3% (4)	7.9% (5)	<b>20.6%</b> <b>(13)</b>
<b>All regions</b>	<b>42.8%</b> <b>(27)</b>	<b>44.4%</b> <b>(28)</b>	<b>12.7%</b> <b>(8)</b>	<b>100.0%</b> <b>(63)</b>

The notional distribution of the 63 refund points includes an implicit sliding scale of access as follows:

- urban areas have a refund point to population ratio of about 1:12,000;
- regional areas have a refund point to population ratio of about 1:6,000; and
- remote areas have a refund point to population ratio of about 1:2000.

### Types of refund points

There are a wide range of means through which containers can be redeemed. Schemes around Australia and internationally use various methods by which members of the public can redeem their containers. These essentially fall into the following categories:

- automated reverse vending machines (RVMs), often located at supermarkets, shopping centres or at public places such as train stations;
- smaller manual refund points, often located in small retail outlets;
- smaller semi-automated drop-off points;
- larger manual or semi-automated depots; and
- mobile or ‘pop-up’ refund points that can be established to periodically act as refund points.

The refund point structure modelled for this analysis is assumed to include a mix of refund point types made up of:

- 20 RVMs, all of which are located in urban areas;
- 36 manual refund points, which could be depots or retail outlets; and
- 7 mobile refund points, principally in regional and remote LGAs.

The PSO should be encouraged to provide consumers with different means of redeeming their containers through a mix of refund point types including RVMs, manual refund points located at existing waste facilities such as transfer stations, manual refund points located at retail outlets and other ‘innovative’ solutions.

### Refund point costs

Cost estimates of different types of refund points have been modelled as part of the broader financial analysis undertaken for this study. In developing the cost estimates, we have drawn on a range of earlier analyses of refund points and waste processing studies. A summary of the cost estimates are presented in Table ES 5.

**Table ES 5. Levelised cost per container (cents)**

	Manual			Mobile	RVM
	Urban	Regional	Remote		
Excluding margin	4.72	5.65	14.57	23.66	4.19
Including margin	5.43	6.50	16.75	27.21	4.82

### Donation points

The PSO and Refund Point Operators (RPOs) should be encouraged to provide infrastructure to enable community organisations to act as ‘feeders’ to refund points.

### Processing and sale of materials to recyclers

In a scheme where only minimal sorting and preparation of container material is undertaken at refund points, processors (also referred to as ‘aggregation points’ and sometimes as ‘hubs’) will play an important scheme role, being responsible for:

- aggregating the containers that have been transported from refund points;

- verifying the numbers of containers received;
- sorting them by material type; and
- baling or (in the case of glass containers) crushing them in preparation for sale to recyclers.

### MRFs

A CRS scheme impacts on the kerbside system by redirecting containers that previously went through the kerbside system to refund points. This has direct implications for MRFs:

- Negatively, by reducing the volume of container material going through MRFs, thereby reducing revenue to MRFs generated by the kerbside system including:
  - gate fees collected from local councils; and
  - the total volume and associated value of material sold to recyclers.
- Positively, by providing MRFs with an opportunity to generate a new revenue stream through redeeming containers and collecting the refund on those containers.

The financial analysis undertaken for this study indicates that it will be in the financial interests of MRFs in Tasmania to play an active role in a Tasmanian scheme. If that is to be the case though, MRFs will need to fulfil two significant obligations:

- First, they will need to comply with the PSO's requirements as to how containers numbers are verified.
- Second, MRFs will need to comply with the PSO's requirements on processing containers including requirements on crushing (glass) and baling (other materials) of containers, minimising contamination and sale of the material.

MRFs should be able to claim the full refund value of the deposit on eligible containers and retain 100% of the value of material redeemed through the kerbside system but should not receive any processing fee.

Under a CRS, there is also an opportunity for MRFs to act as processors.

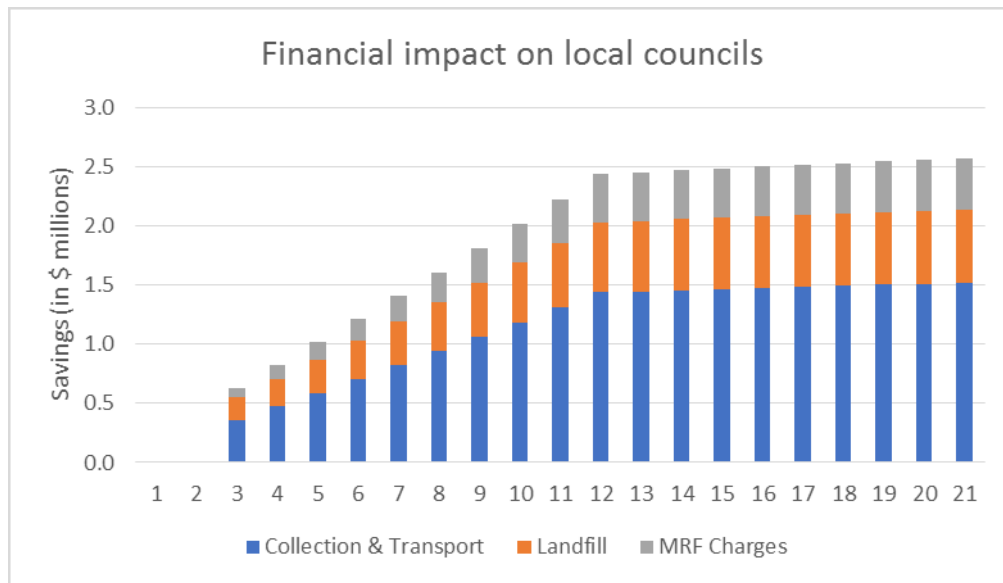
### Local councils

The implications of a CRS for local councils could be direct or indirect.

Directly, local councils could be in operating refund points, particularly through their transfer stations. However, council involvement in the operation of refund points should be purely on an 'opt-in' basis.

Indirectly, councils should in principle incur lower kerbside collection costs where the volume collected results in the need for fewer collections for either general waste (landfill) and lower costs for processing material through MRFs for recycling (Figure ES 1). These reduced costs should in principle be passed on to councils. Whether cost savings are in actuality passed on to councils though, will depend on contract negotiations between waste service providers and councils.

Figure ES 1: Indicative financial impact of a CRS on local councils over time



The cost savings discussed above do not include any transfer of revenue from MRFs to councils as a consequence of container refund revenue generated by the MRFs. In view of the overall financial advantage to MRFs stemming from a CRS, a refund sharing requirement similar to that required under the NSW scheme warrants close consideration in the context of a Tasmanian CRS.

### Audit and record keeping processes

An important function of the PSO, which needs to be stipulated in the Act, is to ensure that effective and ongoing verification, record keeping and audit mechanisms are in place. This requires the PSO to implement processes that ensure:

- the numbers of containers going through the system are accurately tracked and reconciled;
- payments for those containers (both refunds and fees) are accurate, fair and timely;
- accurate and transparent records of all transactions are maintained; and
- comprehensive and ongoing audit processes are in place.

A key consideration for the verification and audit process will be to ensure that the numbers of containers exiting the system (to recyclers) can be accurately verified against the numbers of containers entering the system via refund points (and MRFs) and that financial transactions at all stages of the system match the numbers of containers going through the system.

### Planning and implementation

Stakeholders involved in implementing the NSW and Queensland schemes have indicated that at least 18 months are required between scheme announcement and scheme commencement to enable these tasks to be effectively completed.

An advisory group should be established in the early stages of scheme implementation in Tasmania. The advisory body should be broadly representative.

It is essential that the community has a good understanding of a CRS well before it is introduced. One of the roles of the PSO in the implementation phase will be to develop and

implement an information, education and marketing strategy. Separately, the PSO will also need to provide information and education to potential participants in the scheme.

Significant seed funding will need to be provided to enable the scheme to be established and to commence operations. Seed funding will take two forms:

- Funds sufficient to set up the PSO and establish administrative support including staff, IT and provide a budget for marketing etc. We estimate that funds required for these purposes will be approximately \$9 million dollars.
- A pool of funds, usually referred to as the ‘float’, which will be used to cover payment of refunds and operating costs for the first period (typically the first month) of the scheme’s operations. We estimate that the float required will be in the order of \$0.5 million to ensure that there are sufficient funds to cover scheme operations for a month in the first year of operation when demand and redemption rates are at their peak.

## Financial and material flows modelling

To examine the financial requirements of the proposed scheme, we developed a model of the relevant elements of the source, fate and costs of dealing with beverage containers. The flow of containers within the scheme. In the first instance, we have identified the source of beverage containers by material type across the three regions of Tasmania (urban, regional and remote). In each area, the volume of beverage containers was estimated with the destination varying across litter, landfill and recycling. Table ES 6 provides a brief summary of the results of this analysis.

**Table ES 6: Beverage container summary estimates for Tasmania, 2017**

	Tonnes	Number	%
<b>Total consumption</b>	<b>31,776</b>	<b>301,715,879</b>	<b>100.0%</b>
Recycled/recovered	10,181	96,670,534	32.0%
Landfilled	20,786	197,365,079	65.4%
Littered	809	7,680,267	2.5%

With the introduction of a CRS, and an 80% redemption rate achieved after 10 years, recycling of eligible containers has almost doubled and landfill and littering rates halved (Figure ES 2 and Figure ES 3).

Figure ES2: Fate of beverage containers over time with a CRS

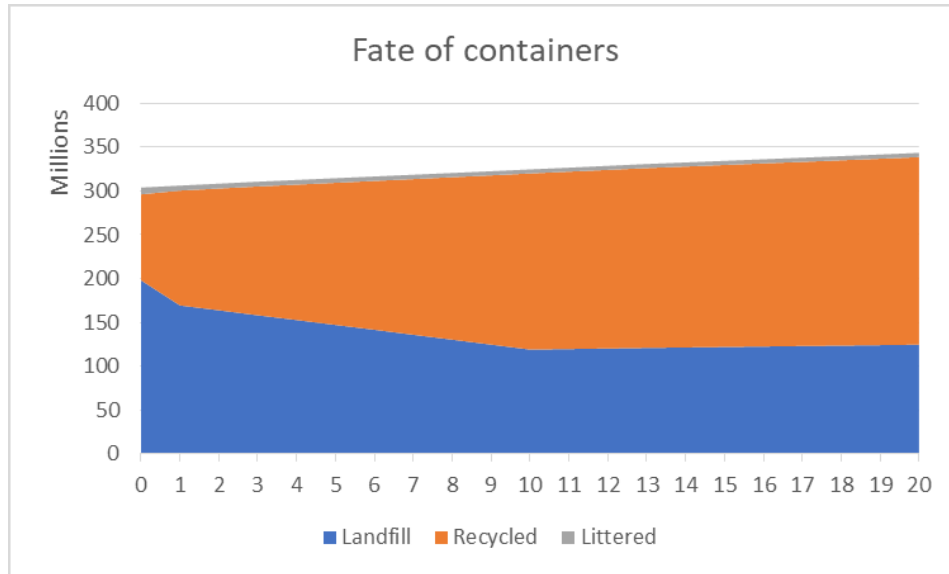
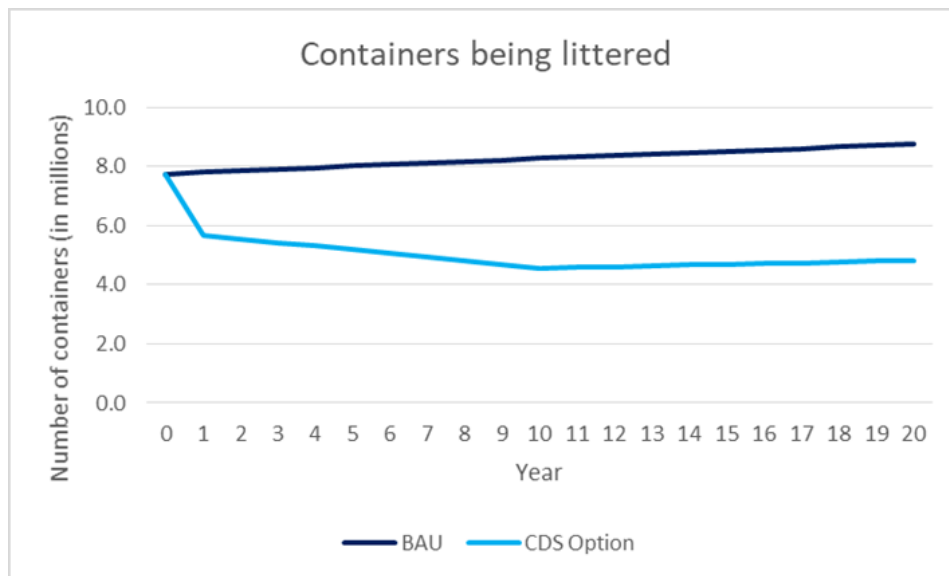
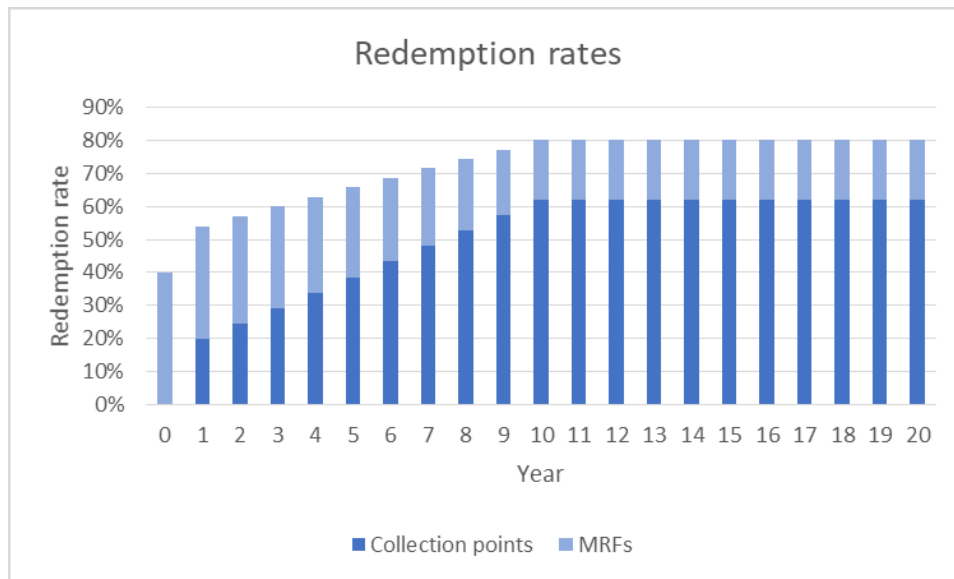


Figure ES3: Impact of a CRS on beverage container litter



The improvement in recycling and litter outcomes results from container redemptions at refund points, part of which are coming from containers that were previously recycled through MRFs. As detailed in the figure below, redemption rates are estimated to increase gradually over time from approximately 55% at the end of the first year of the scheme to 80% after year 10.

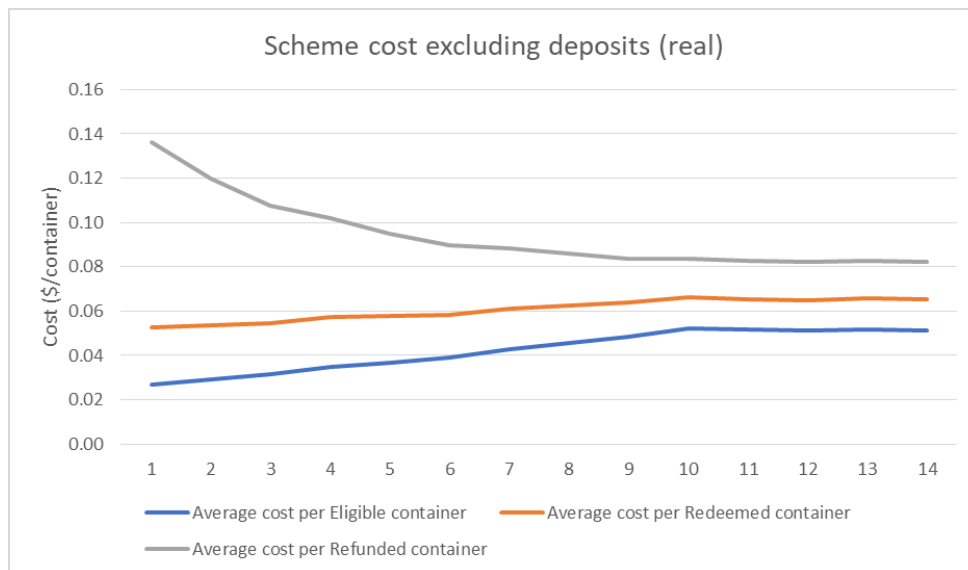
Figure ES 4: Beverage container redemption rates



Scheme costs

Overall, the scheme imposes real funding requirements of around \$239 million (NPV) over the 20 years. This figure includes refunded deposits of around \$138 million. The real costs associated with running the scheme are therefore around \$101 million or about 4c per eligible container. This translates into 7c per redeemed container (MRFs plus refund points) or 10c per refunded container (refund points only). The main influence on non deposit costs are the number of refunded containers. Over time, as more containers are refunded this average cost declines significantly (particularly as a greater proportion are processed through lower cost refund points) (Figure ES 5).

Figure ES 5: Scheme costs



Impacts on consumers

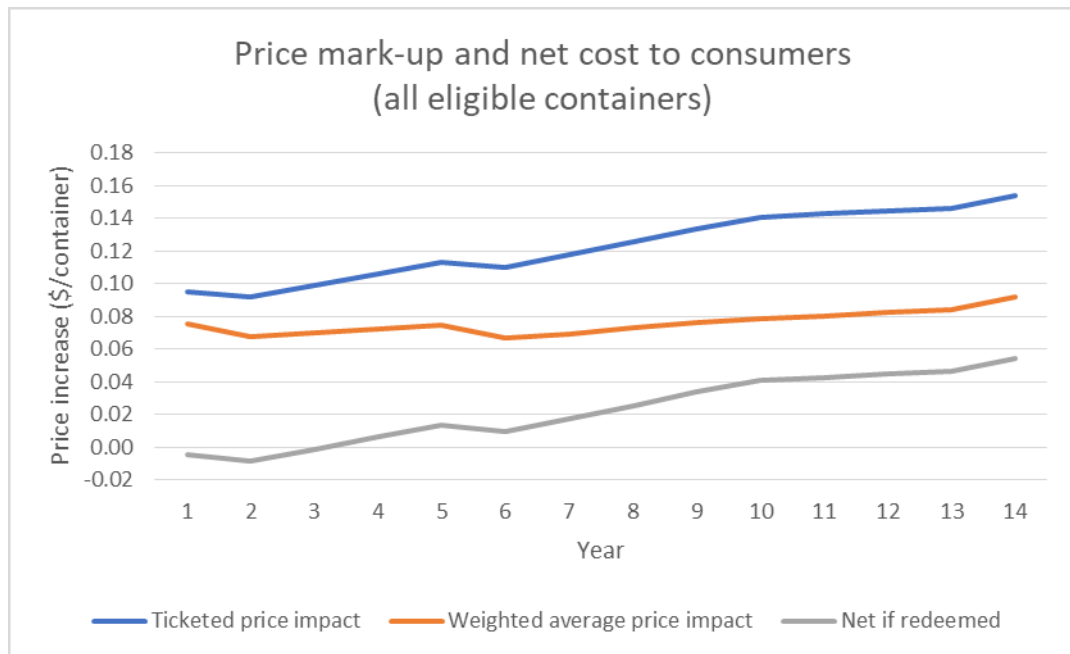
It is expected that the Scheme will impact on prices that consumers pay for beverages, with actual costs that consumers wear being dependent on whether or not they claim a refund by

redeeming their containers through a refund point. The price effect on consumers is expected to increase over time as redemption and diversion rates increase.

ES 6 shows the expected price and cost impacts on different groups of consumers, noting that costs of the scheme will be recovered by beverage suppliers across all sales of eligible containers. The ‘ticket’ price impact is shown by the highest (blue) line in Figure ES 6 and indicates the cost impact on consumers who do not redeem their containers. The grey line shows the cost impact for consumers who redeem their containers through refund points. These consumers are 10c better off than the ticketed price impact, with cost impacts being nothing in year 1, rising to about 5.5 cents/ container in year 10.

The weighted average cost impact across all beverage consumers (both those who do and those who don’t redeem their containers at refund points) is shown in the orange line. This cost increases slightly over time (from about 7.5 cents/container in year 1 to about 9 cents/ container in year 10) reflecting the higher number of containers that are being redeemed over time. The weighted average therefore tracks towards the grey line.

**Figure ES 6: Impact of CRS on consumers in Tasmania**





# 1. Introduction

---

## 1.1 Background

A beverage container refund scheme (CRS) is a scheme through which a deposit is applied to beverages sold to consumers. When empty beverage containers are then returned to a redemption point for recycling a refund of the deposit is provided to the redeemer. A CRS is recognised as an effective way to reduce beverage container littering and increase the rate of recycling, because it creates a financial incentive to change behaviour.

In 2009, a *Feasibility study of a CRS for Tasmania* (Hyder Consulting 2009) was completed on behalf of the then Department of Environment, Parks, Heritage and the Arts. The report recommended a ‘hybrid’ CRS approach drawing on the strengths of existing Australian and overseas systems. The feasibility study was followed in 2013 by a *Cost Benefit Study of a Tasmanian Container Deposit System* (Marsden Jacob 2013). That report examined a CRS similar to that proposed in the feasibility study and provided information on the economic costs and benefits of introducing a CRS, the potential litter reduction achieved through a CRS and the potential for a CRS to drive the local recycling industry. A separate study was also undertaken into the impacts of a CRS on local governments in Tasmania (Equilibrium 2013).

Nationally, a Decision Regulation Impact Statement (DRIS) for the long-running national Packaging Impacts Study was presented to the Environment Ministers of the Standing Council on Environment and Water (SCEW) in April 2014. The DRIS considered 10 options for solving the related problems of packaging waste and litter including three national CRS options. The states and territories failed to reach a consensus decision on a way forward though.<sup>2</sup> This has led to several jurisdictions now actively developing and implementing their own CRS:

- the NSW CRS scheme commenced on 1 December 2017;
- Queensland proposes to have its scheme in place by 1 November 2018;
- the ACT is developing a scheme to take effect on 1 January 2019; and
- Western Australia is proposing to have a scheme in place on 1 July 2019.

The Tasmanian Government has made a commitment to consider the appropriateness of establishing a CRS in Tasmania by developing a model framework for its implementation that complements other mainland jurisdictions. This report presents results of the framework analysis.

---

<sup>2</sup> South Australia has had container deposit legislation since 1977, with a full CRS evolving since then. A CRS scheme was introduced in the Northern Territory in 2012.

## 1.2 Scope of analysis

### 1.2.1 Requested attributes of a CRS

#### General attributes

The terms of reference for developing a model framework for a container deposit scheme stipulate that a CRS in Tasmania should have a number of general attributes. The scheme should:

- be cost effective;
- give people an incentive to return their drink containers;
- target drink containers used away from home;
- complement, rather than compete with, existing kerbside services; and
- provide good access to consumers in all parts of Tasmania by providing a suitably structured network of collection points.

#### Specific attributes

The terms of reference further stipulate that a Tasmanian scheme must be consistent with mainland jurisdictions and should have the following specific attributes (unless they are not considered appropriate in the Tasmanian context in which case a reasoning for this conclusion and a credible alternative should be provided). The scheme should:

- be a legislated, state-wide scheme with contractual, financial and environmental oversight provided by the Parliament, Minister and relevant agencies of the State Government;
- have the primary policy objective of reducing beverage container litter, with a secondary objective of encouraging the recovery, reuse and recycling of containers;
- use a state-wide network of approved collection points such as reverse vending machines (RVMs), existing waste transfer stations and purpose-built depots run by one or more Network Operators;
- employ a single Scheme Co-ordinator to collect container deposits and handling fees from beverage suppliers and distribute these funds to Network Operators in accordance with the number of containers they collect;
- establish a financial incentive for scheme participation by setting a refund amount of 10c for each eligible container returned to an approved collection point;
- allow for an additional ‘per container’ handling and administration fee (to be determined by the Scheme Co-ordinator) to make the scheme profitable for participating businesses, including the provision of any collection infrastructure;
- allow beverage suppliers to pass on any additional scheme costs to consumers, who may offset retail price increases by claiming the refund;
- apply mainly to ‘litterable’ beer, carbonated soft drink, juice and water containers (typically glass, PET, aluminium, and liquid paperboard) with a volume of between 150 millilitres and 3 litres, but with a range of exclusions; and
- exclude a similar range of beverages and beverage containers that are generally consumed at home to those excluded in NSW, SA and NT.

### 1.2.2 Information to be included in the analysis

The terms of reference also stipulate that analysis of a model framework for a CRS in Tasmania should include the following information:

- Information on the public and private investment requirements for a model scheme.
- Data collection and analysis to determine the numbers and types of containers used in Tasmania each year.
- The likely cost of handling and administration for each container that is refunded and/or passes through the CRS and how much this will be per container when spread across the total of all containers used.
- Minimisation of any impacts on kerbside recycling systems in terms of containers leaving the kerbside system for the CRS stream. Any scheme should also aim to avoid duplication of existing infrastructure by using depots, transfer stations and materials recovery facilities (MRFs) that are already in place, as much as possible.
- Mechanisms to address market failure in the recyclables sector to ensure refunded containers are delivered to a recycling process rather than landfill. Note that sole use of regulatory means, such as placing a ban on landfill disposal of refunded containers, is unlikely to result in an optimal outcome given the lack of recycling facilities in Tasmania and the additional costs incurred in transport to the mainland.
- The implications of having a not-for-profit versus profit-making entity as a Scheme Co-ordinator.
- Determine whether it is legally and constitutionally possible for a pool of funds to be generated by upfront payments into the scheme by beverage manufacturers, and the implication of any such funds being handled by Government. Any additional requirement for public or private investment should be addressed if a pool of funds is not considered an appropriate component of the recommended model.
- The features of a container accreditation scheme and how accreditation in other states and territories would interact with a Tasmanian scheme. Also, address how containers purchased in other jurisdictions would be dealt with under a Tasmanian CRS.
- The methodology by which MRF and Collection Point operators would determine the numbers and types of containers collected and how this would be apportioned back to each beverage manufacturer for billing purposes through Network Operators and the Scheme Co-ordinator.
- An analysis and recommendations on the applicability of the NSW, Qld and WA approaches to legal and contractual arrangements in setting up a CRS in the Tasmanian context, which is characterised by having a significantly smaller population of around 537,000 people.
- Modelling of distribution of Collection Points across rural, regional and metropolitan Tasmania to ensure practical, affordable and equitable refund opportunities for the community. Tasmania is characterised by a significant concentration of people in Greater Hobart (232,000), and Launceston, Devonport, Burnie and Ulverstone (160,000). The remaining 145,000 are scattered across approximately 100 rural towns and localities.
- Recommendations on transitional arrangements for dealing with containers if the State Government makes a decision to implement a CRS.

### 1.2.3 Approach to the analysis

The model framework discussed in this report has been developed considering the attributes and information requirements detailed in sections 1.2.1 and 1.2.2 above. In considering these attributes, we have been mindful of the need to address risks to the effectiveness and success of a CRS (Table 1).

**Table 1: Key risks to the success of a CRS in Tasmania**

Stakeholder*	#	Risk
<b>State government/ community</b>	1	Low public participation in scheme/ low rates of container redemption
	2	Scheme does not increase recycling / reduce litter
	3	Scheme is costly to taxpayers
	4	Beverage industry is seen to benefit from the scheme
<b>Beverage suppliers</b>	5	High cost of scheme
	6	Inequitable impact of scheme on different suppliers
	7	Cash flow problems linked to scheme contributions
<b>Beverage consumers</b>	8	Impact of scheme on beverage prices
	9	Difficulty of redeeming containers either through accessing points or processing at points
<b>Scheme co-ordinator</b>	10	Insufficient funds to cover scheme costs
	11	Fraud and/or miscounting of containers
<b>Refund point operators</b>	12	High cost of establishing and operating a refund point
	13	Cash flow problems
<b>MRF operators</b>	14	Loss of volumes / profits as containers diverted from kerbside
<b>Local councils</b>	15	Exposure to higher kerbside operating costs
	16	Council required to operate refund point at cost to council

*\*Risks have been identified from the perspective of a particular stakeholder or stakeholders*

In considering the best ways of addressing all of these risks we have:

- reviewed container deposit and container refund schemes in operation or being developed elsewhere in Australia and internationally, considering the strengths and weaknesses of those schemes and their applicability to Tasmania;
- considered the most appropriate governance and administrative arrangements of a scheme including regulation of the scheme and scheme coordination;
- assessed specific aspects of the operation of the scheme including:
  - an appropriate number, location and type of collection points
  - the process of redeeming containers by consumers
  - counting, sorting and aggregation of containers
  - recycling
  - integration of the scheme with the existing kerbside system;

- assessed the financial aspects of the scheme including overall scheme costs and costs to specific components of the scheme; and
- considered issues relating to planning and implementation of the scheme.

In developing the framework discussed in this report we have also consulted widely with local government and industry and with other jurisdictions. Stakeholders consulted are listed in Appendix 1.

### 1.3 Structure of this report

The remainder of this report includes the following sections:

- Section 2 discusses the main features of a CRS scheme that are likely to apply in Tasmania.
- Section 3 discusses specific aspects of the structure of a scheme relating to governance and administration.
- Section 4 discusses specific aspects of the operations of a scheme including collection, processing and recycling.
- Section 5 discusses scheme planning and implementation and provides.
- Section 6 details results of the material flows and financial modelling that underpins discussion in some of the earlier sections, notably Section 4.

Each section contains recommendations that reflect conclusions from the discussion in that section.

## 2. Major features of a CRS

### Recommendations

#### Recommendation 1 – General scheme structure

It is recommended that any container scheme introduced in Tasmania should have a structure that is consistent with schemes operating elsewhere in Australia. This means that it is a container refund scheme (CRS) that places strict liability on brand owners to:

- register and label eligible containers;
- pay the refund value on redeemed containers; and
- pay for the costs of operating the scheme.

There will also be defined roles for other participants in the scheme including (but not limited to):

- a scheme co-ordinator / network operator;
- refund point operators and processors; and
- Material Recovery Facilities (MRFs).

#### Recommendation 2 – Deposit amount

The container deposit should be set at a level that provides sufficient incentive to encourage redemption. It is desirable that the deposit amount in Tasmania aligns with the deposit amount elsewhere in Australia, both now and in the future. At present this is 10c/ eligible container.

However, there is some doubt as to whether this amount provides a sufficient incentive to promote high redemption rates. Further, the value of this incentive can be expected to erode over time. To ensure the quantum of the deposit provides sufficient incentive for beverage consumers in the future, Tasmanian government regulators should seek a suitable channel to enable a periodic interjurisdictional review of the deposit amount applying to all schemes in Australia.

#### Recommendation 3 – Scheme objectives

The scheme should have litter reduction as its primary objective, with recycling of container material as a secondary objective. To realise these objectives will require:

- Explicit reference to the objectives in the relevant Act.
- Legislated mechanisms to achieve high container redemption and refund rates including:
  - redemption targets;
  - container refund point access targets; and
  - sanctions for failing to meet the targets.
- Baseline & ongoing monitoring of litter and recycling data.
- Legislated mechanisms requiring containers redeemed through the scheme to be recycled including requirements that:
  - approved containers are made of material that is suitable for recycling or reuse; and
  - the scheme co-ordinator/ operator, refund point operators, processors and MRF operators ensure that redeemed containers are not disposed to landfill and instead are sent to recyclers for approved processing.

**Recommendation 4 – Eligible containers**

As with schemes operating elsewhere in Australia, a Tasmanian CRS should apply to ‘litterable’ beer, carbonated soft drink, juice and water containers (typically glass, PET, aluminium, and liquid paperboard) with a volume of between 150 millilitres and 3 litres, but with a range of exclusions.

The State Government should engage with other jurisdictions to develop a mechanism for consistency/ harmonious changes to eligibility of containers, refund amounts and tracking of containers across borders.

This section discusses the major features of a CRS that are likely to apply if a scheme is introduced in Tasmania. The features described in this section are broadly consistent with the general and specific attributes of scheme that have been requested by EPA Tasmania (see section 1.2.1). Importantly, the features described in this section are consistent with schemes that are already in place Australia or soon to be introduced in Australia. This is important because, for the most part, it would be impractical for Tasmania to introduce a scheme that has substantially different features to schemes operating elsewhere in Australia.

## 2.2 Overall scheme structure

### 2.2.1 Overview

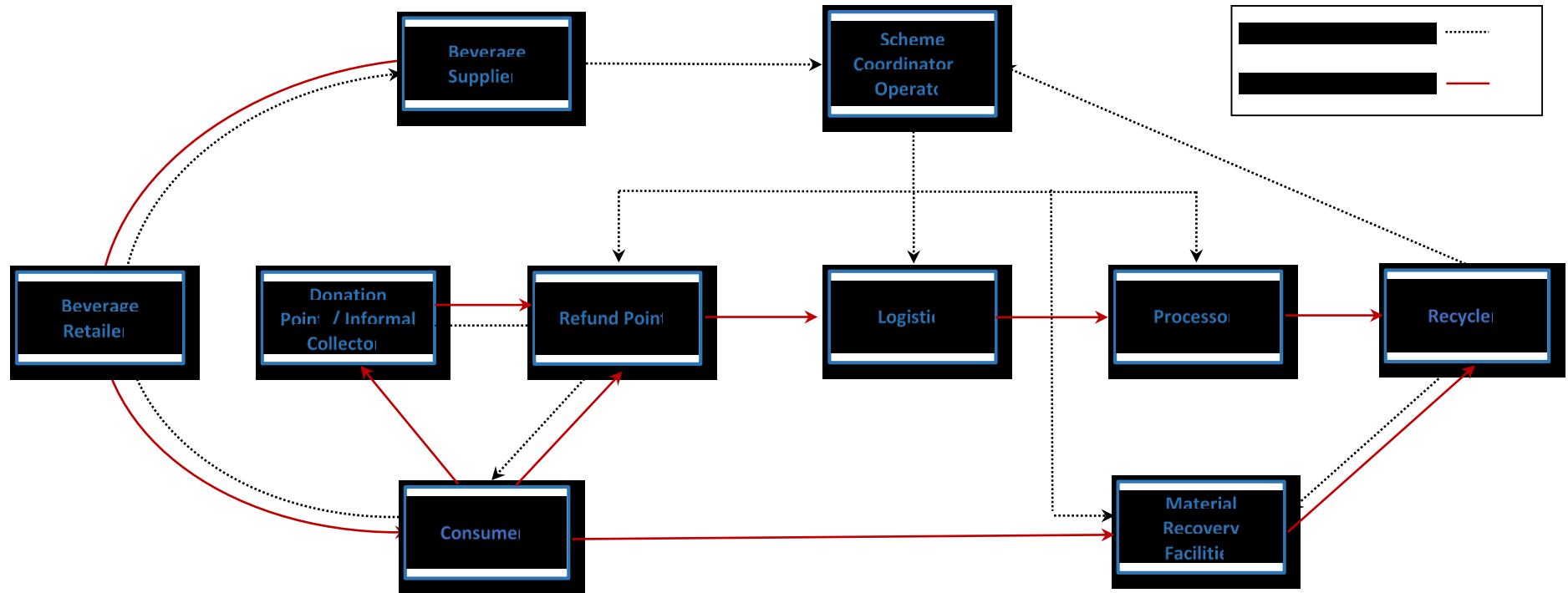
A container refund scheme (CRS) is a scheme through which a deposit is applied to beverages sold to consumers. When empty beverage containers are then returned to a redemption point for recycling, a refund of the deposit is provided to the redeemer.

Figure 1 provides an illustrative structure of a CRS as it could apply in Tasmania. The structure in this figure quite closely matches the structure of other schemes in Australia (either currently in operation or under development). As discussed further in section 3, specific aspects of those schemes differ from the illustrative structure but they all include the following common features:

- **Beverage suppliers** pay for the cost of running the scheme. Costs are then recovered through a mark-up on the sale price of beverages covered by the scheme.
- **Retailers** sell consumers beverages at a price that will reflect the wholesale beverage cost from the beverage industry, the retailer's mark-up, the deposit plus the mark-up to cover any Scheme costs.
- **Beverage consumers** can dispose of a container in a number of ways. They can:
  - take the container to a refund point, in which case they are refunded their deposit; or
  - donate the container to informal collectors, in which case the informal collectors can collect the value of the refund; or
  - dispose of the container to a kerbside recycling bin, in which case material recovery facilities (MRFs) can collect the value of the refund; or
  - dispose of the container to a rubbish bin, in which case the container is then disposed to landfill and no-one collects the value of the refund; or
  - litter the container, in which case no-one collects the value of the refund unless the container is retrieved by an informal collector.
- The **Scheme Co-ordinator** is responsible for managing the scheme finances and payments, particularly payment by beverage suppliers of the refund amount and costs of the operation of the scheme. The Scheme Co-ordinator is also responsible for managing scheme-wide data regarding container amounts and proof of recycling for containers collected through the scheme. The Scheme Co-ordinator is generally also responsible for educational or marketing activities. The **Network Operator** is responsible for establishing Refund Points (see below), complying with any requirements regarding the location, number of points and payment methods at Refund points. It is also responsible for organising logistics including transport between Refund Points, Processors, MRFs and recyclers. The Scheme Co-ordinator and Network Operator can be separate entities or a single entity.



Figure 1: Illustrative structure of a container refund scheme as it could operate in Tasmania



- **Refund points** receive containers from the consumer or informal collectors, pay the refund and undertake initial sorting of the containers. Refund points contract with the Scheme Co-ordinator (or Network Operator if it is a separate entity) to recover the value of refunds paid to consumers and to receive a handling fee to cover costs (including an operating margin) associated with receiving the containers.
- **Informal collectors.** Anyone can pick up litter and redeem the deposit as if they are the consumer. Consumers may choose to donate containers to community organisations who can redeem the containers and collect the refund. In some cases, informal collectors may have a more formal agreement with a refund point or aggregator that transfers some of the handling fee as well as the deposit.
- **Processors** (sometimes referred to as ‘consolidation points’ or ‘aggregation points’) take containers from a number of collection points and sort and bale the containers ready for transport to a recycler. Processors may also be used to accept bulk redemptions (e.g. from commercial sources or from donation points). Processors are paid aggregating fees by the Scheme Co-ordinator to cover sorting and baling costs as well as the handling fee to cover any costs associated with bulk redemptions.
- **Logistics** operators are engaged by the Scheme co-ordinator to transport containers between nodes (say, Refund points to Processors). These are separate payments from handling and aggregating fees. It is expected that recyclers will collect material from MRFs and Processors; if not, this transport would also be covered by the Scheme co-ordinator.
- **Materials Recovery Facilities (MRFs)** receive containers through comingled kerbside recycling. As with processors, MRFs are responsible for sorting the containers and baling them for collection by recyclers. It contracts with the Scheme Co-ordinator to receive the deposit value of the containers collected through the kerbside system but does not receive a handling fee. However, a MRF can be contracted by the Scheme Co-ordinator to act as a processor for material collected through refund points, in which case it will receive a handling fee for sorting and baling that material.

### Role of local councils

Not included in the formal structure, outlined above, are local councils. The impact of a CRS on local councils can be direct or indirect:

- Directly, a council may choose to operate a refund point(s) on public land, in which case it will receive handling fees in the same way that other refund point operators do.
- Indirectly, the operation of a CRS is likely to impact on councils through their involvement in kerbside waste and recycling services and the impacts of a CRS on those services. An assessment undertaken for the Local Government Association of Tasmania (Equilibrium 2013) indicates that the operation of a CRS is likely to improve the financial position of MRFs and reduce the cost to waste contractors<sup>3</sup> of providing kerbside waste and recycling services. Similar results were obtained for this analysis (see section 6.4.2). The extent to which those savings from separate entities are passed onto councils though, will depend contractual negotiations.
- Indirectly, local councils could also have role in a CRS through planning approvals relating to the setting up of refund points on public or private land.

---

<sup>3</sup> Or councils directly if they operate their own waste management services

Landfill operators (either council or private) will receive containers in general kerbside waste. There is no formal mechanism to recover containers through that system, although informal collection may occur.

### 2.2.2 Schemes elsewhere

As previously noted, three schemes currently operate in Australia – in New South Wales, South Australia and the Northern Territory – with schemes in Queensland, the ACT and Western Australia scheduled to commence within the next 18 months. There are also numerous schemes in operation overseas including 10 state-based schemes operating in the USA, schemes in most Canadian provinces and schemes in numerous European countries including in Denmark, Finland, Germany, Lithuania, Netherlands, Norway and Sweden.

Table 2 provides a summary of the key aspects of many of the Australian and overseas schemes.

**Table 2: Key aspects of Australian and overseas schemes**

Region/country	Retailer obligation? (Y/N/partial)	Deposit (D) or Refund (R) scheme?	Scheme administered by?	Deposit amount (\$A equiv.)	Regulated redemption target?	Approximate redemption rate (%)
NSW (Australia)	N	R	Beverage suppliers	0.10	N	nya
NT (Australia)	N	R	Beverage suppliers	0.10	N	60
South Aust (Australia)	N	R	Beverage suppliers	0.10	N	78-80
Alberta (Canada)	N	R	Beverage suppliers	0.10-0.25	N	80-85
British Columbia (Canada)	partial	D	Beverage suppliers	0.05-0.20	Y	80-85
Saskatchewan (Canada)	Y	D	Non industry/not-for-profit	0.06-0.45	Y	85
Ontario (Canada)	partial	R	Beverage suppliers/Gov	0.10-0.20	N	75-80
Germany	Y	D	Beverage suppliers	0.10-0.20	N	95+
California (USA)	Y	D	Government	0.06-0.10	N	75-80
Massachusetts (USA)	Y	D	Government	0.06	N	60-65
Michigan (USA)	Y	D	Beverage suppliers	0.010	N	90+
New York (USA)	partial	D	Beverage suppliers	0.05	N	65-70
Oregon (USA)	Y	R	Beverage suppliers	0.010	N	80-85
Vermont (USA)	Y	R	Beverage suppliers	0.05-0.10	Y	75-80

Container redemption rates<sup>4</sup> vary significantly between the schemes, ranging from 60% in the Northern Territory<sup>5</sup> to 95% or greater in Germany. Major factors contributing to the varying success of the different schemes are discussed in the following sections.

Noting that a high container redemption rate is a necessary outcome for realising scheme objectives (see section 2.3), there would appear to be four elements of scheme structure that have the potential to materially impact container redemption rates and therefore need to be resolved in the context of a Tasmanian scheme<sup>6</sup>:

1. The deposit or refund rate applied to beverage containers.
2. Liable entities under the scheme, including in particular whether beverage retailers have an obligation under the scheme.
3. Whether the scheme is a container deposit scheme or a container refund scheme.
4. Whether the scheme includes a regulated redemption target or targets and penalties for failing to meet those targets.

The first three elements are discussed below, with the fourth element being covered in section 2.3.3.

### 2.2.3 Deposit amount

The deposit amount would appear to be a significant factor influencing redemption rates with schemes having the highest deposit rates (e.g. Germany, Michigan) tending to have the highest redemption rates, while schemes with lower deposit rates (e.g. New York) having lower redemption rates. This outcome is consistent with standard economic theory regarding the influence of price on consumer behaviour. It has also been aptly demonstrated in South Australia, where the overall redemption rate increased from about 70% to 80% or greater after the deposit amount was increased from 5c/container to 10c/container in 2008 (EPA South Australia, 2012).

All current and proposed Australian schemes currently have a deposit of 10 cents (~ 8 cents US) applying to eligible containers. Given the correlation between redemption rates and deposit amount there is some doubt as to whether 10 cents/ container is a sufficiently high deposit amount. We note however, that the terms of reference for this analysis stipulate that a Tasmanian scheme must be consistent with mainland jurisdictions. That requirement alone, but also practicality, dictates that the deposit amount in Tasmania should be 10 cents/ eligible container at scheme commencement and for the foreseeable future.

Given the apparent impact of deposit amounts on container redemption rates however, it would be appropriate for the relevant Minister to retain the ability to increase the deposit amount at any time, including in the advent of an underperforming scheme. Preferably though, a change in the deposit amount would be synchronised with the same change in other schemes. To that end, Tasmanian government regulators should look for a suitable channel to enable a periodic interjurisdictional review of the deposit amount applying to schemes around Australia. The aim of the review would be to ensure that the deposit amount keeps pace in line with inflation. Our

<sup>4</sup> Redemption rate is the proportion of total eligible containers consumed that are returned for a refund payment either through a refund point or via a MRF

<sup>5</sup> The Northern Territory scheme has only been operating for about six years, so it is possible that redemption rates will increase there over the next few years

<sup>6</sup> Note that there are significant differences between Australian schemes and between Australian and international schemes on these aspects

preliminary analysis suggests that a 5c increase approximately every 10 years will be required for that outcome.

### 2.2.4 Liable entities

#### Retailer obligation?

A key unresolved aspect of scheme structure relates to the question “should beverage retailers be subject to an obligation under the scheme?” On this point we note that in all Australian and overseas schemes beverage suppliers (either manufacturers or brand owners/ distributors) are the key liable entities – i.e. they have primary responsibility for:

- ensuring that liable beverages are supplied in eligible containers;
- ensuring that eligible containers are clearly and correctly identified including with the deposit amount; and
- paying for scheme costs.

However, many of the overseas schemes also place a form of ‘secondary liability’ on beverage retailers<sup>7</sup>. In those schemes, either some or all retailers have an obligation to take back and provide a refund for containers that they have sold to consumers.

Table 3 provides a summary of the pros and cons of having a retailer obligation built into a CRS.

**Table 3: Pros and cons of a scheme having a CRS scheme with a retailer obligation**

Pros	Cons
<ul style="list-style-type: none"> <li>- More effective; higher redemption rates</li> <li>- Administratively simpler; easier to establish and oversee network of refund points</li> </ul>	<ul style="list-style-type: none"> <li>- Less cost effective; high numbers of refund points mean lower throughput/refund point and higher unit costs</li> <li>- Potential negative impacts on kerbside recycling system (MRFs and councils)</li> </ul>

On the pro side, it is apparent from results of the review process (summarised in Table 2) that there is significant correlation between container redemption rates and whether or not scheme has a retailer obligation. After allowing for other factors that drive high redemption rates (such as deposit amount), schemes with a retailer obligation (such as in British Columbia, Germany and Michigan) tend to have higher redemption rates than schemes without the obligation – probably in the order of about 10 to 15 percent. This outcome stems from greater accessibility and convenience, with retailer obligation schemes having a significantly greater number of refund points (on a per capita basis) and often in more convenient locations, than schemes without a retailer obligation. This in turn stems from the obligation, which requires most major retailers of beverages (such as supermarkets and convenience stores) to establish a refund point<sup>8</sup>. Considering the Tasmanian context, if a retailer obligation were to be included in a Tasmanian scheme (but with a size threshold), we estimate that at least 120 retail outlets would be required to accept containers and possibly significantly more. As discussed later in the

<sup>7</sup> Notably British Columbia, Germany, Michigan and Vermont

<sup>8</sup> Many of the schemes include a size threshold (e.g. floor space or turnover) or allow exemptions. In Vermont, for example, if retailers are located near another major redemption point then they can be exempted from having to accept containers.

report, this is substantially greater number of refund points than could be anticipated for a scheme that does not have a retailer obligation<sup>9</sup>.

A scheme with a retailer obligation is also likely to be administratively simpler. This is because the obligation will essentially result in a substantial proportion of the refund point network being ‘self-selected’. The scheme co-ordinator or operator will therefore not need to go through a drawn out process of identifying and selecting suitable refund points, with only sites for large scale redemptions needing to be identified.

On the negative side, a major problem with having the large number of refund points that will stem from a scheme that has a retailer obligation is lower cost effectiveness (in cents/container). Higher costs stem from generally lower throughput of containers per refund point and the limitation that a retailer obligation places on the scheme co-ordinator from selecting a mix of fit-for purpose refund points. The higher scheme costs will be passed through to consumers. Further analysis is needed to assess the full impact of a retailer obligation on scheme costs. However, an indicative estimate, drawing on the financial analysis undertaken for this project (see section 6) suggests that a retailer obligation could increase scheme handling costs (on a cents/ container basis) in Tasmania by at least 30% and possibly up to 50% greater than a scheme that does not have a retailer obligation<sup>10</sup>.

The question therefore comes down to the question “does an additional 10%+ container redemption rate justify the extra cost?” In response, if the overarching objective of a CRS is to achieve a very high redemption rate (i.e. greater than 85%), then including a retailer obligation in the scheme should not be ruled out. On balance though, after consideration of the competing objectives of the scheme, we believe a retailer obligation should not be included. There are three reasons for this:

- First, the terms of reference not only stipulate that a Tasmanian scheme must be consistent with mainland jurisdictions but also that the scheme must be cost effective. Introducing a retailer obligation to a Tasmanian scheme would arguably contravene both these terms, since not only would a scheme with a retailer obligation be at odds with all other schemes in Australia (current and proposed), it is likely to be less cost effective (on a cents/ container basis) than a scheme that does not have a retailer obligation.
- Second, there is a risk that the existing kerbside system could be a ‘victim’ of a scheme that contains a refund obligation. While it is desirable to have a successful CRS scheme (with redemption rates of 80% or greater), a seemingly perverse outcome of a very successful scheme (with redemption rates of 90% or greater) could be an adverse financial impact on MRF operations. As discussed further in section 4.4, in general MRFs (and by extension) local councils are likely to benefit from the introduction of CRS scheme, with refund revenues generated from containers collected through the kerbside system outweighing the loss of revenue due to lower kerbside throughput. Once redemption rates reach about 90% however, the reverse starts to occur.
- Finally, applying a retailer obligation is potentially an inefficient means of achieving the desired outcome of very high redemption rates. Arguably, a better way to achieve this

<sup>9</sup> See section 4.1 for details of the number and location of refund points that are considered appropriate given the model proposed through this analysis.

<sup>10</sup> We note that some stakeholders argue that the most expensive CRS for a consumer is “...one that does not allow them to easily recoup their deposit, costing them 10 cents for every eligible container (not redeemed)” (Association of Container Deposit System Operators, Submission to Western Australia Container Deposit Scheme Discussion Paper). While this is indeed a high cost for non-redeeming consumers, this ‘cost’ is in effect a transfer from non-redeeming consumers to redeeming consumers, who will benefit significantly from a scheme that is cost effective overall.

outcome is to set strong redemption rate and access targets and leave the decision on how best to meet those targets to the scheme co-ordinator or network operator, an approach that is more likely to encourage an innovative and diverse mix of refund points.

The lack of a retailer obligation in a Tasmanian scheme however, will mean that strong redemption and access targets will need to be established in the scheme and that suitable sanctions for failing to meet those targets are applied. In the absence of a retailer obligation, this is the only way to ensure that the scheme co-ordinator/operator gives sufficient thought and attention to the required number, location and type of refund points (including retail outlets) (see section 2.3.3 for further discussion).

### First suppliers or brand owners?

A secondary question concerning liable entities is “how should the term ‘beverage suppliers’ be defined?” The answer to this question is important in so far as it determines whether a beverage ‘first supplier’ (typically the manufacturer) of a beverage is primarily responsible for paying the cost of redeeming and recycling the container in which the beverage was sold, or whether it is the ‘brand owner’. In many cases manufacturers and brand owners are one and the same entity. In some cases they are not however, notably when a manufacturer produces and bottles a beverage on behalf of a retail chain, usually under the retail chain’s generic brand name.

In nearly all cases, Australian schemes have applied the brand owner approach to determining supplier liability. In NSW however, the first supplier approach has been applied. The rationale behind its adoption of this approach is frequent cross border movement of beverages, especially by major beverage retailers such as supermarkets, and concern by regulators that this cross border movement could be used by brand owners to avoid paying scheme costs, either unintentionally or deliberately<sup>11</sup>. The outcome of adopting the first supplier approach however, could well be a complex and potentially expensive container tracking process. Moreover, it is arguably inequitable, as it requires manufacturers of generic brand beverages to be responsible for the relevant containers even though it is the brand owners who effectively control the production and distribution of the beverages and their containers.

For this reason, and also because cross border movement of containers is unlikely to be a concern for Tasmanian regulators, we suggest that the brand owner approach to supplier liability is the preferred approach for a Tasmanian CRS scheme.

### 2.2.5 Container deposit-based or container refund-based scheme?

Another key structural difference between the schemes that have been reviewed is that some are container deposit-based schemes and some are container refund-based schemes. The main distinction between the two is as follows:

- Under a container deposit-based scheme beverage suppliers pay an upfront deposit to the scheme co-ordinator on all eligible containers at the time of sale. They also pay a fee to cover scheme costs (usually based on redeemed containers in proportion to market share). The value of any unredeemed deposits is either retained by the scheme co-ordinator (initially for covering scheme start-up costs and later for re-investing in the scheme) or is passed on to government (usually for funding other waste management programs).
- Under a container refund-based scheme beverage suppliers pay a deposit (either upfront or in arrears) to the scheme co-ordinator but only on redeemed eligible containers. They also

<sup>11</sup> NSW EPA, personal communication, 6 February 2018.

pay a fee to cover scheme costs based on redeemed containers. This means that the value of unredeemed deposits is retained by beverage suppliers, which in principle should be passed on as a cost saving to consumers.

Both of these alternatives have advantages and disadvantages (Table 4).

**Table 4: Advantages of container deposit-based and container refund-based schemes**

Scheme type	Advantages
Container deposit-based	<ul style="list-style-type: none"> <li>- Provides additional funds for covering scheme start-up costs, re-investing in scheme or for other waste management programs (e.g. recycling infrastructure)</li> <li>- Possibly contributes to higher redemption rates</li> </ul>
Container refund-based	<ul style="list-style-type: none"> <li>- More cost effective; consumers only pay for costs of containers that are redeemed</li> <li>- Avoids misaligned objectives (CRS objectives v other waste management objectives)</li> </ul>

A container refund-based scheme will almost certainly be lower cost than a container deposit-based scheme. Provided beverage suppliers or retailers do not engage in price gouging, those cost savings should be passed on to consumers. We note however, that there have been some criticism of refund-based schemes where this may not have been happening (West et al. 2013). Further, a refund-based scheme provides a disincentive to the scheme co-ordinator (in the case of an industry-run scheme) to maximise redemption rates, since the industry will only be paying for the cost of containers that are actually redeemed.

A container deposit-based scheme arguably avoids this pitfall, although the evidence for this is at best uncertain, with a number of overseas schemes that utilise a deposit scheme still having relatively low redemption rates (Table 2). In part this may reflect the fact that in a number of deposit schemes some or all of the unredeemed deposit funds are diverted to government for use in other waste management programs. While this may be may be an attractive proposition to government, this approach works against a professed aim of a CRS – to maximise redemption rates. Further, great care would need to be taken when utilising those funds to ensure that the outcomes of funded programs were fully consistent with the objectives of a CRS (see section 2.3). Otherwise government will open itself to criticism of conflicting objectives and misuse of funds.

All schemes currently in operation in Australia (and also the planned Queensland scheme) are deposit refund-based schemes. For this reason, and also because it is likely to be the more cost effective approach, we suggest that any scheme introduced in Tasmania should be a container refund-based scheme. Once again though, the adoption of a container refund-based scheme adds to the imperative to establish strong redemption and access targets in the scheme.

As well, with the introduction of a container refund-based scheme, it may be appropriate for the relevant government consumer agency (i.e. Consumer Affairs and Fair Trading, Tasmania) to monitor beverage prices for an initial period (e.g. 12 months) after the scheme is first introduced, to ensure that beverage suppliers and/or retailers do not engage in price gouging<sup>12</sup>.

### 2.3 Objectives of a CRS scheme

The requested attributes of a CRS scheme for Tasmania include that it has the primary policy objective of reducing beverage container litter, with a secondary objective of encouraging the

<sup>12</sup> This would most likely be Consumer Affairs and Fair Trading, Tasmania (Consumer, Building and Occupational Services). Additional resources would be required to undertake this task.



recovery, reuse and recycling of containers (section 1.2.1). These objectives are consistent with CRS type schemes that are in place elsewhere in Australia and warrant inclusion in a Tasmanian scheme. To realise the objectives however, will require specific measures to be taken as part of the scheme.

### 2.3.1 Litter reduction

Litter is a highly visible sign of pollution. It is unsightly and can cause harm to people, wildlife and waterways. Available evidence indicates that the Australian community generally has great concerns about the impacts of litter (Donnelly and Buard 2011). The impact of plastics on the marine environment is a growing problem in Australia and internationally (McIlgorm et al. 2009, Schuyler et al. 2018).

Concern about single use beverage containers becoming a major part of the litter stream and posing a threat to the environment was the key factor influencing introduction of the South Australian scheme (EPA South Australia 2015). Similarly, achieving the NSW Government's goal of a 40 per cent reduction in litter volume by 2020 is the major driver behind the introduction of the NSW 'Return and Earn' scheme (NSW Government 2018).

Estimates of beverage container litter rates compiled and updated for this analysis indicates that almost 7.7 million beverage containers (>800 tonnes) were littered in Tasmania in 2017 (Table 5). This represents only about 3% of all beverage containers consumed in that year. However, most of the littered containers are for beverages that were consumed away from home, with an estimated 11 percent of beverage containers that were consumed away from home in Tasmania being littered.

**Table 5: Beverage container summary estimates for Tasmania, 2017<sup>13</sup>**

	Tonnes	Number	%
<b>Total consumption</b>	<b>31,776</b>	<b>301,715,879</b>	<b>100.0%</b>
Recycled/recovered	10,181	96,670,534	32.0%
Landfilled	20,786	197,365,079	65.4%
Littered	809	7,680,267	2.5%

Source: Marsden Jacob analysis

Available data on litter provided through analysis of the National Litter Index (NLI) indicates that litter rates<sup>14</sup> in Tasmania are similar to or slightly below the national average, being lower than in some jurisdictions and higher than in others (McGregor Tan Research 2016). Beverage containers typically comprise between 40% and 50% of the total volume of litter in Tasmania. This is also similar to the national average.

Importantly South Australia, the only jurisdiction in which a CRS has been in place for a substantial length of time, has much lower rates of beverage container litter than other jurisdictions, typically being about 50-60% lower than the Australian average. General littering rates in South Australia are also lower than the Australian average but the difference is generally much less (~10-20% lower). Initial indications from the first couple of years of

<sup>13</sup> Table 5 provides summary data from the material flows analysis undertaken for this analysis and detailed in section 6. The data for the material flows analysis was derived from numerous sources including Blue Environment and Randell 2017, Envisage Works and SRU 2017 and Marsden Jacob 2013. There is significant uncertainty about some of the estimates though, and an incidental recommendation based on research undertaken for this study is that further work is needed to improve collation of data related to waste management in Tasmania.

<sup>14</sup> Normalised by measured as volume of litter per 1000m<sup>2</sup> of surveyed sites.

operation of the CRS in the Northern Territory are that the beverage container litter rate has been reduced significantly compared with litter rates prior to the introduction of the scheme (West et al. 2013).

Circumstantial evidence therefore, would seem to strongly indicate that the CRS has been an effective mechanism for reducing litter in both South Australia and the Northern Territory. On that basis, litter reduction would seem to be an appropriate primary objective of a Tasmanian CRS.

### 2.3.2 Recycling

Improving recycling rates is a secondary objective of other recycling schemes, most notably in NSW and Queensland where recycling is listed as an object in the relevant Acts.

Available data indicates that recovery and recycling of beverage containers in Tasmania is only about 32% at present (Table 5). This is lower than comparable recycling rates in most other jurisdictions in Australia, but is consistent with lower rates of recycling in Tasmania compared with other jurisdictions for materials such as paper and construction and demolition (C&D) waste. This situation in part reflects difficulty with access to domestic and international markets for recycle by Tasmania, a situation that a CRS scheme could help to overcome both directly and indirectly:

- Directly, if recycling (or resource recovery) is a stipulated outcome in the relevant legislation for any material recovered through a CRS scheme, then the scheme co-ordinator must ensure that the material is recycled (see 2.3.3).
- Indirectly, material recovered through a CRS scheme is generally higher ‘quality’ than the same material recovered through other means (such as a comingled kerbside recycling service), since it is better sorted and has lower rates of contamination and breakage. This means that it is likely to attract a premium in recycling markets, which will therefore encourage greater rates of recycling.

It is worth noting however, that beverage containers represent only about 30% by weight of total packaging waste in Tasmania (Marsden Jacob 2013), about 12% of Municipal Solid Waste (MSW), and only about 3% of the state’s overall waste stream (see Blue Environment 2017). Introducing a CRS scheme will therefore have only a relatively small impact on overall recycling rates in Tasmania, even if it is very effective in increasing beverage container recycling rates.

In this respect, it is appropriate that recycling is only a secondary objective of a CRS scheme.

### 2.3.3 Realising objectives

#### Legislated objectives

To realise the primary and secondary objectives of litter reduction and container recycling will, in the first instance, require them to be legislated. As previously noted, both the NSW and Queensland legislation includes objectives of recycling and litter reduction:

- The *NSW Waste Avoidance and Resource Recovery Amendment (Container Deposit Scheme) Act 2016* includes in its objects<sup>15</sup>:

<sup>15</sup> Part 5, Section 19 (1) (b)

*(a) to recognise the responsibility that the beverage industry shares with the community for reducing and dealing with waste generated by beverage product packaging; and*

*(b) to establish a cost effective State-wide container deposit scheme to assist the beverage industry to discharge that responsibility and to promote the recovery, reuse and recycling of empty beverage containers.*

- Similarly, the *Queensland Waste Reduction and Recycling Amendment Act 2017*<sup>16</sup> includes in its objects to:

*(a) increase the recovery and recycling of empty beverage containers”;* and

*(b) reduce the number of empty beverage containers that are littered or disposed of to landfill.*

It is appropriate that the Tasmanian scheme follows this approach and explicitly includes litter reduction and recycling as objectives in the relevant Tasmanian legislation. Legislated recycling and litter reduction objectives will not of themselves achieve those outcomes though. Additional mechanisms are required.

#### Litter control mechanisms

In the case of litter reduction, it is not feasible to regulate this outcome through CRS legislation, since littering behaviour is beyond the control of scheme participants. Indirectly though, litter reduction will be promoted via two CRS linked measures.

#### Container redemption rates

First, achieving high container redemption rates, especially of containers that have been consumed away from home, will be crucial to lowering the numbers and volume of beverage containers that are littered.

As has previously been identified through review of other schemes (section 2.1), two design features are most responsible for encouraging high redemptions rates.

1. Deposit amount – ensuring that the deposit it is set at a level sufficient to provide an incentive to change post-consumption behaviour and maintaining the real value of the deposit over time. This issue was covered in section 2.2.3.
2. Convenience/access – ensuring that the process of redeeming containers through refund points is convenient for consumers. In the absence of scheme that includes a retailer obligation (section 2.2.4), a great deal of thought will need to be given to the number, location and design of refund points, keeping in mind the following principles:
  - a sufficient number of refund points is required; for this analysis we have estimated that there will need to be more than 60 refund points state wide to provide good access in urban, regional and remote areas – on a per capita basis this is more than on other jurisdictions and substantially more than are being provided under the NSW and Queensland schemes;
  - refund points need to be well located and comprise a range of types, providing consumers with different means of redeeming their containers depending on their circumstances (e.g. redeeming a small number of containers that have been consumed away from home versus redeeming large numbers of containers that have been consumed at home);

<sup>16</sup> Part 3B, Division 1, Section 99H (a)

- refund points need to give consumers a range of options for receiving refund payments.

As well, legislated targets will be needed to achieve high container redemption rates including:

- redemption targets;
- container refund point access targets; and
- sanctions for failing to meet the refund point access targets.

At this stage it is not possible to be precise about the appropriate redemption target level, although the review of other schemes undertaken for this analysis would indicate that a redemption rate of 80-85% overall would be an achievable long-term target for a scheme that does not include a retailer obligation. Achieving that target however, will depend on setting a redemption target and access targets, requiring that the targets are achieved and maintaining the real value of the deposit over time.

These issues are discussed further in sections 3.3 and 4.1.1.

### Monitoring litter data

As a means of determining whether the litter reduction objective is being achieved it will be important for the relevant government regulator to maintain ongoing monitoring of beverage container litter data. Rather than attempting to generate a new litter data set, the regulator can access litter data generated for Tasmania through the National Litter Index (NLI).

### Requirements in the legislation that containers are recycled

In the case of recycling, it is feasible to include legislative provisions to stipulate this outcome. The *NSW Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulation 2017*, for example, includes a range of provisions that together are intended to ensure that all beverage containers which are redeemed through the scheme are subsequently recycled. These include stipulations that:

- the regulator (NSW EPA) may refuse to grant approval for a supply of a beverage in a container that is not suitable for recycling or reuse [24(c)];
- a collection point can refuse to accept delivery of or pay a refund for a container that is contaminated, such that it is unsuitable for recycling or reuse [29(2)(a)]; and
- a material recovery facility (MRF) will not be paid a refund for an empty beverage container processed unless it has itself recycled the container or has sent the container to a recycler [19(4)] and has not permitted the container to be disposed to landfill [20].

Similar provisions are included in the *Queensland Waste Reduction and Recycling Amendment Act 2017*. Additionally, the Queensland Act stipulates that one of the functions of the scheme co-ordinator<sup>17</sup> is to ensure that empty beverage containers are recycled [99J]. We understand that the contractual arrangements between the NSW Government and the scheme co-ordinator also stipulates a similar requirement.

## 2.4 Eligible containers and beverages

All schemes currently operating or scheduled to operate in Australian jurisdictions cover the same groups of containers and beverages. The schemes apply mainly to 'litterable' beer,

<sup>17</sup> In Queensland this is referred to as the Producer Responsibility Organisation. See section 3.2.

carbonated soft drink, juice and water containers (typically glass, PET, aluminium, and liquid paperboard) with a volume of between 150 millilitres and 3 litres, but with a range of exclusions, notably:

- milk and milk substitutes (other than flavoured milk);
- cordial intended to be diluted before drinking;
- concentrated fruit and/or vegetable juice intended to be diluted before drinking; and
- registered health tonics.

Inclusions and exclusions are detailed in Table 6 and Table 7.

It would make little sense for a Tasmanian scheme to be any different. Broadening (or narrowing) the range of containers in Tasmania compared with the schemes of other jurisdictions risks creating unnecessary administrative complexities while achieving only minor additional benefits. On this point we note that a perusal of NLI data for this analysis suggests that the beverage containers listed in Table 6 typically comprise about 90-95% of the volume of beverage container litter in Tasmania.

**Table 6: Non-alcoholic beverages and containers proposed to be covered by a Tasmanian CRS**

Non Alcoholic Beverages			
Beverage type	Container material	Container size	
		Included	Exempted
<b>Carbonated soft drinks</b>	All	3 litres or less	Greater than 3 litres
<b>Non-carbonated soft drinks</b> including (but not limited to) fruit juice based drinks containing <90% juice, sports drinks, vitamin drinks, energy drinks and ready to drink cordials	All	3 litres or less	Greater than 3 litres
<b>Water</b> including plain, still or carbonated spring water, mineral water and any other water intended for human consumption	Aseptic packs/ casks (cardboard and/or plastic and/or foil)	Less than 1 litre	1 litre or more
	All other materials	3 litres or less	Greater than 3 litres
<b>Pure fruit/ vegetable juice</b> meaning a liquid containing at least 90% fruit juice and/or vegetable juice	All	Less than 1 litre	1 litre or more
<b>Flavoured milk</b> meaning milk to which a flavour has been added including cow's milk, milk of any other animal, vegetable based milks (soy, almond, etc.) ultra-heat treated milk, low-fat milk	All	Less than 1 litre	1 litre or more
<b>Plain milk</b> (unflavoured)	All	Nil	All
<b>Other</b> including concentrated fruit or vegetable juice intended to be diluted before consumption, undiluted cordial and health tonics (included in Register of Therapeutic Goods)	All	Nil	All

**Table 7: Alcoholic beverages and containers proposed to be covered by a Tasmanian CRS**

Alcoholic Beverages			
Beverage type	Container material	Container size	
		Included	Exempted
<b>Beer/ale/stout</b>	All	3 litres or less	Greater than 3 litres
<b>Spirituos liquor</b> meaning a liqueur or other alcoholic beverage produced by distillation (eg: brandy, gin, rum, vodka, whisky)	Glass	Nil	All
	All other materials	3 litres or less	Greater than 3 litres
<b>Wine</b> meaning a beverage produced by the fermentation of grapes that contains only grapes and no other beverages. Includes de-alcoholised wine (alcohol has been removed from the wine) but does not include non-alcoholic grape juice which has not undergone fermentation process.	Glass	Nil	All
	Aluminium	All	Nil
	Plastic	Less than 250ml	250 ml or more
	Sachets (plastic and/or foil)	Less than 250ml	250 ml or more
	Aseptic packs/ casks (cardboard and/or plastic and/or foil)	Less than 1 litre	1 litre or more
<b>Flavoured alcoholic beverages with a wine base</b> meaning any beverage that contains wine plus additional beverages, ingredients or flavours. This can include (but is not limited to) fruit-flavoured wine, wine coolers, ready to drink alcoholic beverages (RTDs)	Aseptic packs/ casks (cardboard and/or plastic and/or foil)	Less than 1 litre	1 litre or more
	All other materials	3 litres or less	Greater than 3 litres
<b>Alcoholic beverages derived from fruit or other substances</b> including cider, alcoholic lemonade, plum wine, sake	All	3 litres or less	Greater than 3 litres
<b>Flavoured alcoholic beverages with a spirit base</b> meaning any beverage that contains spirituous liquor plus additional beverages, ingredients or flavours. This can include (but is not limited to) ‘alcopops’, ready to drink alcoholic beverages (RTDs) and spirit-based beverages sold in casks	All	3 litres or less	Greater than 3 litres

### 3. Scheme governance and administration

#### Recommendations

##### **Recommendation 5 – Scheme governance**

Consistent with schemes operating elsewhere in Australia and with most overseas schemes, the beverage supply industry should have responsibility for running a CRS scheme in Tasmania. To ensure that scheme operations are at ‘arms length’ from the industry though, and that the industry is not seen to profit from the scheme, the responsible organisation should in essence operate as a product stewardship organisation (PSO), within a co-regulatory framework. This means that it is a not-for-profit company (limited by guarantee) that has been established under the relevant Act. The PSO will have a Board structure and a constitution and will be required to report to parliament against responsibilities and outcomes defined in the Act.

Suppliers of beverages in eligible containers in Tasmania (Brand Owners) should be required to contract or otherwise sign an agreement with the PSO. They should also be encouraged to participate as members of the organisation.

##### **Recommendation 6 – Board of Directors**

The PSO should be overseen by a Board of Directors. The Board should include representation from the beverage industry but, consistent with good practice governance models, should largely be skills based. To that end, the Board should consist of up to 9 directors, a majority of whom are independent of the beverage industry including:

- an independent chair;
- representatives of beverage manufacturers, both large and small; and
- directors with specialist skills, potentially including legal, financial, marketing, waste management and/or local government expertise.

Board membership should be approved by the relevant Minister after assessment of nominees against a skills matrix that has been developed for Board positions.

##### **Recommendation 7 – Single scheme co-ordinator/network operator**

To achieve consistency of objectives and to avoid duplication of roles and administrative complexities, the scheme should be operated by the PSO as a single co-ordinator and network operator in a combined role.

##### **Recommendation 8 – Transparent responsibilities and performance objectives**

Roles and responsibilities of the PSO should be clearly defined in the relevant Act. These include:

- Scheme integrity – ensuring that operation and administration of the scheme is transparent is undertaken solely for the purpose of achieving scheme objectives and that this is done in a way that is transparent, fair and equitable.
- Product stewardship – ensuring that beverage suppliers fund the full costs of the scheme through payments to the PSO.
- Scheme payments – establishing the timing and basis for payments under the scheme including payments by beverage suppliers to the PSO and payments from the PSO to other scheme participants such as refund points, logistics operators, processors and MRFs.
- Redemption rates – ensuring that the scheme achieves a high rate of container redemptions.

- Scheme accessibility – establishing a network of refund points to provide consumers and community members with good access to a place for returning their empty beverage containers and receiving a refund on those containers.
- Recycling – ensuring that all beverage containers collected through the scheme are fit for recycling, are sorted and recycled in an approved process. All recyclers should be approved by government.
- Monitoring and record keeping – ensuring that effective and ongoing audit and verification mechanisms are in place to accurately track and reconcile numbers of containers going through the system and payments (refunds and fees) for those containers. Also, maintaining accurate financial and container records against a register of approved containers and suppliers<sup>18</sup>.
- Scheme awareness – ensuring that the scheme is effectively promoted, providing useful education and information to the community about the scheme and to scheme participants and potential participants.
- Complaints – ensuring that complaints about the scheme, by either community members or other scheme participants, are addressed. Referring any complaints relating to price gauging by beverage suppliers or retailers to the relevant regulator.

#### **Recommendation 9 – Performance targets and sanctions**

To ensure that the objectives of the scheme are being met, specific targets should be set for the PSO against those objectives including:

- redemption targets;
- possibly refund targets; and
- container refund point access targets.

To encourage transparency, these targets should be established in the relevant regulations, with a requirement that the PSO regularly report on performance against the targets to parliament via the relevant Minister.

Appropriate sanctions should be applied for failure to meet the targets. Sanctions should be graduated and proportionate, with the highest level of sanction be cancellation of appointment of the PSO. Lower level sanctions should be sufficient to encourage improved performance.

The funds, infrastructure etc. will need to be safeguarded in case of cancellation.

#### **Recommendation 10 – Defined roles and responsibilities for other scheme participants**

The Act should also establish defined roles and responsibilities for other key scheme participants including for:

- beverage suppliers;
- refund points;
- processors; and
- material recovery facilities (MRFs).

Section 2 considered the major features of a CRS scheme, making recommendations for Tasmania suggesting features that are broadly consistent with schemes that are in place or soon to be introduced in other jurisdictions in Australia. There are numerous specific aspects of a CRS relating to governance, administration and operation of a scheme that vary quite considerably between jurisdictions and need to be resolved for Tasmania considering local

<sup>18</sup> Note, responsibility for container approval and maintaining a register of approved containers is likely to reside with the relevant State Government department (see section 6.4.3).



contexts. Governance and administration aspects are discussed in this section, with scheme operations being considered in section 4.

### 3.1 Overview of alternative governance models

Scheme governance relates to the organisational structure and responsibilities of the organisation responsible for running a CRS and the rules governing its operations. At a high level, there are three main models of governance that are in place in Australian and international schemes at present:

- **Government run scheme** – a government or government agency sets objectives and targets for the scheme and also runs the scheme, possibly through a statutory authority. Costs of the scheme are borne by beverage suppliers.
- **Industry run scheme, for profit** – the beverage industry (manufacturers or suppliers) establishes and runs a scheme, on a for-profit basis (usually through a company established specifically for that purpose). Costs of the scheme are borne by beverage suppliers. The rules governing operation of the scheme are generally established by government, in consultation with industry, with the rules being set out in legislation and/or contracts. Scheme profits are distributed as dividends to shareholders of the newly established company.
- **Industry run scheme, not-for-profit** – the beverage industry (manufacturers or suppliers) establishes and runs a scheme, on a not-for-profit basis (usually through a company limited by guarantee). Costs of the scheme are borne by beverage suppliers. The rules governing operation of the scheme are generally established by government, in consultation with industry, with the rules being set out in legislation. Revenue over time is used to meet all costs; there is not any redistribution of funds outside of the Scheme.

All Australian schemes (current and proposed) are industry run and only one of the international schemes that has been reviewed - California - is government run. Noting the situation elsewhere in Australia, and the likely unwillingness of the Tasmanian government to take on the role and potential risks of running a CRS, we confine our consideration of governance models hereafter to industry based models. Further, noting an earlier recommendation to not include a retailer obligation in the scheme, the discussion is confined to models that do not contain that obligation.

We note though, that in the course of consultations for this analysis, we ‘sounded out’ non-beverage industry stakeholders in Tasmania regarding their interest in being involved in the administration of CRS, in some capacity. No stakeholders expressed a direct interest, although some were of the view that the involvement of organisations and industries (outside of the beverage industry) in scheme operations should be tested through a competitive tendering process. That question is examined further in the following sections.

### 3.2 Governance in other jurisdictions

Boxes 1 and 2 contain overviews of the NSW and Queensland schemes respectively. Those two schemes provide the basis for discussion of alternative governance models. This is because:

- They are two recently established schemes and considerable attention has gone into developing and participating in the governance and administrative arrangements for these schemes.

- Although they are both essentially industry-based schemes, they have contrasting arrangements in key aspects of governance and the process of developing these arrangements was quite different between the two.
- Although the South Australian scheme has been in operation for over 40 years and by most measures it has been a relatively effective scheme, the rules governing its operations have essentially evolved over time, often by convention, and are therefore less relevant to establishing a new scheme from scratch. Nevertheless, there are aspects of the South Australian scheme worth mentioning and for this reason, an overview of the scheme's arrangements are provided in Figure 2 along with those of NSW and Queensland.
- The Northern Territory system is similar in structure to the South Australian scheme, and has many of the advantages and drawbacks of that scheme. Also the ACT scheme is likely to be part of the NSW scheme.

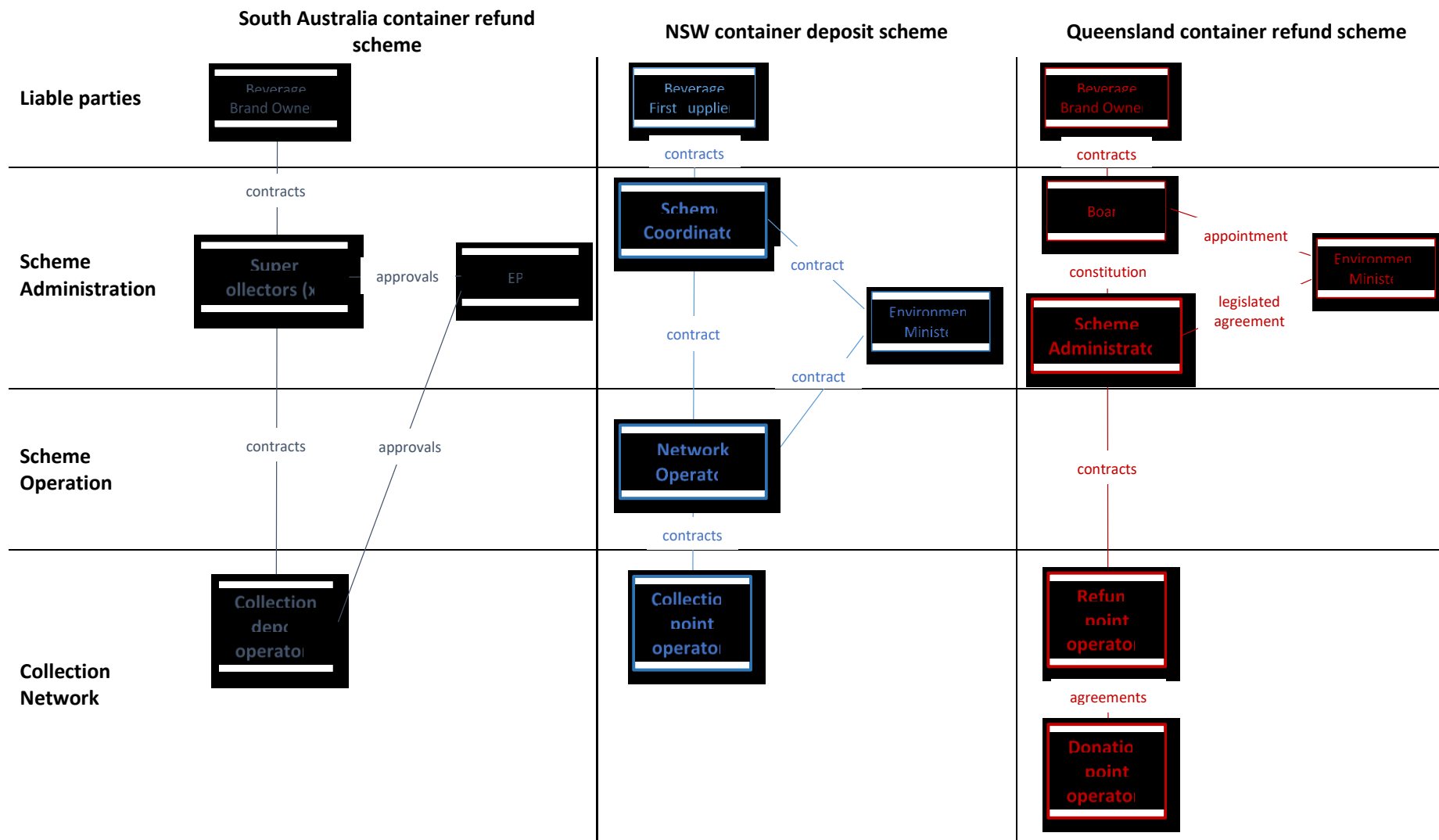
### 3.2.1 Key features of governance arrangements under the NSW and Queensland models

#### NSW

As outlined in Figure 2 and further detailed in Box 1, key features of the governance and overarching administrative arrangements of the NSW scheme are as follows:

- State government has regulatory oversight of the scheme through an Act and supporting regulation.
- The scheme is being co-ordinated by a single, industry-based company which, nominally at least, is a for-profit company. There is fairly wide industry participation in that company.
- A separate company (based in the waste industry) is responsible for network operations.
- Selection of both the scheme co-ordinator and network operator was undertaken following a competitive tender process.
- Roles and responsibilities of the scheme co-ordinator and network operator are detailed in the Act and regulation. General principles and performance targets relating to the number and operating hours of refund points (referred to as collection points in NSW) are included in the regulation, with further details provided in contracts. These are not publicly available. It is also unclear as to what, if any, sanctions apply in the event of targets not being achieved. There are no targets relating to redemption rates.
- Beverage suppliers are required to pay for the cost of the scheme. This is done by entering into a supply agreement with the scheme co-ordinator covering scheme costs and refunds associated with redeemed containers. Beverage suppliers are also required under the Act to get container approvals from the NSW EPA for beverages sold in eligible containers and to ensure that all eligible containers bear a refund marking and a barcode.
- Roles and responsibilities of other scheme participants including collection point operators, MRFs and members of the public seeking to redeem containers.

Figure 2: Container scheme governance and administration arrangements, other jurisdictions



### Box 1: NSW scheme overview

The NSW container deposit scheme<sup>19</sup> 'Return and Earn' has been in operation since 1 December 2017. The Scheme was established through the *Waste Avoidance and Resource Recovery Amendment (Container Deposit Scheme) Act 2016*, with regulations relating to the Scheme's operations being detailed in the *Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulation 2017*.

#### Key features of the scheme

##### **Liable parties**

Beverage suppliers are the liable parties, based on the 'first supplier' model, which almost always means the beverage manufacturer.

##### **Supplier contributions**

Despite its name, the NSW schemes is essentially a 'refund' scheme in that suppliers only pay for the costs of redeemed containers, rather than all eligible containers supplied to the market. The NSW scheme has an upfront payment arrangement, which was introduced to provide a float to cover payments in the first period.

##### **Scheme co-ordination**

The Scheme is being run by a single Scheme Co-ordinator, Exchange for Change, which was contracted by the State through a competitive tendering process. Exchange for Change is a for-profit company established by the five largest beverage suppliers to the NSW market: Asahi, Carlton United Breweries, Coca Cola Amatil, Coopers and Lion.

Exchange for Change is responsible for managing Scheme finances and payments, including payment by beverage suppliers of the refund and administrative and network fees to fund operation of the Scheme. Furthermore, Exchange for Change is responsible for managing Scheme-wide data regarding container amounts, refund amounts and proof of recycling for containers collected through the Scheme. Exchange for Change is also responsible for educational and marketing activities. These requirements are established in the Act.

##### **Scheme operation**

A separate Network Operator, has been contracted by the State Government through a competitive tender process to establish collection points, ensure processing and recycling of the collected containers and to coordinate transport and other logistics. Tomra Cleanaway, the successful tenderer, is a joint venture partnership between Cleanaway Waste Management Ltd and TOMRA Systems ASA. The network operator must comply with various State Government obligations, including in relation to the location, (minimum) number of collection points and their times of operation. General principles relating to these obligations are established in the *Waste Avoidance and Resource Recovery (Container Scheme) Regulation 2017*, with details contained in contracts between the Network Operator and State Government and Network Operator and Scheme Co-ordinator. Outside of the obligations the Network Operator is free to make operational decisions based on commercial and other considerations.

##### **Collection point and depot network**

The Regulation sets out principles regarding the minimum number and location of collection points. Ultimately, it is planned that there will eventually be a network of more than 500 collection points, including Reverse Vending Machines (RVMs), manual over-the-counter collection points, donation points and bulk automated depots, which will combine as counting and processing centres.

The Network Operator may own and operate all collection points, or may engage collection point operators, which could be businesses, councils, retailers or not-for-profit organisations. In practice, 50% or more of collection points in NSW are expected to be (RVMs) operated by Tomra Cleanaway. These are being established in shopping centres (including in car parks) and public places such as train stations and universities. A network of manual, over-the-counter, collection points is also

being established, many of which are being located at privately owned retail outlets, such as convenience stores and cafes. Donation points are also being operated by Tomra Cleanaway, principally at public spaces such as at train stations, with refunds from containers redeemed at these paid to nominated charities. Full details of the proposed collection and processing network are in the relevant contracts and therefore are not publicly available.

Collection points are required to remain open for a minimum number of hours each week and at certain times of the day. Payments for refunds to consumers and other members of the public are via vouchers or Paypal at RVMs. At manual and bulk centres, payment is generally by cash. There is a limit of 100 containers accepted at manual collection points and 500 at RVMs. Members of the public who have greater numbers of containers must go to a bulk centre.

Collection points are responsible for initial counting and sorting of containers. Sorting of containers is only by glass and non-glass at the collection points. Similarly, counting of containers at manual collection points is done by volume rather than on an individual container basis.

Bulk, automated collection depots handle large volume redemptions (>500 containers). In some case they also act as processors, counting, sorting and baling containers received from the collection points, ready for movement to recyclers. A large depot in Western Sydney, operated by Tomra-Cleanaway, is processing all containers collected through the RVMs.

Under the NSW system, the full value of material sold to recyclers is retained by the Network Operator.

#### **MRFs**

Material recovery facilities (MRFs) are entitled to receive refunds for beverage containers collected through domestic kerbside waste management services, but not a handling fee. It is not necessary for MRFs to individually count containers to receive the refund, rather it can be done through a claims process involving weighing of the containers and application of a statewide factor to determine the number of containers for a given weight. Details of the claims process are provided in a separate 'MRF processing refund protocol'. MRFs must also enter into a 'refund sharing agreement' with local councils responsible for the LGAs in which the containers have been collected.

## Queensland

As outlined in Figure 2 and further detailed in Box 2, key features of the governance and overarching administrative arrangements of the Queensland scheme are as follows:

- State government has regulatory oversight of the scheme through an Act and a supporting regulation.
- The scheme is being co-ordinated by a single, industry-based entity, run as a not-for-profit company limited by guarantee (producer responsibility organisation or 'PRO'). The entity was appointed by the Minister and is overseen by a nine-member Board of Directors. The PRO is also responsible for network operations.
- Roles and responsibilities of the PRO are detailed in the Act.
- Roles and responsibilities of other scheme participants including refund point operators, MRFs and members of the public seeking to redeem containers are also detailed in the Act.

<sup>19</sup> Notwithstanding its description as a container *deposit* scheme, the NSW scheme is in effect a container *refund* scheme (see section 2.4.1).

- We understand that performance targets relating to the number and location of refund points are to be included in the regulation, with a minimum of 307 refund points to be stipulated. We understand that there will be no targets relating to redemption rates.
- Sanctions on the PRO for failing to meet its obligations include the capacity of the Minister to suspend or cancel its appointment and replacing it with an administrator. We also understand that there will be fines applied to the PRO in the event that it fails to meet access targets. At the time of writing, details of these, which are to be included in the regulation, were not available. We understand however, that the levels of fines are relatively small.
- Beverage manufacturers are required to pay for the cost of the scheme. This is to be done by entering into a container recovery agreement with the PRO covering scheme costs and refunds associated with redeemed containers. There is to be a cap on amounts paid to the scheme by small beverage manufacturers. Details of the cap are to be included in the regulation.
- Beverage suppliers are also required under the Act to ensure that all eligible containers bear a refund marking and a barcode.

#### Box 2: Queensland scheme overview

The Queensland container refund scheme is scheduled to commence operating on 1 November 2018. The scheme has been established through amendments to the *Waste Reduction and Recycling Act 2011*.

#### Key features of scheme

##### **Liable parties**

Beverage suppliers are the liable parties, based on the 'brand owner' model, which usually means the beverage manufacturer, but also means retailers when they are the owner of generic brands.

##### **Supplier contributions**

The Queensland scheme is a 'refund' scheme in that suppliers only pay for the costs of redeemed containers, not all eligible containers supplied to the market. The Queensland scheme has an arrears payment arrangement, which has the advantage of avoiding cash flow problems for beverage suppliers, but means that a source of revenue is needed to finance the scheme for the first period. The Queensland Government has committed to providing these funds as a loan.

##### **Scheme co-ordination and network operation**

A 'Product Responsibility Organisation' (PRO) has been appointed by the responsible Minister to run and administer the scheme. The PRO (Container Exchange) is a not-for-profit company limited by guarantee and is overseen by a nine member board of directors. It was established initially by beverage suppliers Coca Cola Amatil and Lion but the intention is that the PRO reflects broader industry representation over time. Network operation functions are also combined with scheme administration in the PRO. Obligations of the PRO are detailed in the Act and include:

- achieving scheme objectives;
- ensuring that the beverage industry pays for the scheme;
- organising scheme payments including refunds and fees;
- establishing a network of container refund points that is convenient and accessible;
- education and marketing; and
- auditing, verification and reporting.

Additional details regarding scheme accessibility are being established in the regulation based on an algorithm agreed with the Queensland Government.<sup>20</sup>

<sup>20</sup> At the time of writing the regulations were not available.

**Refund point, donation point network**

Applying the accessibility algorithm, mentioned above, a minimum of 307 refund points<sup>21</sup> are planned for Queensland. Details of the type and location of these collection points are being developed by the PRO in collaboration with refund point operators. Our understanding is that the exact type of refund points have not been stipulated but that the PRO is considering a range of types including:

- manual depots, which could be located at existing transfer stations and recycling centres and involve immediate refund payment by cash or electronic means;
- ‘drop-off’ points whereby consumers can return eligible containers in assigned and identified bags for later counting at depots, with payments made by electronic means after counting;
- RVMS; and
- mobile refund points (such as trailers with a cage) that operate in remote communities to a scheduled timetable.

Refund points are responsible for:

- paying the refund to members of the public;
- counting and sorting the containers by material type (glass, aluminium, LPB, steel, PET, HDPE and other plastics);
- ensuring secure storage of the materials;
- preparing the materials for transport to the processors; and
- record keeping.

Refund point operators will also be required to provide mobile collection infrastructure for use by community groups who wish to collect containers for redemption away from a Refund Point.

For these services, refund points will be paid a handling fee, likely to be set at a fixed rate by the PRO depending on the region.

Refund points can nominate how refunds will be paid to members of the public, whether by cash or non-cash methods. Opening hours of the refund points will also be at the discretion of the refund point operator.

The PRO will be responsible for organising collection and transport of the containers from refund points to a processor.

**Processors and MRFs**

Processors are responsible for:

- providing any infrastructure to refund points necessary to enable container transport;
- verifying the numbers of containers collected from refund points by material type (either using automated counting machine containers to count all containers or an weight basis using conversion factors by material type);
- preparing the containers for recycling by material type by ensuring that they are free of contamination ( $\leq 1\%$  by weight), glass crushing by color, and baling (all other materials);
- assisting with auditing; and
- reporting.

Processors must sell all materials collected through the CRS to registered recyclers using an auction process via an online material auction platform operated by the PRO. 80% of the sale price will go to the Scheme Co-ordinator, with 20% to go to the processor.

As in the NSW scheme, MRFs are entitled to receive refunds for beverage containers collected through domestic kerbside waste management services, but not a handling fee. Also like NSW, it will not be necessary for MRFs to individually count containers to receive the refund, rather it can be done through a claims process involving weighing of the containers and application of a

<sup>21</sup> Not all of which are expected to be operating at the beginning of the scheme.

statewide factor to determine the number of containers for a given weight. MRFs will retain 100% of the value of the material redeemed in this way but, as with processors, all of the material must be sold through the online material auction platform.

In addition to receiving material through the kerbside system, under the Queensland scheme, MRFs are also being encouraged to act as processors of material collected through refund points. For processing this material, the MRFs will receive a processing fee and (as with other processors) 20% of the value of the material to which the processing fee applies.

### 3.2.2 Pros and cons of alternative models

Table 8 provides an overview of the pros and cons of the NSW and Queensland models. In our view both models have strengths and weaknesses.

**Table 8: Pros and cons of NSW and Queensland models**

Scheme feature	Pros	Cons
<b>NSW</b>		
Separation of scheme co-ordinator and network operator roles	<ul style="list-style-type: none"> <li>- Balances competing scheme objectives (cost effectiveness v redemption rates) without concentrating authority in a single organisation</li> <li>- Increases potential for involving waste sector specialists in scheme operations</li> </ul>	<ul style="list-style-type: none"> <li>- Adds extra layer of administration and creates complex contractual arrangements</li> <li>- Potential for organisations to not work well together due to competing objectives</li> </ul>
Competitive tendering process	<ul style="list-style-type: none"> <li>- Increases transparency of process</li> <li>- 'Tests the market' for low cost and/or innovative service providers</li> </ul>	<ul style="list-style-type: none"> <li>- Reduces transparency of outcome</li> <li>- Adds extra layer of administration</li> </ul>
Roles, responsibilities and financial arrangements and targets detailed in contracts	<ul style="list-style-type: none"> <li>- Necessary to establish necessary level of detail and synchronise administrative arrangements</li> </ul>	<ul style="list-style-type: none"> <li>- Not transparent</li> </ul>
Scheme targets limited to access targets, sanctions limited or unclear	<ul style="list-style-type: none"> <li>- Reduces compliance burden on scheme co-ordinator and network operator</li> <li>- Extra targets may not be necessary with separation of roles</li> </ul>	<ul style="list-style-type: none"> <li>- Risk that key scheme objective (redemption rates) is not achieved</li> </ul>
<b>Queensland</b>		
Integration of scheme co-ordinator and network operator roles	<ul style="list-style-type: none"> <li>- Risks concentrating authority in single organisation with limited interest in maximising redemption rates</li> </ul>	<ul style="list-style-type: none"> <li>- Administratively less complex</li> </ul>
Product Stewardship Organisation appointed by government	<ul style="list-style-type: none"> <li>- Not-for-profit, Board run model can operate independently of industry</li> </ul>	<ul style="list-style-type: none"> <li>- Scheme seen to be beholden to beverage industry</li> </ul>
Roles, responsibilities, and targets detailed in regulations	<ul style="list-style-type: none"> <li>- Transparent</li> </ul>	<ul style="list-style-type: none"> <li>- May be difficult to amend, should circumstances change</li> </ul>
Scheme targets limited to access targets, sanctions limited or unclear	<ul style="list-style-type: none"> <li>- Reduces compliance burden on scheme co-ordinator and operator</li> </ul>	<ul style="list-style-type: none"> <li>- High risk that key scheme objective (redemption rates) is not achieved</li> </ul>

By separating the roles of scheme co-ordinator and network operator the NSW scheme provides a means of balancing competing scheme objectives (i.e. cost effectiveness versus high redemption rates) by not concentrating authority in a single organisation and by using a tender process to select the organisations. However, this very strength is also a potential weakness, as it means that there are two organisations, with potentially competing objectives, responsible for running different aspects of the scheme. The NSW government therefore needs to devote considerable attention to ensuring that the two organisations are working in sync. This has been



done through a three-way system of contracts, adding considerable regulatory and administrative complexity to the scheme. In doing so, the NSW government appears to be seeking to influence operational aspects of the scheme (stipulating the opening hours of collection points for example), thereby moving away from a co-regulatory model under which government's primary focus is on regulatory oversight. Further, the three-way system of contracts limits transparency, with a number of issues of importance such as scheme targets, sanctions and costs not being publicly available.

By combining the roles of scheme co-ordinator and network operator into a single organisation the Queensland model is administratively simpler. It is also potentially more transparent as scheme targets and sanctions are included in the regulation. However, this model is open to the criticism that it concentrates responsibility for the scheme in the hands of an industry run organisation whose primary objective will be to minimise scheme costs and therefore has no interest in maximising redemption rates. Two elements of the Queensland scheme seek to address this criticism:

- First, as a not-for-profit organisation that is run by a Board answerable to the Minister, the Queensland model seeks to ensure that the organisation responsible for running the scheme is at 'arms length' from the beverage industry. Indeed, the Producer Responsibility Organisation (PRO), which has been established in Queensland to run the scheme, closely follows the co-regulatory, producer responsibility organisation (PSO) model as defined in the national *Product Stewardship Act 2011*.
- Second, access targets linked to schemes objectives, with sanctions for failing to meet the targets, are established in the Act and supporting regulation.

These elements would appear to be deficient in some respects though.

1. First, the Board structure seemingly lacks balance, as it allows for over-representation of the beverage industry and insufficient independent expertise. At the time of writing, we understand that a majority of the nine members of the Board are from the beverage industry and that there is no waste specialist on the Board. It would be preferable for a majority of Board members to be people with specialist expertise who are not industry representatives. Further, given the nature of the scheme, one of the specialists should have expertise in the waste sector. One argument given for excluding the waste industry from the Board is that this represents a conflict of interest or a potential conflict of interest, as a waste industry representative could have pecuniary interest in how the scheme is run. It should be feasible however, to nominate a waste 'expert' who has no pecuniary interest in the scheme. Or in the worst case, the waste expert can be excluded from any decisions involving a potential conflict.
2. Second, the regulated targets and sanctions in the scheme appear to be inadequate. As with the NSW scheme, there are no redemption targets, only access targets. Arguably under the Queensland model though, which does not include a separate network operator who has a clear incentive to increase redemption rates, it is more important that there are both redemption and access targets. Furthermore, the regulated sanctions in the Queensland scheme are not graduated, having the all or (almost) nothing approach of either minor fines or suspension/cancellation of appointment (of the PRO).

### 3.3 Potential Tasmanian model

Considering the pros and cons of the Queensland and NSW governance models discussed above, other aspects of scheme design discussed in earlier sections, and also considering

specific elements of Tasmania's economy and demographics<sup>22</sup>, the following key attributes are proposed for a CRS in Tasmania.

### Single co-ordinator and operator set up as a product stewardship organisation

Given its relatively small population and low throughput of containers it is especially desirable that a Tasmania scheme avoids administrative complexities and costs. This points to a model involving a scheme co-ordinator combined with network operator. In both South Australia and the Northern Territory, other jurisdictions that have relatively small populations and container throughput, current scheme structures both involve multiple co-ordinating/operating roles. Past reviews of those schemes have all pointed to administrative complexities and inefficiencies resulting from a multi-organisational structure (see for example Hudson Howells 2005; West et al. 2013).

To reconcile competing scheme objectives (cost effectiveness versus redemption rates) and to ensure that the joint scheme-co-ordinator / network operator operates independently of the beverage industry, the organisation should be established as a not-for-profit product stewardship organisation (PSO) under a co-regulatory arrangement. This means that it is a not-for-profit company (limited by guarantee) that has been established under the relevant Act. The PSO will have a Board structure and a constitution and will be required to report to parliament against responsibilities and outcomes defined in the Act.

Ultimately container deposit/container refund schemes are a type of product stewardship arrangement. Given this, it is better to formalise that arrangement through a genuine co-regulatory arrangement between government and an industry-based product stewardship organisation than through an alternative structure. Under this arrangement:

- Government has overarching regulatory responsibility including determining the scheme structure, appointing the PSO, setting scheme objectives and targets and sanctions related to those objectives.
- The PSO is responsible for financial management of the scheme and day-to-day operations of the scheme.
- All suppliers of beverages in Tasmania (Brand Owners) are required to contract or otherwise sign an agreement with the PSO. They should also be encouraged to participate as members of the organisation.

### Board composition

The PSO should be overseen by a Board of Directors. The Board should include representation from the beverage industry but, consistent with good practice governance models, should largely be skills based. To that end, the Board should consist of up to 9 directors, a majority of whom are independent of the beverage industry including:

- an independent chair;
- representatives of beverage manufacturers, both large and small; and
- directors with specialist skills, potentially including legal, financial, marketing, waste management and/or local government expertise.

<sup>22</sup> These include the small scale of Tasmania's economy and its relatively dispersed and seasonal settlement pattern.

Board membership should be approved by the relevant Minister after assessment of nominees against a skills matrix that has been developed for Board positions.

Having a majority of the Board comprising people with specialist expertise who are not industry representatives will ensure that the PSO makes decisions that are not only independent of the beverage industry but are seen to be independent of the beverage industry.

### Transparent responsibilities and performance objectives of the PSO

Roles and responsibilities of the PSO should be clearly defined in the relevant Act. These include:

- Product stewardship – ensuring that beverage suppliers fund the full costs of the scheme through payments to the PSO.
- Scheme integrity – ensuring that operation and administration of the scheme is transparent is undertaken solely for the purpose of achieving scheme objectives and that this is done in a way that is transparent, fair and equitable.
- Scheme payments – establishing the timing and basis for payments under the scheme including payments by beverage suppliers to the PSO and payments from the PSO to other scheme participants such as refund points, processors and MRFs.
- Redemption rates – ensuring that the scheme achieves a high rate of container redemptions (see following section).
- Scheme accessibility – establishing a network of refund points to provide consumers and community members with good access to a place for returning their empty beverage containers and receiving a refund on those containers.
- Recycling – ensuring that all beverage containers collected through the scheme are sorted and recycled in an approved process.
- Monitoring and record keeping – ensuring that effective and ongoing audit and verification mechanisms are in place to accurately track and reconcile numbers of containers going through the system and payments (refunds and fees) for those containers. Also, maintaining accurate financial and container throughput records and a register of approved containers<sup>23</sup>.
- Scheme awareness – ensuring that the scheme is effectively promoted, providing useful education and information to the community about the scheme and to scheme participants and potential participants.
- Complaints – ensuring that complaints about the scheme, by either community members or other scheme participants, are addressed.

### Targets and sanctions in regulations

To ensure that the objectives of the scheme are being met, specific targets should be set for the PSO against those objectives including:

- redemption targets;
- possibly refund targets; and
- container refund point access targets.

<sup>23</sup> Note, the relevant government agency should be responsible for new container approvals but the PSO should be responsible for maintaining a register of approved containers.

To encourage transparency, these targets should be established in the relevant regulations, with a requirement that the PSO regularly report on performance against the targets to parliament via the relevant Minister.

As previously noted, a challenging but achievable redemption target in the absence of a retailer obligation would be about 80-85% of eligible containers. Experience with other schemes suggest that achieving this target will take at least a number of years, so a system of annual targets, gradually increasing over time will need to be agreed.

Consideration should also be given to establishing refund targets (i.e. targets for containers that are redeemed through refund points). Refund targets (as distinct from redemption targets, which also include redemption of containers redeemed through MRFs) should help to overcome a criticism that has been levelled at some industry run CRS schemes that they have an incentive to maximise redemption of containers through MRFs, as this keeps scheme costs down. As discussed further in section 6.4, high refund rates also has the benefit of reducing the overall price effect of the scheme on consumers (as opposed to scheme costs), as well as encouraging less littering of containers that have been consumed away from home.

Appropriate sanctions should be applied for failure to meet the targets. Sanctions should be graduated, with the highest level of sanction be cancellation of appointment of the PSO. Lower level sanctions would most likely be financial penalties such as fines, which would need to be set at a sufficient level to encourage improved performance.

#### Other attributes

The Act should also establish defined roles and responsibilities for other key scheme participants including for:

- beverage suppliers;
- refund points;
- processors; and
- material recovery facilities (MRFs).

Both the Queensland and NSW legislation provide suitable definitions and appropriate detail regarding these roles.

## 4. Scheme operations

### Recommendations

#### **Recommendation 11 – numbers of refund points**

A key responsibility of a PSO will be to ensure that there are adequate numbers of refund points, conveniently located for members of the public across urban, regional and remote areas of Tasmania. We estimate that more than 60 refund points are likely to be required to ensure reasonable access and achieve a redemption rate of 80% or greater.

Targets for access, split by region, should be established in the regulation.

#### **Recommendation 12 – types of refund points**

Decision on the types of refund points to be established should ultimately be left to the PSO. However, the PSO should be encouraged to provide consumers with alternative means of redeeming their containers through a mix of refund point types including RVMs, manual refund points located at existing waste facilities such as transfer stations, manual refund points located at retail outlets and other 'innovative' solutions.

The PSO and Refund Point Operators (RPOs) should also be encouraged to establish donation points as 'feeders' to refund points.

Decisions on other aspects of refund point design such as configuration and location should be left to the PSO in consultation with the RPOs.

#### **Recommendation 13 – method of paying refunds to consumers**

Refund points should seek to provide consumers with a range of options for receiving refund payments including cash, vouchers and/or electronic transfer. Further, the PSO should seek to ensure that a mix of payment types are provided across the network.

#### **Recommendation 14 – refund point handling fees**

Handling fees paid to refund points should be fair and equitable, being set at a sufficient level to enable refund points to earn a reasonable return on their investment, while encouraging a suitable mix of refund point types. Recognising the need to ensure good access across all regions – urban, regional and remote – and recognising a difference in cost of providing refund points in the different regions, it is likely that handling fees will need to vary between urban, regional and remote areas.

#### **Recommendation 15 – counting and verification of container numbers**

Decisions on the most appropriate systems to be applied to sorting containers at refund points and verification of container numbers for the purpose of paying handling fees and audits should ultimately be left to the PSO. It would be preferable however, for the verification process to be applied consistently across the network. Moreover, to assist with the audit process and to avoid discrepancies and disputes between the scheme processors and refund points, it would be preferable if a verification system other than a weight based system were applied.

#### **Recommendation 16 – processing**

A system other than a weight based system should preferably be applied by processors to verifying the numbers of containers received from refund points.

As with both the NSW and Queensland schemes, the Tasmanian scheme should include a requirement that material sold by processors can only be sold to recyclers that have been approved and registered by the regulator. Consideration should be given to allowing processors to retain a portion of the value of the material that has been sold.

#### **Recommendation 17 – MRFs**

MRFs should be encouraged to play an active role in a Tasmanian CRS including allowing MRFs to claim the full refund value of containers that go through the kerbside system. To receive payment for the refunds however, they will need to comply with the PSO's requirements as to how containers are verified and processed.

MRFs should not receive a processing (or handling) fee for containers that are redeemed via the kerbside system, but should be allowed to retain the full value of material sold to recyclers.

Existing MRFs should also be encouraged to participate in a CRS in the role of processors of material that has been redeemed via refund points. MRFs should receive a fair and equitable processing fee for that role.

#### **Recommendation 18 – local councils**

Similar to the NSW scheme, consideration should be given to requiring a refund sharing between MRFs and local councils to share the value of refunds on containers redeemed through the kerbside system.

#### **Recommendation 19 – record keeping and auditing**

The enabling legislation should stipulate the record keeping and audit roles of all major scheme participants. In particular, the PSO's roles in this area should be detailed including requirements that:

- the numbers of containers going through the system are accurately tracked and reconciled;
- payments for those containers (both refunds and fees) are accurate, fair and timely;
- accurate and transparent records of all transactions relating to the containers are maintained; and
- comprehensive and ongoing audit processes are in place.

This section discusses operational aspects of a CRS scheme. The discussion is predicated on a CRS scheme being introduced that does not have a retailer obligation, although some aspects of the discussion are also relevant in the context of a scheme that does have that obligation. Much of the discussion draws on outcomes of container flows and scheme financial analyses that were undertaken in support of this study. Further details of those analyses are provided in section 6.

## 4.1 Refund and donation points

The key point of contact between the community and a CRS is through container collection points. Collection points can either be places where the community deposits their containers and redeems the value of the refund (described hereafter as ‘refund points’), or deposits their containers with a community group or charity so that the group can redeem the value of the refund (donation points). Most of the discussion below focusses on refund points, since refund points are typically where most containers are redeemed and these need to be explicitly established and funded through the scheme.

### 4.1.1 Potential number of refund points

As previously discussed, there are two competing goals relevant to considering the number, type and location of refund points:

- First are the primary objectives of the scheme to reduce litter and increase recycling across Tasmania. Those objectives are facilitated by providing a sufficient number of refund points at convenient locations, enabling members of the community to redeem their containers securely and with minimal transaction times. Although not specifically prescribed, our analysis has been based on an assumption that an overall container redemption rate of at least 80% is desirable in the longer term.
- Second is the goal of ensuring that scheme costs are not excessive. The greater the number and spread of refund points, the higher the average and total cost in providing the services.

These competing goals underpinned our consideration of a realistic number and location of refund points under a Tasmanian scheme. With this in mind, we consider that a minimum of 60 refund points are likely to be needed to achieve a redemption rate of 80%. This number would also provide a balance between access and cost. Clearly, if the aim is to achieve a redemption rate greater than 80%, then additional refund points will be needed. The number modelled in our analysis starts at 54 and increases to 63<sup>24</sup>. This range should be viewed as indicative only though. We are fully aware that there are numerous factors other than just the number of refund points that will influence the redemption rate including:

- the deposit amount and whether the value of the deposit is maintained over time;
- the type, configuration and siting of the refund points;
- how the CRS interacts with the existing kerbside recycling system; and
- the community’s willingness to embrace the scheme.

In arriving at this number we first considered per capita access to refund points in other jurisdictions. As outlined in Table 9, an indicative number of 63 refund points across Tasmania means each refund point services on average about 8,300 people. This ratio is substantially better than in NSW, South Australia, the Northern Territory, and Queensland, based on the number of refund points in place or proposed for those states).

<sup>24</sup> In addition, we have assumed that there would be a number of donation points supplementing these refund points.

**Table 9: Per capita access to refund points in Tasmania and other jurisdictions**

	Population ('000)	Refund points	Population per refund point
<b>Tasmania</b>	520.9	63	8,268
<b>SA</b>	1,723.5	132	13,057
<b>NSW (target 2017)</b>	7,861.1	500 <sup>25</sup>	15,722
<b>Qld (proposed)</b>	4,928.5	307 <sup>26</sup>	16,054
<b>NT</b>	246.1	13	18,931

Sources: Population: ABS Cat No 3101.0 June 2017, Refund points: NSW – [www.returnandearn.org.au](http://www.returnandearn.org.au), SA - EPA SA ([http://www.epa.sa.gov.au/environmental\\_info/container\\_deposit/collection\\_depots](http://www.epa.sa.gov.au/environmental_info/container_deposit/collection_depots)), Qld - EPA Queensland, personal communication

There are two main reasons for suggesting that a significantly higher rate of access (on a per capita basis) is required in Tasmania compared to the access being provided in other jurisdictions:

- First is the relatively decentralised population of Tasmania. The proportion of Tasmania's population outside of the capital is greater than in any other state or territory. Similarly, the density of population within urban areas is lower than in other jurisdictions and the proportion of the population living in regional and remote areas is greater than in other jurisdictions. Although, Tasmania is a relatively compact state, travel within regional and remote areas is restricted by the terrain.
- Second, in our view, the number of refund points in other jurisdictions is unlikely to be to be sufficient to achieve and sustain a redemption rate of 80%. As previously noted, the redemption rate in South Australia is currently just below 80%. This is in a state that has a highly centralised population and that has a refund point/ population ratio that is significantly better than in NSW, Queensland or the Northern Territory. Furthermore, as a scheme that has been underway for 40 years consumers there are very familiar with the concept of redeeming containers. Yet reviews of the scheme of the scheme have pointed to a lack of access and inadequate numbers of refund points (e.g. Hudson Howell 2005). By contrast, redemption rates under the Northern Territory scheme, which has now been in operation for over five years, are struggling to reach even 60%.

On the other hand, it is worth noting that the modelled number of redemption points (63) is only about half or less than might be expected under a scheme that has a retailer obligation. Overseas schemes that have a retailer obligation typically have a refund point to population ratio of about 1:1000 to 1:2000. We note however, that many of those schemes pre-date the introduction of kerbside recycling systems so at the time there was not an expectation that significant numbers of containers would be redeemed through the kerbside system, as is the case with Australian schemes<sup>27</sup>. Still, it is estimated that a Tasmanian scheme that had a retailer obligation would likely have refund point to population ratio of about 1:4000.

<sup>25</sup> This is the target number. It is not clear how many were operating at start-up and there are suggestions that there could eventually be greater than 600 refund points operating in NSW.

<sup>26</sup> This is the target 12 months after the scheme commences. The start-up target is lower.

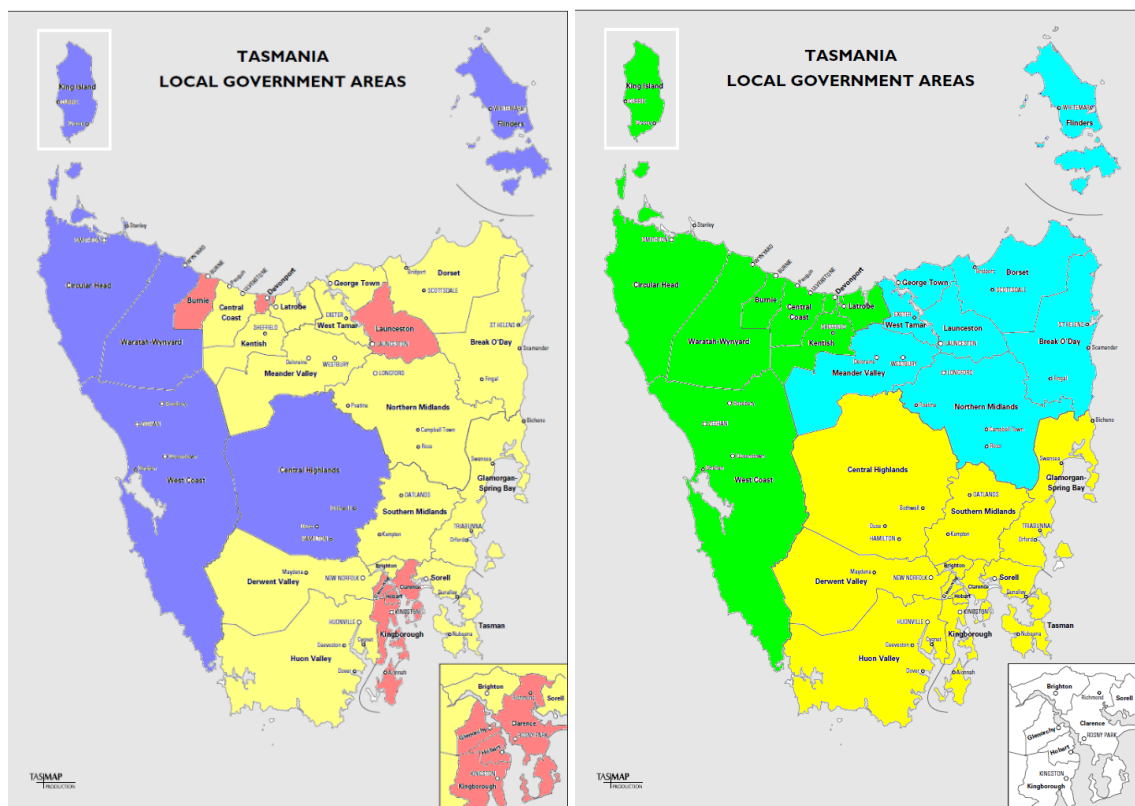
<sup>27</sup> This adds to an earlier point, discussed in detail in section 4.4, that a very high number of redemption points, which can be expected through a scheme involving a retailer obligation, could adversely affect the kerbside system by 'mining' almost all beverage container material from that system.



### 4.1.2 Regional distribution of refund points

Further analysis was undertaken to assess the potential regional distribution of refund points. The analysis considered population distribution and associated beverage container consumption, and factors influencing access to the refund points. The regional analysis was based on a two-way split of regions. First, analysis of consumption was based on by an LGA/SA geographic allocation, with LGAs being assigned a notional region type: Urban, Regional and Remote.<sup>28</sup> Figure 3 (a) shows these notional regions. Secondly, each sub-region was also analysed across three waste areas (Southern, Northern and Cradle Coast), which align with existing waste management groups. King Island and the West Coast LGA were notionally allocated to the Cradle Coast region. The waste management areas are shown in Figure 3 (b).

**Figure 3: Regions and waste management areas applied to notional distribution of refund points**  
**(a) Notional regions** **(b) Waste management areas**



Key:



Source: Derived from LGAT *Tasmania: Local government areas*,  
[https://www.lgat.tas.gov.au/webdata/resources/files/Local\\_Govt\\_Area\\_A4\\_map.pdf](https://www.lgat.tas.gov.au/webdata/resources/files/Local_Govt_Area_A4_map.pdf)

### Container consumption and throughput

Reflecting the regional allocations, described above, the relative population and derived container consumption is shown in Table 10.

<sup>28</sup> These region types were allocated on the basis of LGA and reflect the underlying population density of each LGA. Other approaches may be as valid. The allocation of LGAs across these region types is notional and we recognise that some LGAs have a mix or region types (e.g. part urban, part regional).

**Table 10: Population percentages and implied consumption across regions and waste areas**

Waste management area	Region			All areas
	Urban	Regional	Remote	
<b>Southern</b>	33.5%	17.0%	0.4%	<b>51.0%</b>
<b>Northern</b>	17.7%	9.8%	0.2%	<b>27.6%</b>
<b>Cradle Coast</b>	12.4%	6.4%	2.6%	<b>21.4%</b>
<b>All regions</b>	<b>63.6%</b>	<b>33.2%</b>	<b>3.2%</b>	<b>100.0%</b>

This distribution was used to inform the distribution of refund points across the State. As noted above, we initially determined that Tasmania should be serviced by approximately 50-60 refund points. A combination of judgement and access criteria were applied to these numbers to make estimates of the numbers of refund points required to service more disparate populations in regional and especially remote areas.

Approaches that have been applied by other jurisdictions, notably Queensland, were considered when undertaking this exercise. The Queensland approach is of particular interest because Tasmania exhibits similar population characteristics to Queensland. Both have a significant proportion of their population outside of the capital and there are issues of access for remote areas - time taken to get to the nearest town is significantly affected by distance in Queensland, and by difficult transport routes in Tasmania. In developing the distribution of refund points across Queensland, the population was divided into four regions and then an algorithm based on travel distance and population size was applied.

In developing the number and distribution of refund points across Tasmania, we used a similar approach aimed at:

- ensuring all LGAs are covered;
- ensuring all towns of at least 1000 people are serviced by a refund point; and
- ensuring towns in remote and regional areas are accessible to smaller localities considering maximum travel time.

However, we eschewed the specific use of an algorithm to avoid anomalies that algorithms of this nature can throw out. In considering where refund points could be located we also considered the availability of existing facilities including, typically, waste transfer stations, recycling centres and ‘tip shops’. It is assumed that refund points would be a mix of types.

**Table 11: Notional distribution of refund points – proportion and number**

Waste management area	Region			All areas
	Urban	Regional	Remote	
<b>Southern</b>	23.8% (15)	20.6% (13)	3.2% (2)	<b>47.6%</b> <b>(30)</b>
<b>Northern</b>	12.6% (8)	17.5% (11)	1.6% (1)	<b>31.7%</b> <b>(20)</b>
<b>Cradle Coast</b>	6.3% (4)	6.3% (4)	7.9% (5)	<b>20.6%</b> <b>(13)</b>
<b>All regions</b>	<b>42.8%</b> <b>(27)</b>	<b>44.4%</b> <b>(28)</b>	<b>12.7%</b> <b>(8)</b>	<b>100.0%</b> <b>(63)</b>

*Note: Includes 1 urban, 4 regional and 2 remote mobile refund points.*

The notional distribution of refund points, by proportion and number, resulting from the approach applied is summarised in Table 11, with further details of the split by LGA and type provided in Table 12.

**Table 12: Notional distribution of refund points by LGA and type**

	Urban	Regional	Remote	
<i>Manual (including retail and depots)</i>	Burnie	Break O’Day (2 RPs)	Central Highlands	
	Devonport	Brighton	Circular Head	
	Glenorchy	Central Coast	Flinders	
	Hobart	Derwent Valley (2 RPs)	King Island	
	Launceston (two separate RPs)		Dorset (2 RPs)	Waratah-Wynyard
			George Town	West Coast
		Glamorgan Spring (3 RPs)		
		Huon Valley		
		Kentish		
		Latrobe		
		Meander Valley (2 RPs)		
		North Midlands (2 RPs)		
		Sorell		
		Southern Midlands (2 RPs)		
		Tasman		
		West Tamar		
	<i>Mobile</i>	Kingborough	Break O’Day	Central Highlands
Glamorgan Spring			West Coast	
Kentish				
Tasman				
<i>RVM</i>	Burnie			
	Clarence (2 RVM)			
	Devonport			
	Glenorchy (3 RVM)			
	Hobart (6 RVM)			
	Kingborough (2 RVM)			
	Launceston (5 RVM)			

The overall effect of our approach is that, on a per capita basis, there are fewer refund points in urban regions and that there is a slight bias against the Southern waste management region. These outcomes mainly reflect higher population densities in urban areas, especially Hobart, and the ability to gain economies of scale per refund point in the urban environment. The notional distribution of the 63 refund points includes an implicit sliding scale of access as follows:

- urban regions have a refund point to population ratio of about 1:12,000;
- regional areas have a refund point to population ratio of about 1:6,000; and
- remote areas have a refund point to population ratio of about 1:2000.

People in urban areas will typically be much closer to refund points than in regional and remote areas.

It is important to re-emphasise that the distribution of refund points, as detailed in Table 12, is only a notional one. We are aware that, even though this distribution provides significantly greater access on a per capita basis than schemes elsewhere in Australia, there could be gaps in the level or types of access that it provides. For example, given the importance of tourism to the Tasmanian economy we have assumed that at least two RVM points in Hobart (e.g. Salamanca Place, MONA) and possibly a further one in Launceston (e.g. Cataract Gorge) will be needed to cater for tourists. However, it may be necessary to establish additional mobile facilities in Hobart, Launceston and elsewhere to cater for major events.

Ultimately, the required numbers, locations and types of refund points will need to be resolved through the interaction of the enabling legislation and regulations, the (presumed) tender process by the PSO and offers from potential refund point operators. Regulations, in particular, will provide an important means to guide the number and broad distribution of refund points through access requirements and start-up targets.

#### 4.1.3 Types of refund points

There are a wide range of means through which containers can be redeemed. Schemes around Australia and internationally use various methods by which members of the public can redeem their containers. These essentially fall into the following categories:

- automated reverse vending machines (RVMs), often located at supermarkets, shopping centres or at public places such as train stations;
- smaller manual refund points, often located in small retail outlets;
- smaller semi-automated drop-off points;
- larger manual or semi-automated depots; and
- mobile or ‘pop-up’ refund points that can be established to periodically act as refund points.

Overseas schemes which have a retailer obligation tend to use RVMs or a mix of RVMs and manual retail refund points, with a smaller number of depots used for large scale redemptions and/or as aggregation points for containers coming from the smaller manual retail points.

In Australia, the South Australian (SA) scheme is based wholly on manual depots, a structure that largely reflects infrastructure that was in place at the time of the scheme’s establishment. It would be reasonable to suggest that this mix is now something of an anachronism. The Northern Territory scheme has a mix of depots, similar in style to the SA depots but also includes a small number of RVMs. The NSW scheme involves a range of types of refund points but has a significant focus on RVMs, and smaller manual retail refund points. Depots are used for large-scale redemptions. At the time of writing it is unclear as to the mix of refund points that will be employed in Queensland.

Based on discussions with stakeholders and a review of schemes operating elsewhere it is apparent that a mix of refund points are likely to be required in Tasmania, reflecting different circumstances of people who are redeeming containers and the strengths and weaknesses of different types of refund points. Thus:

- RVMs, which are quick and can be conveniently located, are well suited to providing refunds to large numbers of redeemers who individually have only small numbers of containers. They are particularly well-suited to away from home consumption. Manual retail outlets can also serve that purpose, but depending on their size may not be in a position to cope with the same level of throughput as RVMs.

- Larger depots are better suited to the redemption of larger numbers of containers. Their capacity to cope with very large numbers of containers, probably depends on whether they employ a semi-automated process via counting machines.
- Semi-automated drop-off points can potentially combine the advantages of RVMs and manual refund points but tend to be more focussed on at home consumption of beverages. Systems employed overseas are often located at apartment buildings or retail shopping strips and entail consumers dropping a tagged bag of containers into a chute and then receiving an automatic funds transfer once the containers have been picked up and counted at a depot. Their advantage over manual refund points is that they can be accessible 24 hours a day at low cost. Their advantage over RVMs is that they enable consumers to drop off large numbers of containers very quickly. Thus they are proving to be very successful and cost effective in a number of overseas schemes, now being responsible for a very high proportion of container redemptions under the successful Michigan scheme for example (Table 2).
- Mobile or ‘pop-up’ refund points are suited to some remote locations or for public events.

As detailed in Table 12, the refund point structure modelled for this analysis is assumed to include a mix of refund point types made up of:

- 20 RVMs, all of which are located in urban areas;
- 36 manual refund points, which could be depots or retail outlets; and
- 7 mobile refund points, principally in regional and remote LGAs.

As with the number of refund points, this structure should be seen as being indicative only. Ultimately, decisions on the appropriate refund point types should be left to the PSO. However, the PSO should be encouraged to provide consumers with different means of redeeming their containers through a mix of refund point types including RVMs, manual refund points located at existing waste facilities such as transfer stations, manual refund points located at retail outlets and other ‘innovative’ solutions.

#### 4.1.4 Refund point costs

Cost estimates of different types of refund points have been modelled as part of the broader financial analysis undertaken for this study (section 6). In developing the cost estimates, we have drawn on a range of earlier analyses of refund points and waste processing studies.

As with other aspects of the modelling, the cost estimates should be seen as indicative only. Details of costs and structure will be determined through a combination of market forces and the requirements established under the enabling legislation and targets.

In developing cost estimates for the system though, we have sought to identify facilities that can be readily used, particularly for manual refund points. We have not specifically modelled semi-automated refund points, referred to above, but these could be cost effectively be combined with manual points or as alternatives to RVMs.

Over time the number of containers is expected to grow substantially. For regional and remote areas, these volumes are likely to be met by capacity at the initially established refund points – both fixed and pop-up. In the case of urban areas, the volumes being processed are significant and likely to require expansion of both numbers and capacity. As noted previously, urban areas are assumed to have both manual points and RVMs. It is further assumed that as container throughput and redemption rates increase, this will be met by installing additional RVMs, so

that ultimately about 20 RVMs will be utilised. The number of manual refund points is assumed to be fixed over time.

### Manual refund points

As noted, we have sought to base estimates of costs for manual refund points on the use of existing facilities such as transfer stations where feasible. However, based on experience in other jurisdictions, notably NSW, for a number of locations it is likely that retail or other businesses will provide more suitable access as refund points. Given this, we have notionally allocated half of refund points as transfer stations and half as retail establishments.

#### Common costs

Upfront (and ongoing investment) is required for accounting and communications infrastructure.

Annual fees are included for transfers of refunds (using financial facilities) and an allowance for all infrastructure upkeep.

#### Transfer station costs

It is assumed that these refund points do not incur separate land (rental) costs. However, some form of building and fit-out will be required to accept containers and house staff, accounting machines etc.

Fixed infrastructure not available at existing transfer stations include cages for storage of containers and fixed facilities for sorting. In addition, counting machines and software will be purchased.

In terms of operating costs, these facilities are assumed to be manned for the same periods that the existing facility is manned. The number of staff are adjusted to reflect the average throughput in the manual facilities.

In general, we have assumed that urban and regional facilities have sufficient infrastructure including hard surfaces, fencing, gates, and staff areas to absorb the processes required for a refund point. In remote areas, it is assumed that ongoing investment will be required for these infrastructure.

#### Retail establishment costs

It is assumed that retail establishments will not need to significantly increase staffing nor building for these operations. It is assumed that staff would be employed on refund operations for a quarter of their time.

### Mobile refund points

As previously noted, mobile or 'pop-up' refund points are suited to some remote locations or for public events and transient populations associated with tourism. For this analysis we have assumed that the seven mobile facilities are located in remote areas (e.g. West Coast) or to cover transient populations (e.g. Kingborough/ Bruny Island) or both (e.g. Central Highlands, Break O'Day, Tasman). Mobile facilities in these areas are likely to incur similar costs to a manual transfer station in remote sites except for the permanent infrastructure costs. The mobile facility will include the cost of a trailer or similar. Reflecting its need to operate standalone, it is assumed that two staff are always required. As previously noted, transient populations in urban areas (linked to events) are assumed to be covered by RVMs in our analysis but if additional

mobile refund points are required on those areas to cater for events then the costs are likely to be somewhat lower than in regional and remote locations.

### RVMs

In contrast to manual points, it is assumed that most or all reverse vending machine (RVMs) will be located in commercial zones of urban areas. Thus they will incur rental costs, which are likely to vary significantly between inner Hobart and non-central areas of regional cities (such as Burnie and Devonport). Whereas labour costs may be modelled to reflect throughput (greater volumes mean that staff become increasingly full-time), we have allocated a full-time staff for all machines. For reverse vending machines, included costs are detailed in Table 13.

**Table 13: RVM cost items**

Set up	Capital costs	Operating costs
Amenities	RVM machine (front and back)	Labour
Fencing	Installation and delivery	Rent
Building	Associated capital costs (anti-graffiti, rainguards, panels)	Electricity
Signage	Computer	Cleaning
	Wireless	Repairs
	Bins	Consumables

### Estimates of average costs

Estimates were made of the levelised cost<sup>29</sup> of providing the different refund points across the State both excluding and including margins (Table 14). These estimates reflect the inputs discussed above and the likely average throughput in each type of refund point. For the overall estimate for RVMs, a 15% margin was added. For manual refund points, a weighted average cost of capital (WACC) of 20% was applied reflecting the higher risk associated with these operations.

**Table 14: Levelised cost per container (cents)**

	Urban	Manual Regional	Remote	Mobile	RVM
Excluding margin	4.72	5.65	14.57	23.66	4.19
Including margin	5.43	6.50	16.75	27.21	4.82

Considering the cost estimates, outlined above, handling fees paid to refund points should be fair and equitable, being set at a sufficient level to enable refund points to earn a reasonable margin on their investment, while encouraging a suitable mix of refund point types. Recognising the need to ensure good access across all regions – urban, regional and remote – and recognising the likely difference in cost of providing refund points in the different regions, handling fees will likely need to vary geographically.

<sup>29</sup> This reflects the net present value of costs over the period of 20 years divided by the net present value of the volumes.

#### 4.1.5 Approving refund points

Under the proposed model, approval of refund points, will be decision of the PSO. However, obligations stipulated in the legislation should ensure that this process is transparent, fair and encourage innovation. In the recent cases of NSW and Queensland, the scheme co-ordinators/operators have tendered for businesses and organisations to operate as refund points. Concern has been raised by some stakeholders that the contractual arrangements sought by the scheme co-ordinator is limiting investment certainty for potential refund point operators. The PSO should not unreasonably use contractual conditions to limit the involvement of service providers where it is clear that they will be in a position to operate refund points efficiently and effectively.

On the other hand, the Queensland and NSW tendering processes apparently have included road shows that have sought to identify businesses which may not have considered themselves as potential refund points. That process should be encouraged.

As demand increases (reflecting organic growth and increasing redemption rates), new refund points are expected to appear. The PSO should not unreasonably discourage new collection points, especially where it is clear that a location is under-serviced and that additional refund points are required. However, an allowance should be made to ensure that existing refund points are given a reasonable time to establish themselves before new refund points are established in the same locality.

#### 4.1.6 Roles and responsibilities of refund points

Across the jurisdictions in Australia, there are a common set of tasks that are performed by refund points. A Tasmanian scheme should be no different. Key functions, which define much of the infrastructure and other costs comprise:

- **Provide an area** where containers can be redeemed. This may be an existing area within an establishment that serves a number of purposes or an area set aside. In some cases, the area may be a temporary arrangement. Depending on the type of refund point, this area may require a significant footprint for machinery and storage of containers between pick-ups. In addition, it must be securable against theft; accessible for likely deposits (it may require access for vehicles); it will require an area where transport vehicles can take away redeemed containers. If this is located in a car park for example, there will also need to be safe areas for customers to queue. It may require access to 3 phase power.
- **Take the container.** A refund point must provide a means to take the containers, basically either manually or mechanically. In a manual system, staff must be provided, trained and supported. For mechanical systems, the actual taking would be handled by a reverse vending machine (RVM) but this would also need to be managed and maintained. Staff would be required in these cases on at least a part-time basis. The system must be able to determine if the container is eligible. In some cases, there may be limits on the number of containers redeemed by one customer.

One approach that facilitates receipt of containers is to use ‘registered’ bags. These bags would hold a pre-determined number of containers, say 100, which would be processed later at an aggregation point. The bags would be bar coded to identify the redeemer.

- **Provide refund:** Linked to taking the container is the return of the deposit. There are a number of ways of transferring the refund:
  - In the case of South Australia, cash is transferred to the redeemer. This requires the refund point to hold a cash float every day to meet potential refunds and represents a



direct funding requirement ahead of each day. This cash will need to be securely handled.

- Alternatively, a cashless transfer is possible using financial system mechanisms such as by crediting credit/debit cards. Non-financial system alternatives include other payment systems, such as Paypal. These two options require redeemers to hold the appropriate account. This is more likely in the case of financial instruments (government transfers more generally are undertaken through such accounts).
- Alternatively, refund points can provide vouchers to redeemers. These would be credits at businesses or organisations which may be associated with the Scheme. Alternatively, the vouchers may represent donations to identified charities.
- In the case of registered bags, the refund would be provided when the bag is processed.

Decisions on the method of paying the refund should ultimately left to the PSO in negotiation with refund point operators. Nevertheless, it would be preferable if refund points provided consumers with a range of options for receiving refund payments including cash, vouchers and/or electronic transfer. Further, the PSO should seek to ensure that a mix of payment types are provided across the network.

- **Sorting** of containers at the refund point varies between systems. In some, such as proposed for Queensland, containers are to be sorted by material type. In NSW, containers are only being sorted by glass and non-glass. There are advantages and disadvantages with the two approaches. Full sorting at the refund point provides the potential for baling at the refund point, thereby reducing transport costs to the processor. Sorting by glass and non-glass only reduces costs at the refund point, and potentially reduces the time required for consumers to redeem their containers. Again, a decision on the most suitable approach to apply should be made by the PSO.
- **Counting and verification.** All redemptions need to be manually or automatically recorded. These are later reconciled with the numbers received by aggregation points and form the basis of audits. Counting and verification procedures vary considerably between existing systems:
  - In South Australia, counting is undertaken manually at refund points but then a weight based system is used at the processors/ aggregators to verify the number of containers being received from refund points and exiting the system.
  - In NSW, a verifiable count of containers is made at the processor when containers are received from automated refund points. A volume and counting based system is applied for containers coming from manual refund points.
  - Queensland seems likely to apply a combination of a weight based system (manual) and counting system (automated refund points).

Some stakeholders have argued that a fully automated system using barcode scanning at all refund points should be applied, as this will avoid discrepancies and disputes between refund points and processors and also enables containers to be baled at the refund point. Although it would be preferable for consistent counting and verification processes to be applied across the network, a barcode counting system could prove difficult for manual refund points, especially smaller ones located in regional and remote areas.

A key consideration for any verification and audit process will be to ensure that the numbers of containers exiting the system (to recyclers) can be accurately verified against the numbers of containers entering the system via refund points (and MRFs). This is discussed further in section 4.4.

- **Secure redeemed containers** this will be on-site until collection is made.
- **Prepare for pick up** and transport to processing point. The refund point needs to ensure the containers are able to be collected for transport to aggregation point.
- **Provide access** and networking with donation points. Refund points may be required to provide cages, trailers or similar equipment for groups to collect containers. This requirement is an explicit component of the Queensland scheme though not necessary, per se, to operate a refund point.

#### 4.1.7 Role of councils in refund points

The above analysis assumes potential involvement by local councils in operating refund points, particularly through their transfer stations. It is anticipated that the inclusion of refund point operations does not impinge on the operating areas of the transfer stations. In addition, the ability to earn operating fees for collecting containers provides a potentially important extra revenue stream for the transfer station's operations. However, council involvement in the operation of refund points should be purely on an 'opt-in' basis.

#### 4.1.8 Donation points and community groups

Community groups offer significant scope for enhancing various elements of the scheme. In the first instance, they are often major collectors of containers that go through the system – this they can achieve by providing a donation point(s) or through their own efforts to collect containers. As noted earlier, such informal collectors are able to reduce litter and increase redemption rates.

Donation points, or more broadly non formal collection points, comprise a range of collection methods. It is easier to define these by what they are not. Donation points are not formal Refund points, Material Recovery Facilities or Aggregation points.

These sites act as a means to collect containers, often with significant sorting, either directly from beverage consumers who do not want redeem the container themselves or through collection elsewhere, such as from public places for, say, community events. The best example of the various approaches are the scouts:

- beverage consumers can elect to give empty containers at scout facilities;
- scouting groups may organise to collect containers at public events or as part of clean-up operations; or
- individual scouts may collect from their neighbourhood.

First, there is an *ex ante* effect: the availability of community organisations to take containers as donations increases the likelihood that the container will be redeemed. Consumers have extra opportunities to send the container into the redemption supply chain. By the same mechanism, there are fewer containers that may be littered.

Secondly, there is the *ex post* effect. Where community groups engage in clean-up activities to reduce litter.

In addition, other schemes have used community organisations to reduce the costs associated with refund points. Where community groups collect and sort containers, they effectively avoid a significant cost element for refund points. In these cases, there is incentive for both community group and refund point operator to negotiate to share the processing charge.

Considering a Tasmanian scheme, we suggest that the PSO and Refund Point Operators (RPOs) should be encouraged to establish donation points as 'feeder points' to refund points or provide

infrastructure to enable community organisations to act as feeders to refund points. This situation is most likely to be relevant to depots rather than RVMs or retail outlets. We note that donation points of feeders are likely to be a part of the redemption system in Queensland. The NSW scheme also involves donation points, with refunds being directed to identifiable charitable organisations. These are operated by the network operator however, and therefore have less direct involvement of community organisations.

## 4.2 Logistics

Logistics entails the collection of containers from refund points and transport of the containers to processors. Although logistics are sometimes provided directly by a scheme co-ordinator or network operator, typically the activity is undertaken by transport specialists under contract to the scheme co-ordinator. Under a Tasmanian scheme, the PSO should be expected to organise and pay for the logistics services for manual refund points. As with the NSW scheme (and likely also for the Queensland scheme) RVM operators are expected to provide their own logistics as well as their own processing services.

As previously noted, whether containers are transported as fully sorted and baled and compacted material or as only partially sorted and uncompacted material will largely depend on the sorting, counting and verification system that is to be adopted at manual refund points and RVMs. It is most likely that the full sorting, baling and compaction process for containers collected at manual refund points will be undertaken at the processors. If the RVMs are also configured to only separate containers into glass and non-glass (as happens under the NSW scheme) then it is likely that the same approach will be adopted for containers collected at RVMs.

Assuming this approach, an assessment of potential transport costs has been undertaken as part of the broader financial analysis undertaken for the scheme. Results of the transport financial analysis are presented in Table 15. As with other aspects of the financial analysis, these cost estimates should be viewed as indicative.

**Table 15: Indicative transport costs, urban, regional and remote (\$/tonne)**

	\$/tonne	c/container
<b>Region</b>		
Urban	15.00	0.16
Regional	56.25	0.59
Remote	100.00	1.05
<b>Waste management area</b>		
Southern	45.71	0.48
Northern	48.67	0.51
Cradle Coast	63.21	0.67

## 4.3 Processing and sale of material to recyclers

In a scheme where only minimal sorting and preparation of container material is undertaken at refund points, processors (also referred to as ‘aggregation points’ and sometimes as ‘hubs’) will play an important scheme role, being responsible for:

- aggregating the containers that have been transported from refund points;
- verifying the numbers of containers received;
- sorting them by material type; and
- baling or (in the case of glass containers) crushing them in preparation for sale to recyclers.

The financial and material flows analysis undertaken for this study assumes that there will be four processors in Tasmania, one in each of the Northern and Cradle Coast waste management regions and two in the Southern Waste Management region. No assumptions are made about who will or should operate the processing facilities, however the three MRFs currently operating in the three waste management regions in Tasmania would appear to be well placed to take on that role (see section 4.4.1), with possibly a fourth processing facility being established in southern Tasmania to take on the role of processing containers collected through RVMs.

### Handling fees and material value

Processors are typically paid a handling fee of about \$55 a tonne or approximately 0.6 cents/container for the roles outlined above. In some schemes the processor is also permitted to retain some of the material value of containers sold to recyclers. Under the Queensland scheme this is likely to be the case, with recyclers expected to share the sale value of the recyclate on 20/80 basis with the scheme co-ordinator. In other schemes, such as the NSW scheme, the network operator retains 100% of the sale value of the recyclate. The Queensland approach of allowing the processor to retain at least some of the material value would appear, at face value, to have the advantage of providing an incentive to the processor to ensure effective preparation of the material (e.g. minimal contamination) and to seek to maximise its market value.

### Sale of material

Another positive aspect of the Queensland scheme will be a requirement that processors (and MRFs) must sell all processed material through an online open auction platform overseen by the scheme-co-ordinator. This has the following advantages compared with the NSW scheme, which allows processors to sell material directly to recyclers:

- it means that there is only one point of exit for material leaving the scheme, assisting with the scheme audit process (see section 4.5);
- there is greater transparency around the destination and prices paid for material exiting the scheme.

In both the NSW and Queensland schemes there is a requirement that material can only be sold to recyclers that have been approved and registered by the regulator. This requirement should be retained under a Tasmanian scheme.

### Verification

The process of verifying numbers of containers that have been received by processors from refund points is another issue that needs to be resolved for a proposed Tasmanian scheme. Although the verification process will ultimately be a decision for the PSO, as previously noted, it would be preferable if a verification system other than a weight based system were applied by all processors for containers received from all refund points. This could be a barcode scanning system or (if that is not practical) a system similar to that applied in NSW that relies on counting machines.

## 4.4 Interaction with the existing kerbside system

The terms of reference for this study stipulate that the system should minimise impacts on kerbside recycling systems and, as much as possible, should utilise materials recovery facilities (MRFs) that are already in place.

A CRS scheme impacts on the kerbside system by redirecting containers that previously went through the kerbside system to refund points. This has direct implications for MRFs, both positive and negative, and also for local councils, which pay for the kerbside waste collection and management system on behalf of ratepayers.

### 4.4.1 Direct impacts of CRS on MRFs

A CRS scheme impacts on the kerbside system by redirecting containers that previously went through the kerbside system to refund points. This has direct implications for MRFs:

- Negatively, by reducing the volume of container material going through MRFs, thereby reducing revenue to MRFs generated by the kerbside system including:
  - gate fees collected from local councils; and
  - the total volume and associated value of material sold to recyclers.
- Positively, by providing MRFs with an opportunity to generate a new revenue stream through redeeming containers and collecting the refund on those containers.<sup>30</sup>

On the second point we note that MRFs are active participants in both the NSW and SA schemes as redeemers of containers. There is also an expectation that they will be active participants in Queensland. Further, the financial analysis undertaken for this study indicates that it will be in the financial interests of MRFs in Tasmania to play an active role in a Tasmanian scheme. If that is to be the case though, MRFs will need to fulfil two significant obligations:

1. First, they will need to comply with the PSO's requirements as to how container numbers are verified. In NSW, a protocol has been developed that sets out rules as to how MRFs must operate in order to sort and verify the container numbers and then make a refund claim (NSW EPA 2017). The protocol gives MRFs the option of either counting or weighing containers as the basis for verifying container numbers. If the latter method is adopted however, a specified algorithm and sampling strategy must be applied. We understand that similar approach is to be adopted in Queensland.

As previously discussed in relation to processors, we are concerned that a verification approach that entails weighing of containers is problematic. Nevertheless, it is acknowledged that this approach may also prove to be the most efficient approach for Tasmanian MRFs given their current state of technology. Ultimately, the verification process will be a decision for the PSO in negotiation with the MRFs.

2. Second, MRFs will need to comply with the PSO's requirements on processing containers including requirements on crushing (glass) and baling (other materials) of containers, minimising contamination and sale of the material. As previously noted, under the Queensland scheme there will be a requirement for processors and MRFs to sell all

<sup>30</sup> Indirectly, a CRS may also have positive implications for MRFs by increasing the unit value of material going through the MRF system and reducing the volume and associated disposal costs of material, such as glass, that cannot be sold. To fully realise this value however, is likely to require additional investment by the MRFs.

processed material through an online open auction platform overseen by the scheme-coordinator. This would appear to be an appropriate approach for a Tasmanian scheme.

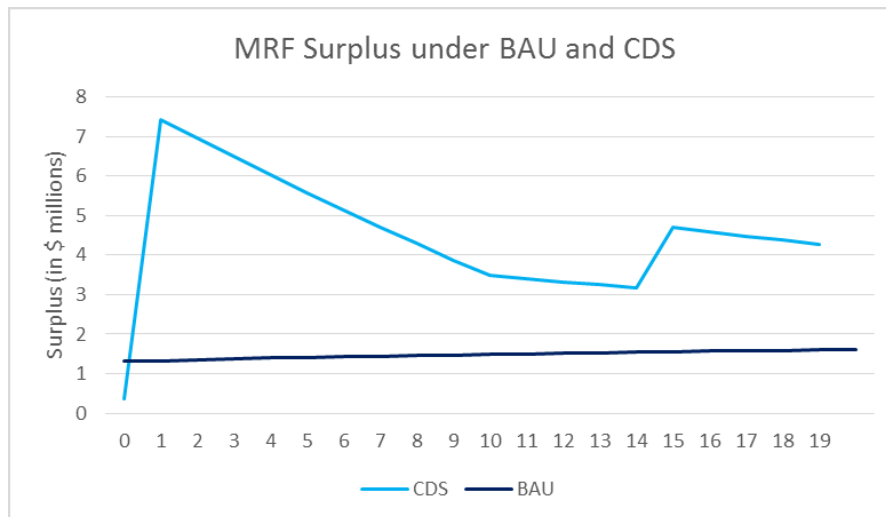
In other Australian schemes, the MRF can claim the full refund value of the deposit on eligible containers but do not receive any processing fee. As well, they retain 100% of the value of material redeemed through the kerbside system. This is an appropriate outcome for Tasmania as well.

**Implications of a CRS on the financial position of MRFs**

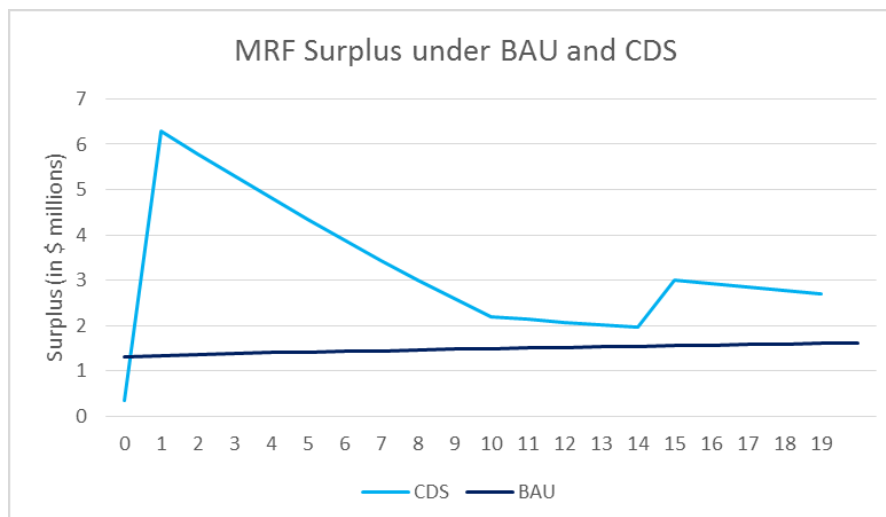
As part of the financial analysis undertaken for this study we have assessed the impact of a Tasmanian CRS on MRFs in Tasmania considering both the positive and negative impacts outlined earlier. As with other aspects of the financial analysis, results should be viewed as indicative only. More so in the case of this aspect of the analysis because we did not have access to specific data relating to any of the MRFs currently operating in Tasmania. Also the analysis only covers those aspects of MRFs operations relating to container material.

Results of the analysis are presented in Figure 4, Figure 5 and Figure 6 for the three MRFs in aggregate.

**Figure 4: Impact of CRS on net operating surplus of MRFs, 'optimistic' scenario**



**Figure 5: Impact of CRS on net operating surplus of MRFs, 'pessimistic' scenario**



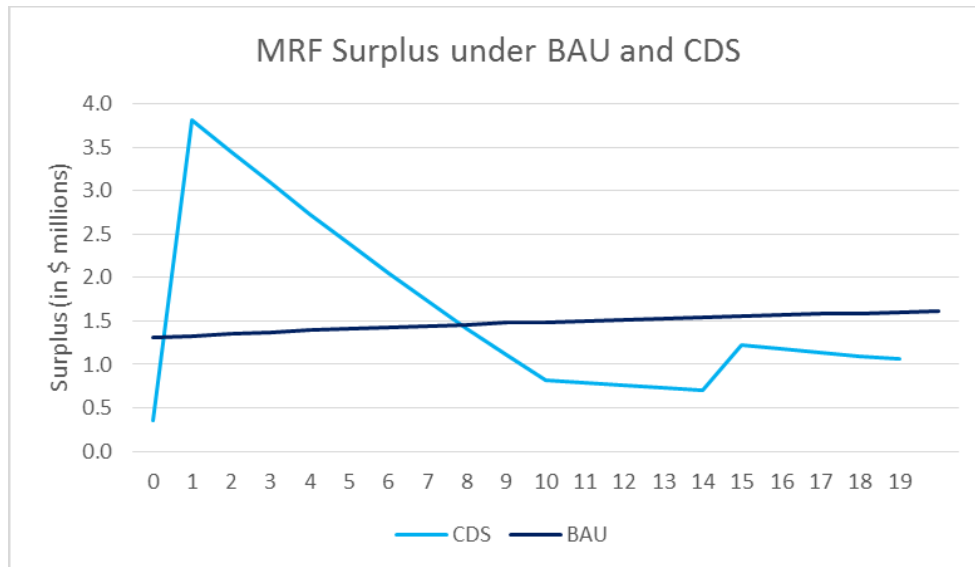
**Figure 6: Impact of CRS on net operating surplus of MRFs, 'high redemption rate' scenario**

Figure 4 presents results of an optimistic scenario (i.e. optimistic from the perspective of a MRF, which assumes a redemption rate increasing steadily to 80% by year 10, with a diversion rate<sup>31</sup> of container material from the kerbside system starting at only 5% in year 1, but increasing to 40% by year 10.

Figure 5, presents results of a pessimistic scenario, which also assumes a redemption rate of 80% by year 10, but with a diversion rate of container material starting at only 20% in year 1, and increasing to 60% by year 10.

The results presented in the two figures needed to be treated with care, as they only present operating surplus impacts (excluding tax and depreciation) and therefore do not take into account possible additional infrastructure costs. Nevertheless, the effects are clear. Even under the pessimistic scenario, the effect of a CRS on the operating surplus of MRFs is strongly positive, with the additional surplus above business-as-usual (BaU) being approximately \$6 million in year 1 of the scheme (when diversion rates are low). The additional surplus falls significantly as diversion rates increase but in year 10 when the redemption rate is 80% and the diversion rate is 60% MRFs are still generating a significantly greater surplus than under BaU.

It is only under the third scenario (Figure 6), under which the diversion rate is very high by year 10 (80%), which in turn is linked to a very high redemption rate (90%+), that the effect of a CRS on the operating surplus of the MRFs is negative.

### MRFs as processors

Under a CRS, there is also an opportunity for MRFs to act as processors. By undertaking that role MRFs can generate an additional source of revenue (not factored into the analysis discussed above). Under the Queensland scheme it seems very likely that a substantial part of the processing role will be filled by MRFs. MRFs also have a processing role in the NSW scheme,

<sup>31</sup> Diversion rate refers to the proportion of beverage containers that are diverted from the kerbside system to redemption via refund points.

although their role there is limited, probably due to the fact that RVMs play such a significant part in the NSW scheme and the major processor there has been established specifically to process containers collected through RVMs.

#### 4.4.2 Effects on local councils

There are likely to be two main impacts from the introduction of a CRS: a reduction in littering and an increase in recycling. Both of these outcomes will, in principle, affect costs facing local councils.

The first effect will see reduced need for clean-up activities.<sup>32</sup> The financial impact of this reduction has not been explicitly assessed.

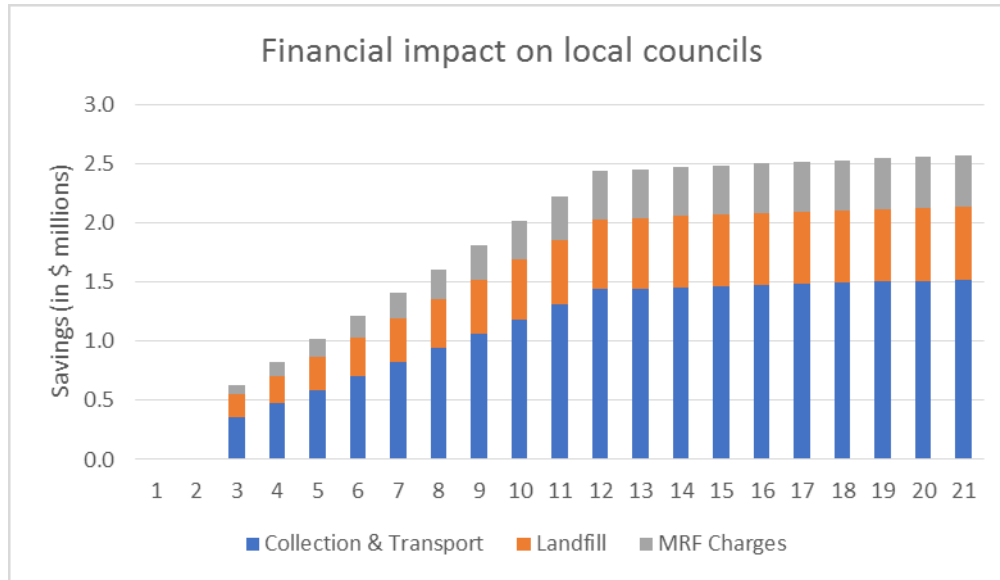
Second, councils should in principle incur lower kerbside collection costs where the volume collected results in the need for fewer collections for either general waste (landfill) and lower costs for processing material through MRFs for recycling. These reduced costs should in principle be passed on to councils. Whether cost savings are in actuality passed on to councils though, will depend on contract negotiations between waste service providers and councils. Table 16 and Figure 7 provide an overview of the estimated (positive) impacts of a CRS scheme on local councils if in fact costs savings are passed on to them. Across all of local councils, a CRS is estimated to generate benefits over the first 20 years of over \$13 million Net Present Value (NPV) (Table 16). Most of these benefits will be achieved for larger population centres (i.e. urban areas). Benefits start modestly at around \$0.5 million in the first year, before broadly levelling out at over \$2 million per annum by the 10<sup>th</sup> year of the scheme. The largest benefits accrue from lower collection and transport costs (around 60% of savings), with reduced landfill (25%) and MRF charges (15%) making up the balance (Figure 7).

**Table 16: Indicative (positive) financial impact of a CRS on local councils over 20 years**

Council group	NPV (\$m)
<b>All Local Councils</b>	<b>13.12</b>
Urban	8.04
Regional	4.73
Remote	0.33

<sup>32</sup> It is worth noting that refund points may exhibit slightly increased littering associated with ineligible containers. It is also likely that littering of these containers may be merely displaced from other locations.



**Figure 7: Indicative financial impact of a CRS on local councils over time**

### Refund revenue sharing with MRFs?

The cost savings discussed above do not include any transfer of revenue from MRFs to councils as a consequence of container refund revenue generated by the MRFs (section 4.4.1). One important aspect of the NSW legislative framework is a requirement that MRFs enter into ‘refund sharing agreement’ with the local councils in which the containers have been collected to pay the councils a proportion of all refund amounts paid to the MRF by the Scheme Co-ordinator. At the time of writing, we understand that this requirement is creating tensions, in part stemming from difficulties to the waste management sector caused by the ban on importation of recyclable waste from Australia (and other countries) by China. Nevertheless, in view of the overall financial advantage to MRFs stemming from a CRS, a refund sharing requirement of this kind warrants close consideration in the context of a Tasmanian CRS.

## 4.5 Audit and record keeping processes

As previously discussed, an important function of the PSO, which needs to be stipulated in the Act, is to ensure that effective and ongoing verification, record keeping and audit mechanisms are in place. This requires the PSO to implement processes that ensure:

- the numbers of containers going through the system are accurately tracked and reconciled;
- payments for those containers (both refunds and fees) are accurate, fair and timely;
- accurate and transparent records of all transactions relating to the containers are maintained; and
- comprehensive and ongoing audit processes are in place.

All scheme participants, including refund points, logistics providers and processors will need to be a part of the verification, record keeping and audit processes. Primary responsibility for these functions should reside with the PSO, however.

A key consideration for the verification and audit process will be to ensure that the numbers of containers exiting the system (to recyclers) can be accurately verified against the numbers of containers entering the system via refund points (and MRFs) and that financial transactions at

all stages of the system match the numbers of containers going through the system. As previously mentioned in sections 4.1.6 and 4.3, an important aspect of that process will be verifying numbers of containers that have been received by processors from refund points. As previously mentioned, we believed that a weight based system is problematic.

The audit process itself should be conducted by the PSO on an ongoing basis. To that end, it is very likely that, following the initial set-up process, most of the staff engaged by the PSO will have an audit role.

It is important to note that the State government is also anticipated to have a monitoring and 'auditing' role. The PSO is expected to report to the Minister. Thus relevant departmental officials will need to audit these reports, ensuring that the PSO is fulfilling its obligations and achieving targets. A more formal review process will also need to be undertaken every few years as well.

## 5. Planning and implementation

### Recommendations

#### **Recommendation 20 – Implementation timing**

At least 12 months are required between passage of the relevant legislation and regulations and scheme commencement to provide sufficient time for the scheme to be effectively planned and implemented. The scheme should commence during a period of low beverage consumption, such as in the winter months.

#### **Recommendation 21 – Advisory group**

An advisory group should be established in the early stages of scheme implementation. The advisory body should be broadly representative. The advisory group following scheme commencement to provide ongoing advice on scheme operations.

#### **Recommendation 22 – Information, education and marketing strategy**

The PSO should develop and implement an information, education and marketing strategy during the implementation phase. The strategy will need to be funded to a level sufficient to ensure that community members are educated and informed about the scheme through multi-media channels and, importantly, marketed in a way that encourages them to use the scheme.

#### **Recommendation 23 – Seed funding**

Significant seed funding will need to be provided to enable the scheme to be established and to commence operations. Funding is needed to set up the PSO and establish administrative support and to provide a float to cover payment of refunds and operating costs for the first period. Scheme establishment costs should be covered by the beverage industry. Money for the float could be raised through the beverage industry or via a loan from the State government.

### 5.1 Implementation timing

It is no secret that there have been ‘teething problems’ with both the NT and NSW CRS schemes. In the case of the NT scheme, scheme reviews point to significant structural problems with the scheme (West et al. 2013). In the case of the NSW scheme, discussion with a number of stakeholders indicates that many (although not all) of the difficulties that have been experienced since scheme commencement can be attributed to a rushed implementation process, with only about six months between finalisation of the enabling Act and regulation and scheme commencement.

A large number of planning and implementation issues need to be resolved between when a scheme is announced and when it commences. These include:

- drafting and passing of enabling legislation (Act and regulation);
- appointment of the PSO;
- setting up scheme administrative and auditing systems;
- tendering for a network of refund points;

- setting up the network points, which in turn is likely to entail a number of steps such as
  - determining infrastructure and site requirements
  - where necessary, going obtaining planning approval for establishing sites and infrastructure for refund points, either through local councils or through the statewide planning scheme<sup>33</sup>
  - establishing the necessary infrastructure and staffing arrangements
- contracting processors and logistics providers;
- community and stakeholder consultation; and
- scheme marketing and community education.

Stakeholders involved in implementing the NSW and Queensland schemes have indicated that at least 12 months are required between passage of scheme legislation (Act and regulations) and scheme commencement to enable the above tasks to be effectively completed. It is likely that an additional 6 to 12 months will also be needed to draft and pass the relevant legislation and go through any stakeholder consultation processes.

A further consideration is the time of the year that the scheme commences. Available information suggests that during the period covering the summer months and Easter, a disproportionately large proportion of beverages covered by the scheme are consumed. Therefore, proportionately, a very large volume of containers will go through the system over this period and any teething problems will be exacerbated. Thus the summer months are not a good time to commence a scheme. It is much better to bed-in the scheme during a quiet period - a period of low beverage consumption – such as during the winter months.

Given these considerations, even if a decision were to be taken to implement a scheme within the next few months, realistically we don't believe that a scheme could commence before about the middle of the 2020 calendar year.

## 5.2 Advisory group

Most of the newly established schemes in Australia and those in the process being established have included an advisory group to government and the appointed/contracted scheme co-ordinator on scheme implementation. In some cases (e.g. NSW), the advisory group has been retained to provide ongoing advice on scheme operations.

A similar group should be established in the early stages of scheme implementation in Tasmania to advise on aspects of scheme establishment including Board membership, numbers, location and types of refund points and scheme marketing and education. The advisory body should be broadly representative and include representatives of:

- the beverage industry;
- the waste management industry, including MRFs and refund point providers;
- local government;
- the retail industry;
- the recycling industry;

---

<sup>33</sup> We understand that in NSW, for example, that amendments to state planning scheme rules were required to allow for RVMs to be established.

- non-government environment organisations; and
- charitable and community organisations.

### 5.3 Scheme information and education

It is essential that the community has a good understanding of a CRS well before it is introduced. One of the roles of the PSO in the implementation phase will be to develop and implement an information, education and marketing strategy. The strategy will need to be funded to a level sufficient to ensure that community members are educated and informed about the scheme through multi-media channels and, importantly, marketed in a way that encourages them to use the scheme. Information will need to be provided on:

- What is a CRS?
- Why is a CRS being introduced? How will consumers benefit? How much will it cost?
- How can consumers redeem their containers?
- Where?
- When is the scheme commencing?
- Where can community members go if they need more information about the scheme or are having problems redeeming their containers?

Most of this information will be provided through the PSO but the State government is likely also to have a role, especially in the start-up phase of the scheme.

Separately, the PSO will also need to provide information and education to potential participants in the scheme including potential refund point operators, processors, logistics providers, processors and MRFs. This information will need to be far more targeted and specific than the information provided to the broader community.

One issue raised regarding the implementation of the NSW scheme was responsibility for education prior to commencement of the scheme. If this role is to be undertaken by the PSO, and we recommend that it is, then funding will need to be raised for the education program. This funding would fold into the pre-operation seed funding discussed below.

### 5.4 Start-up funding

Significant seed funding will need to be provided to enable the scheme to be established and to commence operations. Seed funding will take two forms:

- Funds sufficient to set up the PSO and establish administrative support including staff, IT and provide a budget for marketing, provide education and information, etc. We estimate that funds required for these purposes will be approximately \$9 million dollars (see section 6.3 and Appendix 3 for further details).
- A pool of funds, usually referred to as the ‘float’, which will be used to cover payment of refunds and operating costs for the first period (typically the first two months) of the scheme’s operations. We estimate that the float required will be in the order of \$0.65 to 1.0 million to ensure that there are sufficient funds to cover scheme operations for a month in the first year of operation when demand and redemption rates are at their peak.

In relation to the first point, we suggest that the funding required to establish the scheme should be considered a normal part of its operations and should therefore be paid for by the PSO via the beverage industry. This means that the beverage industry needs to increase prices associated with the scheme to cover the period prior to implementation. This could be linked to funding the float discussed in the following.

In relation to the second point, arguably the float is also a part of the scheme's normal operations and should also be paid for by the beverage industry. We note that in NSW, an up-front payment system by beverage manufacturers of refunds and scheme operating costs is a requirement of the scheme, with adjustments made to payments for the following month to reflect redemption rates in the previous month. This system ensures that there is adequate funds for the scheme's operations in the first few months, but it is an administratively awkward approach. Furthermore, the NSW system caused cash flow problems for beverage manufacturers, especially smaller manufacturers, which eventually necessitated the NSW government providing loans to some of the affected manufacturers. An alternative approach, being implemented by Queensland, is an arrears payment system. That still leaves the question of how the float will be raised and in the case of Queensland, this is apparently being done through a loan from the Queensland Government to the scheme co-ordinator.

The Tasmanian government will need to determine what the best approach is but suggest that money for the float should be provided by the beverage industry or raised through a commercial loan, to be paid back within in the first year of scheme operation.

## 6. Financial and material flows modelling

---

### 6.1 Modelling purpose and approach

To examine the financial requirements of the proposed scheme, we developed a model of the relevant elements of the source, fate and costs of dealing with beverage containers. The flow of containers within the scheme is outlined broadly in Chapter 2.

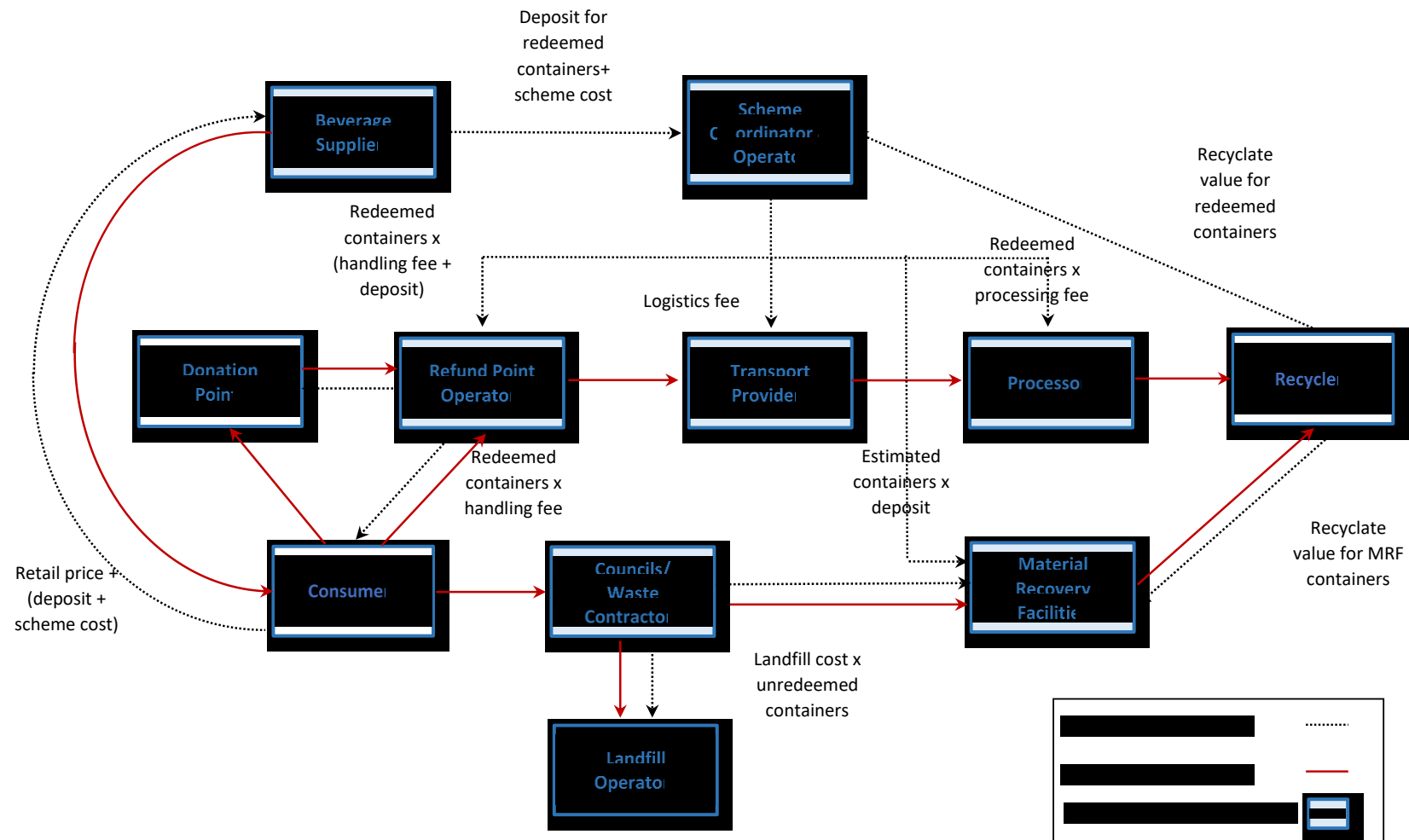
In the first instance, we have identified the source of beverage containers by material type across the three regions of Tasmania (urban, regional and remote). In each area, a volume of beverage containers is estimated with the destination varying across litter, landfill and recycling.

A key impact of the scheme is to divert containers from landfill and towards recycling. A secondary impact will be the diversion of containers from MRFs (and then recycling) to collection points, processors and recycling. Setting the base case to include activities outside of the scheme is particularly important in examining the impacts on councils and MRFs where containers are diverted from MRF to collection points/processors.

In estimating the cost of the scheme, we have developed cost estimates for the key components of the supply chain. These are outlined in Figure 8.

The sections following outline the key estimates for the scheme overall and for consumers. Impacts on MRFs and councils were discussed in section 4.

Figure 8: Material flow and cost components of container beverage supply chain





## 6.2 Material flows

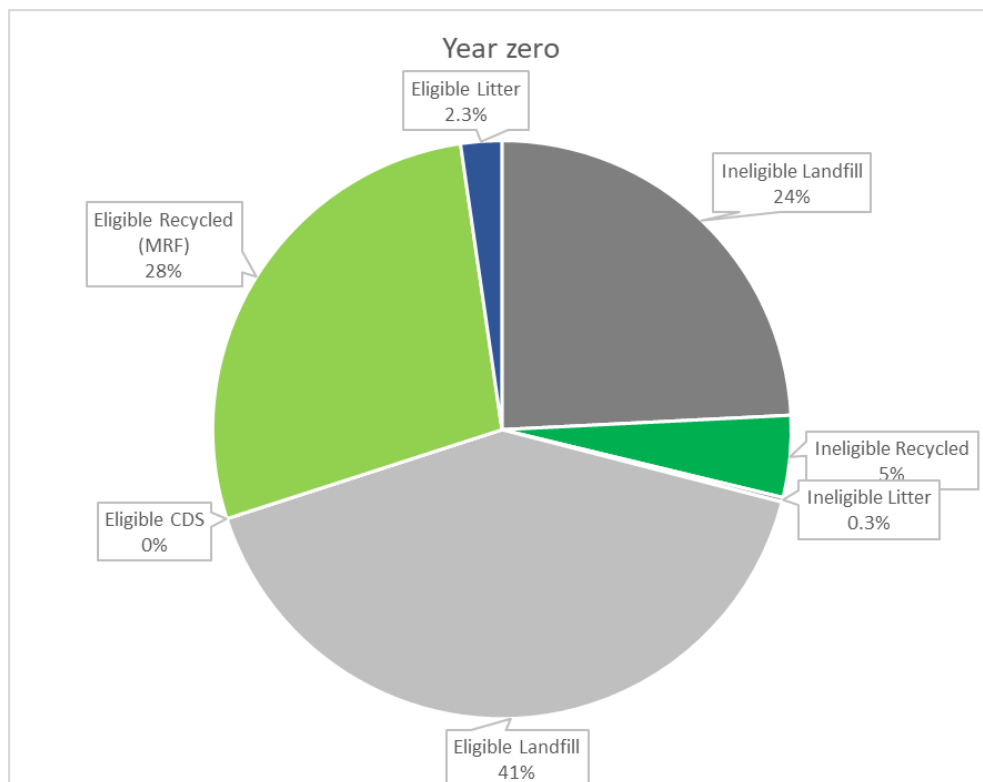
This section provides an overview of the material (beverage container) flows applied in the financial analysis. Further details of assumptions applied in the material flows analysis and relevant sources are provided in Appendix 2.

### 6.2.1 Base case (without scheme) assumptions

Estimates suggest that approximately 300 million beverages were purchased in Tasmania in 2017 in containers. Currently most containers (some 200 million) are sent to landfill and only around one-third are recycled through MRFs. Almost 8 million containers are estimated to be littered across the State during the year.

Of all containers used, some 214 million are in containers that are typically covered by a CRS in other jurisdictions.<sup>34</sup> The proposed Scheme seeks to increase the number of these ‘eligible’ containers sent to recycling and reduce the amount littered. For this reason, there will be no direct effect of the Scheme on the almost 100 million ineligible containers. Currently, around 85 million eligible containers are estimated to be sent for recycling through MRFs. This is approximately 40% of eligible containers. This base line situation is shown in Figure 9.

**Figure 9: Fate of containers, Base year**

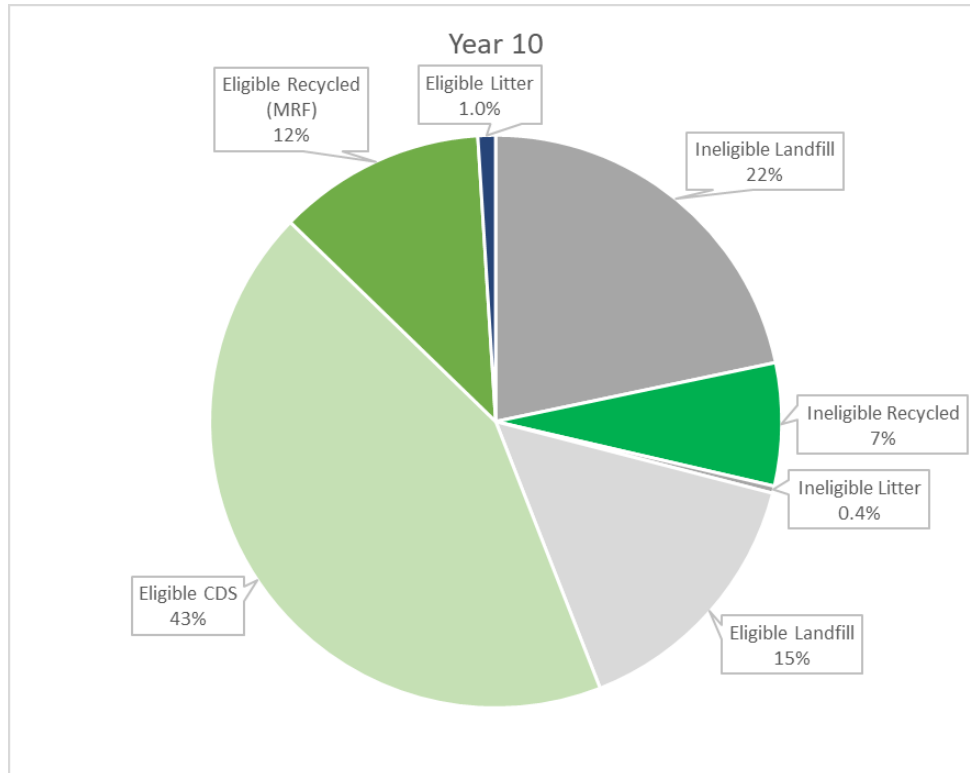


### 6.2.2 Impact of scheme on material flows

With the introduction of the CDS, recycling of eligible containers is modelled to almost double and landfill and littering rates to halve (Figure 10). A by-product of the Scheme is slightly improved outcomes for containers not eligible under the Scheme.

<sup>34</sup> South Australia has a slightly broader definition of eligible containers.

**Figure 10: Fate of containers, year 10 of Scheme**



The improvement in recycling and litter outcomes results from container redemptions at refund points, some of which are coming from containers that were previously recycled through MRFs (Figure 11). As detailed in the figure below, redemption rates are estimated to increase gradually over time from approximately 55% at the end of the first year of the scheme to 80% after year 10. This is a very conservative estimate and, based on overseas experience, it should be feasible, if appropriate targets were to be set, to achieve a redemption rate of 80% or greater within five years.

**Figure 11: Redemption rates**

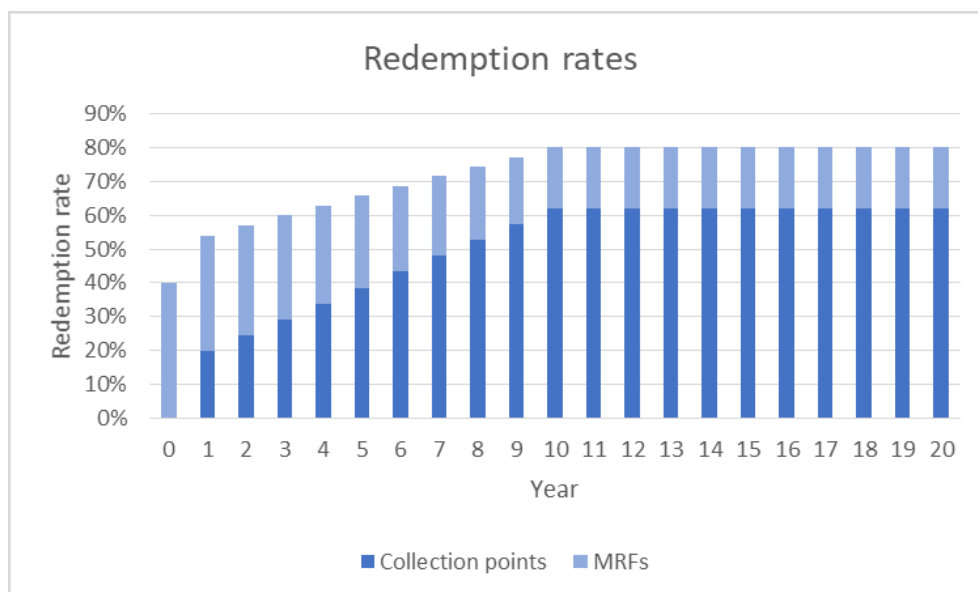
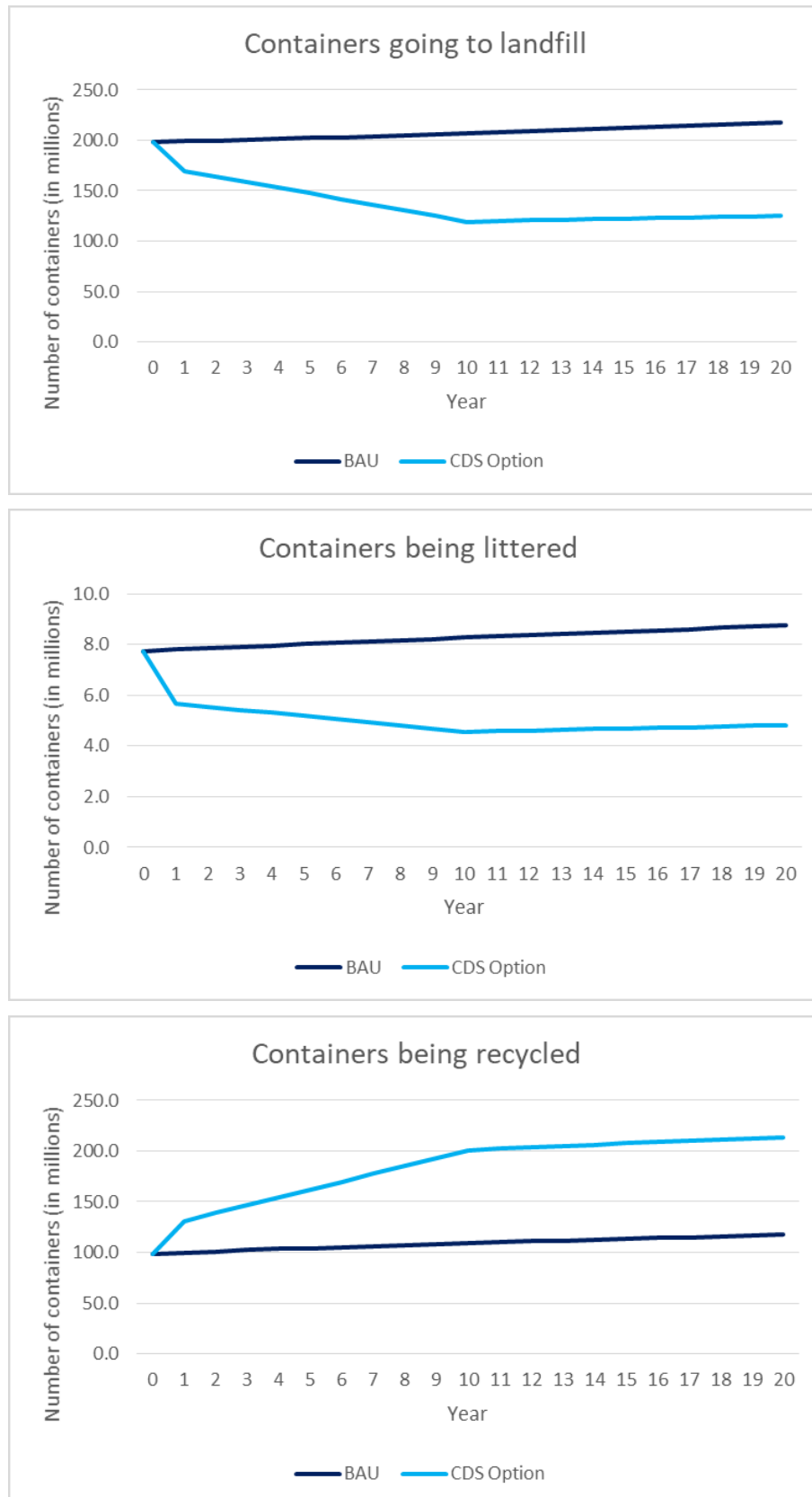


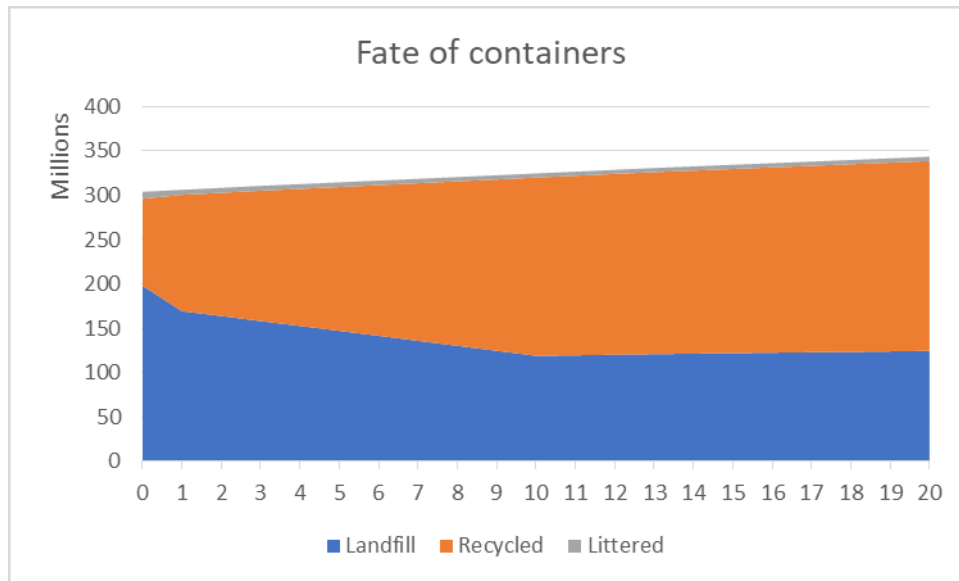
Figure 12 shows the impact of the Scheme across all containers (remembering that approximately one-third of beverage containers are outside of the Scheme).

**Figure 12: Fate of containers over time with a CDS**



This is reflected in the overall fate of all containers (Figure 13).

**Figure 13: Fate of containers over time with a CDS**



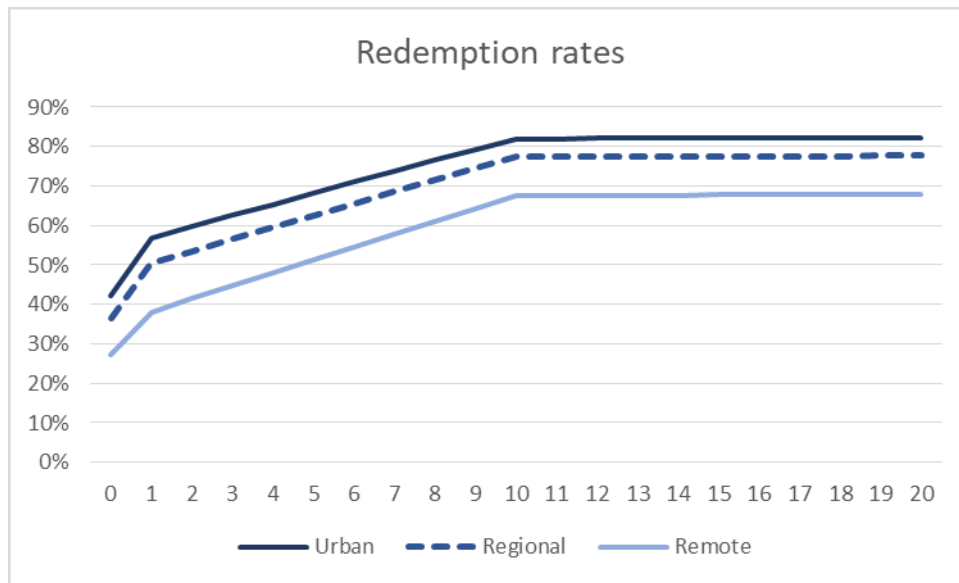
In developing the impact of the Scheme, we have modelled three types of regions: Urban, Regional and Remote. Reflecting the distribution of the population noted in Table 10, two-thirds of containers are estimated to be consumed in Urban regions. Almost all of the remaining containers are consumed in Regional areas with the small balance in Remote areas (Table 17).

**Table 17: Number of containers redeemed by area (millions)**

Region	Year				
	0	5	10	15	20
Urban - consumed (all)	193	200	206	213	218
Urban - consumed (eligible)	137	142	146	151	155
Urban - redeemed	58	97	120	124	127
Regional - consumed (all)	101	105	108	111	114
Regional - consumed (eligible)	72	74	77	79	81
Regional - redeemed	26	46	59	61	63
Remote - consumed (all)	10	10	10	11	11
Remote - consumed (eligible)	7	7	7	8	8
Remote - redeemed	2	4	5	5	5

Redemption rates are expected to be higher in Urban areas than in Regional regions and higher in Regional regions than in Remote regions. Redemption rates across all three areas are assumed to increase at broadly the same annual rate across the regions (Figure 14).

Figure 14: Redemption rates: distribution across regions



### 6.3 Scheme financial analysis

Chapter 4 outlined the main elements of the financial costs of the Scheme covering in particular refund point costs. This section outlines results of the financial presenting overall scheme costs (i.e. costs to the beverage industry, which is assumed to pay for all of these costs) and price impacts of the scheme on consumers. Information on the financial impacts of the scheme on MRFs and local councils are provided in sections 4.4.1 and 4.4.2 respectively.

For the purposes of the analysis, we have examined the costs and throughput over a 20 year horizon. This provides more than sufficient time for the assumed minimum targeted redemption rate (80%) to be achieved and for the main cycles of investment to flow through the system so that all costs recovering can be included.

For the purposes of developing pricing for handling, we have included implied riskiness of operations. We expect RVM operations to be less volatile than for manual collection points.

We have used average container throughput for each type of collection point. This will over-estimate the cost for higher volume or more stable operations and under-estimate that for low volume or more risky operations. To reflect the need to provide for a range of operations, a premium has been added to the average cost.

Contra this premium, refund points that arrange for collections through donation points should be able to achieve lower costs of handling containers (in terms of both actual costs incurred and in generating higher volumes to achieve economies). The main assumptions applied in the financial analysis are provided in Table 18. Further details of these assumptions are provided in Appendix 3.

**Table 18: Major assumptions applied in financial analysis**

Key Financial Assumptions	
<b>Scheme type</b>	not for profit
Initial Investment	
IT Systems (capital and support)	3,000,000
Business Set Up and Marketing	9,000,000
<b>Ongoing Admin</b>	720,000
<b>Processing &amp; Transport (\$ per container)</b>	
Aggregation / processing cost	0.005817
Transport CP to processing (urban)	0.001580
Transport CP to processing (regional)	0.005924
Transport CP to processing (remote)	0.010532
<b>Refund point handling fees (\$, incl. margin per container)</b>	
RVMs	0.048
Manual Refund Points (Urban)	0.054
Manual Refund Points (Regional)	0.065
Manual Refund Points (Remote)	0.168
Pop-up Refund Points (Regional and remote)	0.272
<b>Premium</b>	15%

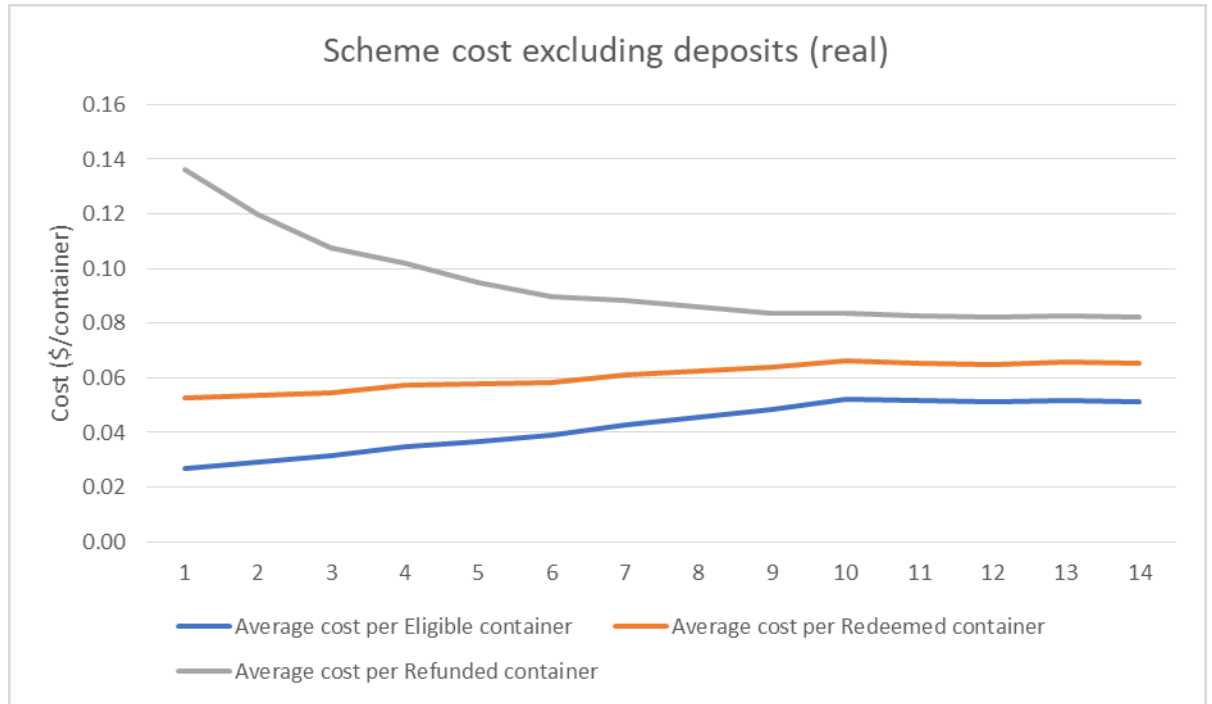
### 6.3.1 Overall scheme costs

Table 19 provides an overview of the results of the financial analysis. The impact of the scheme overall will be felt by most elements of the beverage container world. Ultimately it is consumers who will pay for the scheme through the higher prices to cover both the deposit and the scheme costs. The effect of these higher prices will be felt by beverage suppliers/retailers in lower volumes. In the absence of any price gouging, this will not translate into higher profits as the difference in prices received will be equal to the costs of the scheme. For the purposes of this exercise, we have not estimated any of the demand effects. However, within the overall “share of throat”, we would expect some movement towards those beverages not covered by the scheme. However, as the scheme covers the majority of convenient packaged beverage sales, it is likely that it would not greatly affect market share within that category.

As noted above, a 20-year analysis was undertaken to estimate the costs of the scheme. This means that, all things being equal, the scheme will not make a profit overall. In any particular year, however, it may record a surplus of earnings over expenses. These net earnings are used to fund the initial set-up and future upgrades to the system.

Overall, the scheme imposes real funding requirements of around \$239 million (NPV) over the 20 years. This figure includes refunded deposits of around \$138 million. The real costs associated with running the scheme are therefore around \$101 million or about 4c per eligible container. This translates into 7c per redeemed container (MRFs plus refund points) or 10c per refunded container (refund points only). The main influence on non deposit costs are the number of refunded containers. Over time, as more containers are refunded this average cost declines significantly (particularly as a greater proportion are processed through lower cost refund points) (Figure 15).

Figure 15: Estimated real scheme costs over time (cents/container)



In addition, we would expect regular reviews of the costs and charges of the scheme. While price reductions for consumers are unlikely, future cost increases may be limited. This is separate from any changes in the deposit rate.

**Table 19: Financial analysis summary table (\$'000)**

Year	0	1	2	3	4	5	6	7	8	9	10
<b>Revenue</b>											
Beverage Manufacturer Payments	0	19,643	18,447	19,372	20,243	21,042	19,695	20,486	21,309	22,067	22,713
Value of Recyclates	0	203	257	312	367	423	480	537	596	654	714
Interest Income	0	43	46	49	52	54	57	59	62	65	67
<b>Expenses</b>											
Business Setup Cost	9,000	0	0	0	0	0	0	0	0	0	0
Scheme Administration (Staff & other opex)	0	720	720	720	720	720	720	720	720	720	720
Deposit/ Refund payments	0	10,690	11,021	11,329	11,587	11,826	12,046	12,248	12,433	12,596	12,744
CDS processing & transport cost	0	314	395	476	559	642	726	812	898	986	1,074
Handling fees (allowing a profit margin)	0	2,537	3,128	3,727	4,331	4,856	5,470	6,025	6,650	7,210	7,847
Depreciation	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Interest Expense	0	840	665	478	488	288	75	210	145	75	210
<b>Surplus (Deficit)</b>	<b>-10,000</b>	<b>3,788</b>	<b>1,821</b>	<b>2,002</b>	<b>1,977</b>	<b>2,188</b>	<b>195</b>	<b>68</b>	<b>120</b>	<b>200</b>	<b>-101</b>

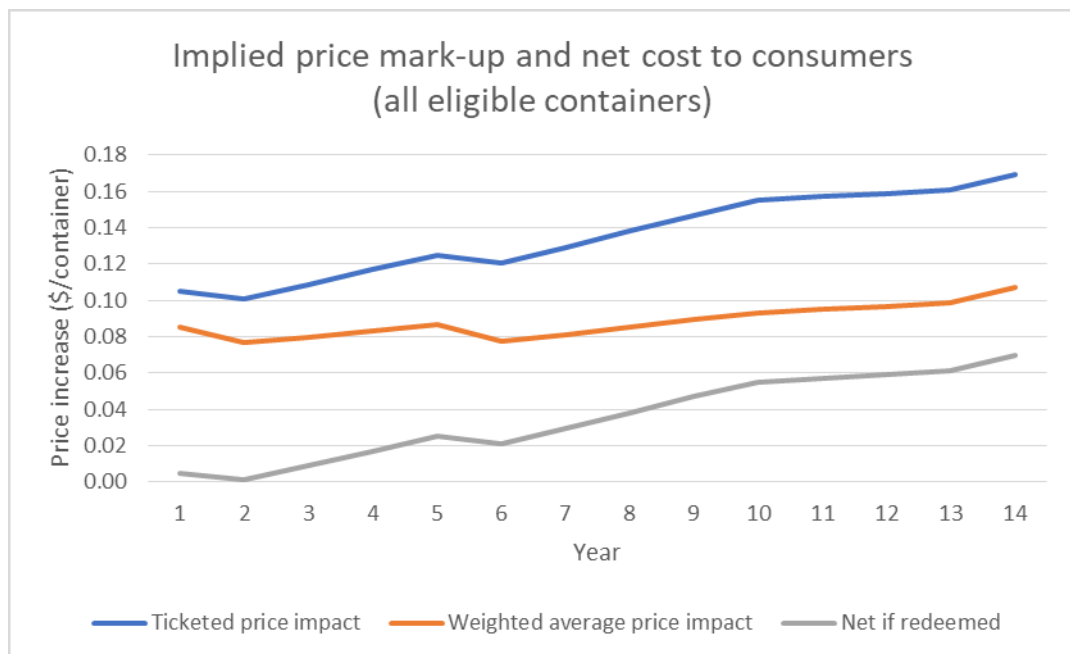


### 6.3.2 Impact on consumers

It is expected that the Scheme will impact on prices that consumers pay for beverages, with actual costs that consumers wear being dependent on whether or not they claim a refund by redeeming their containers through a refund point. The price effect on consumers is expected to increase over time as redemption and diversion rates increase. Figure 16 shows the expected price and cost impacts on different groups of consumers, noting that costs of the scheme will be recovered by beverage suppliers across all sales of eligible containers. The ‘ticket’ price impact (nominal) is shown by the highest (blue) line in Figure 16 and indicates the cost impact on consumers who do not redeem their containers. The grey line shows the cost impact for consumers who redeem their containers through refund points. These consumers are 10 cents better off than the ticketed price impact, with cost impacts being nothing in year 1, rising to about 6.5 cents/ container in year 10.

The weighted average cost impact across all beverage consumers (both those who do and those who don’t redeem their containers at refund points) is shown in the orange line. This cost increases slightly over time (from about 8.5 cents/container in year 1 to about 10 cents/ container in year 10) reflecting the higher number of containers that are being redeemed over time. The weighted average therefore tracks towards the grey line.

**Figure 16: Impact of CDS on consumers in Tasmania**



The price impacts indicated above are, of course, gross impacts of the scheme alone. For consumers, after the initial impact of the introduction of the scheme, changes in prices associated with costs of beverage production and/or retail discounting or mark-ups are likely to be significantly more important to beverage prices going forward than scheme costs.

## 6.4 Costs of the scheme for state government

The above analysis focusses on the flowthrough of costs associated with the scheme to consumers. It identifies impacts on direct scheme providers or users of the scheme.

In addition, the scheme will impose costs on the state government associated with establishing the scheme and with regulatory oversight. In the financial analysis presented above, it is assumed that these costs are not directly recovered from the PSO nor any of the scheme participants. We note however, that in NSW costs of regulating the scheme are recovered through a license fee imposed on the scheme co-ordinator. The Tasmanian government could choose to do the same.

The Tasmanian government will incur costs at two stages.

At set-up, it will incur costs for:

- Drafting and passage of the relevant legislation. It is likely costs associated with this activity can be contained by leveraging similar legislation from other jurisdictions.
- Mutual recognition of legislation across the Commonwealth. The effort and cost required to obtain recognition will also be contained as most jurisdictions have already obtained recognition for their schemes.
- Overseeing set-up of the PSO and its Board. In particular, negotiations with the beverage industry around establishing the PSO, establishing criteria for the skills/experience needed for the independent members of the Board and appointing Board members.
- Drafting and the legislated agreement with the PSO.
- Developing the necessary regulatory detail to be achieved by the PSO including redemption and access targets.
- Registering approved recyclers.
- Stakeholder engagement and community education<sup>35</sup>.

We estimate that that these set-up costs will be in the order of \$500,000 to \$750,000 with the actual cost being dependent on the extent of stakeholder consultation and community education assumed by the government.

On an on-going basis, the State government will need to:

- Assume responsibility for monitoring performance of PSO against key targets of the scheme, including redemption and access rates.
- Improve monitoring and data collection on recycling rates and littering – this would be a useful rather than necessary step. In relation to recycling we note that there are limitations with waste management and recycling data in Tasmania a point also noted by other waste management related studies that have been undertaken for Tasmania. In relation to litter data, we note that existing National Litter Index (NLI) probably provides a suitable foundation for monitoring litter rates and that not too much additional effort would be required to build on the NLI to establish an ongoing database of litter rates in Tasmania.

<sup>35</sup> We note that most of the marketing of the scheme should be undertaken by the PSO but that it may be necessary for the State government to have some initial role in this area.

- Undertake approvals of new containers and maintain a register of approved containers<sup>36</sup>. Again the cost of the function should be limited as, most new containers will already be being registered by other jurisdictions and Tasmania need simply duplicate that task when registrations occur elsewhere.
- Review PSO reporting and provide advice to the Minister.
- Provide regular, more detailed reviews of the scheme, approximately every three to five years.

These costs are unlikely to exceed \$150,000 per annum, with scheme costs increasing in review years to about \$250,000.

It is important to note also that higher prices from the scheme will also generate higher GST revenues<sup>37</sup> that should, in principle, be distributed to the Tasmanian state government. Our preliminary analysis suggests that it is likely that the scheme will generate higher GST revenues starting at around \$200,000 in the first year and increasing thereafter. Thus the additional GST revenue is likely to exceed ongoing costs.

---

<sup>36</sup> It is possible that the function of maintaining the container register could be assumed by the PSO. On balance we believe that it is best undertaken by the State Government.

<sup>37</sup> The analysis of scheme costs has estimated that price changes will have minimal effect on volumes demanded.

## References

---

- Blue Environment, Randell Environmental Consulting, 2017. *Australian National Waste Report 2016*, prepared for Department of the Environment and Energy.
- Curnow, R. and Spehr, K., 2005. *Littering Behaviour Studies VII: National Benchmark 2004*, Beverage Industry Environment Council.
- Donnelly, D. and Buard, M. 2011. *Community Preferences for Litter Reduction*, prepared for NEPC Services Corporation, Instinct and Reason.
- Envisage Works and SRU, 2017. *National Recycling and Recovery Survey (NRRS) 2015–16 for plastics packaging* (IND 299/16), prepared for the Australian Packaging Covenant Organisation.
- Environment Protection Authority, South Australia, 2012. *Environment Protection Authority Annual Report 1 July 2011 to 30 June 2012*, Environment Protection Authority, Adelaide.
- EPA South Australia, 2015. ‘Container deposit legislation - a South Australian environmental success story’, EPA Recycling Information Sheet 074/15, Updated September 2015.
- Equilibrium, 2013. *An assessment of the potential financial impacts of a Container Deposit System on local governments in Tasmania*, prepared for Local Government Association of Tasmania (LGAT).
- Hudson Howells, 2005. *Collection Industry Arrangements under Container Deposit Legislation*, Environment Protection Authority South Australia.
- Hyder Consulting Pty Ltd 2009. *Feasibility Study of a Container Deposit System for Tasmania*, report prepared for the Tasmanian Department of Environment, Parks, Heritage and the Arts.
- IBISWorld, 2013, Industry Reports, Sourced at: <http://www.ibisworld.com.au/>, April-June, 2013.
- Industry Edge and Equilibrium, 2013. *Compilation of Contestable Data for 2011-12 on the Consumption and Recycling of Glass, Aluminium, LPB, HPDE and PET Beverage Containers and In Addition Aluminium Aerosol Containers*, Report for the Packaging Stewardship Forum of the Australian Food and Grocery Council.
- McGregor Tan Research 2016. *National Litter Index Annual Report 2015-16*, Keep Australia Beautiful.
- McIlgorm, A., Campbell H. F. and Rule M. J. 2008. *Understanding the economic benefits and costs of controlling marine debris in the APEC region* (MRC 02/2007). A report to the Asia-Pacific Economic Cooperation Marine Resource Conservation Working Group by the National Marine Science Centre (University of New England and Southern Cross University), Coffs Harbour, NSW, Australia.
- Marsden Jacob Associates, 2013. *Distributional and Cost Benefit Analysis for the Packaging Impacts Decision Regulation Impact Statement: Regulation Impacts Report*, prepared for the National Environmental Protection Council.
- Marsden Jacob Associates, 2014. *Cost Benefit Study of a Tasmanian Container Deposit System – Final Report*, report prepared for the Department of Primary Industries, Parks, Water and the Environment (DPIPWE), EPA Division.

- NSW Government, 'NSW Container Deposit Scheme Information for residents', accessed at: <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/return-and-earn>, 20 February, 2018.
- Schuyler, Q, Hardesty, B, Lawson, T, Kimberley, O, Wilcox, C, 2018. 'Economic incentives reduce plastic inputs to the ocean', *Marine Policy*, 15 February 2018.
- West, D., Angel, J., Kelman, R. and Lazarro, A., 2013. *Independent Review: The Northern Territory Container Deposit System*, Boomerang Alliance, Sydney.

## Appendix 1: Stakeholder engagement

---

Following is a list of stakeholders who were consulted over the course of the analysis.

Australian Beverages Council  
Container Deposit System Operators  
Cradle Coast Waste Management Group  
Hobart City Council  
Huon Valley Council  
Kingborough Council  
Local Government Association of Tasmania  
Northern Tasmanian Waste Management Group  
NSW Environment Protection Authority  
Queensland Department of Environment and Heritage Protection  
SKM Recycling  
Sustainable Living Tasmania  
Veolia Environmental Services  
Waste Management Association of Australia (Tasmania)  
Waste Strategy - South

A number of other stakeholders were contacted but did not provide feedback.

## Appendix 2: Material flows assumptions

The material flows analysis undertaken for this study, covering container consumption, disposal, recycling and litter, draws on a number of previous analyses undertaken by Marsden Jacob across Australian jurisdictions relating to packaging (including beverage container) recycling and litter, as well as a number of Tasmanian and national waste management studies. The following tables provide further information on the materials flows assumptions applied in the analysis and major sources for those assumptions.

### Beverage container consumption

Information relating to beverage container consumption is presented in Tables 20 to 24. This includes total consumption, a regional breakdown of consumption, material composition, numbers of containers per tonne, location of beverage containers consumed and consumption growth.

Most of this information was initially drawn from a detailed analysis of packaging material flows undertaken for the ‘Distributional and Cost Benefit Analysis for the Packaging Impacts Decision Regulation Impact Statement’ (Marsden Jacob 2013) and the ‘Cost Benefit Study of a Tasmanian Container Deposit System, (Marsden Jacob 2014) but has been updated to reflect more recent Tasmanian data and data from other jurisdictions.

Total and regional consumption of beverages is presented in Table 20. Total consumption was originally estimated for (Marsden Jacob 2013) but was updated in line with growth projections presented in Table 21. Original consumption and growth projections were sourced from a range of sources including IBISWorld, 2013 and Industry Edge and Equilibrium, 2013 as well as projections for population growth. The regional split of beverage containers is assumed to be proportional to population in each area.

**Table 20: Total and regional split of beverage container consumption, 2017**

Region	Proportion of consumption	Consumption (tonnes)
Urban	63.56%	20,344
Regional non-levy paying area	33.23%	10,637
Remote	3.21%	1,027
Tasmania	100.00%	32,007

**Table 21: Beverage container consumption growth**

Time Period	Annual Growth rate
2017-2021	0.73%
2022-2031	0.63%
2032 onwards	0.54%

Information on the split by material for beverage containers (Table 22), containers per tonne (Table 23) and location of beverage container consumption (Table 24) is not available specifically for Tasmania. We have extrapolated from analysis undertaken more broadly for packaging across Australia (MJA 2013), which was updated to reflect more recent estimates derived from surveys and discussions with industry stakeholders that were developed for Marsden Jacob 2016. It should be noted that there is little information on where beverages are consumed. Thus estimates of distribution across home and away from home consumption are subject to considerable uncertainty.

**Table 22: Material composition split of beverage container consumption (by tonnes)**

Material	Composition Split
Paper/cardboard	2.11%
Glass	83.28%
PET	7.28%
HDPE	5.01%
Aluminium cans	2.32%

**Table 23: Containers per tonne**

	Containers per tonne
Paper/Cardboard	48,000
Glass	4,500
PET	29,000
HDPE	20,000
Aluminium Cans	70,000

**Table 24: Location of beverage container consumption**

Location	Proportion of consumption
At home	67.5%
Away from home (public place)	22.5%
Away from home (non-public place)	10.0%

## Recycling

The current level of recycling of beverage containers in Tasmania (Table 25) was estimated specifically for this study drawing on a range of sources including: Australian Packaging Covenant Organisation, 2017, Blue Environment, 2017 and Envisage Works, 2017. This was cross-checked with the Tasmanian data developed for Marsden Jacob 2013.

**Table 25: Estimate recycling rates of containers by material type (2017)**

Material	%
LPB	12.5%
Glass	39.7%
PET	7.0%
HDPE	7.9%
Aluminium Cans	75.4%
<b>Overall</b>	<b>32.3%</b>



Under a CDS all redeemed containers are assumed to be recycled. In this way it is possible to estimate changes to recycling rates with the introduction of a CDS and assumed redemption rates.

**Littering of beverage containers**

Estimates of the numbers of beverage containers littered each year in Tasmania were calculated by applying ‘propensity to litter’ estimates against estimates of ‘public place’ and ‘other’ beverage consumption (see Table 24). Propensity to litter refers to the likelihood that a container will be littered after the beverage has been consumed. National Litter Index (NLI) data indicates the vast majority of litter (beverage container and other types) comes from products that are consumed in public places away from home.

NLI data (McGregor Tan Research 2016) for approximately the last five years was used to estimate propensity to litter for public place beverage consumption and other locations. NLI estimates are based on survey sites only. To estimate total litter it is necessary to ‘scale up’ the survey site estimates to derive total litter estimates (by volume). The process of scaling up involves applying a scale up factor that has been derived based on the total area of urban areas relative to the survey areas, population and population density. This exercise was originally undertaken for the national packaging study (Marsden Jacob 2013) and then revised for the NSW CDS cost-benefit analysis (Marsden Jacob 2016). Total litter estimates (by category of packaging material, including beverage containers) derived in this way were then applied to beverage consumption data to obtain estimates of propensity to litter in urban areas<sup>38</sup>. These estimates were then validated against propensity to litter estimates derived in the past from surveys of community littering habits (e.g. Curnow and Spehr 2005).

As indicated in Table 26, the assessed propensity to litter of beverage containers is currently 10.9% for beverages consumed in public places but only 0.1% for beverages consumed elsewhere. Based on recent historic data, this is assumed to remain relatively unchanged over the period of the study. With the introduction of CRS propensity to litter is assumed to decrease substantially – by over 45% when the redemption rate of containers is 80%. This estimate has been derived by comparing NLI litter rates of beverage containers in South Australia (which has a CRS and a redemption rate of approximately 80%) with litter rates in Tasmania, allowing for differences in survey site areas and population density.

**Table 26: Propensity to litter beverage containers, public places and other areas, with and without a CDS**

Year	Propensity to litter			
	0	5	10	15
No CRS - Public place	10.86%	10.86%	10.86%	10.86%
No CRS - Other place	0.13%	0.13%	0.13%	0.13%
CRS - Public place	10.86%	7.04%	5.97%	5.97%
CRS - Other place	0.13%	0.08%	0.08%	0.08%

<sup>38</sup> Propensity to litter in non-urban areas are assumed to be the same as in urban areas, although it is recognised that this may not be the case.

## Redemption rates

The analysis assumes a redemption rate of 80% is achieved by year 10 based on 63 refund points being established statewide and redemption targets commensurate with this outcome being introduced. This estimate is based on judgement, drawing on experience from Australian and overseas schemes. To achieve significantly higher than an 80% redemption rate will probably require a greater number of refund points than the modelled 63. On the other hand, it may be possible to achieve a rate of 80% earlier than 10 years, depending on how quickly and successfully refund points are established, whether or not the PSO adopts innovative measures to encourage redemption and whether or not the community embraces the scheme. Table 27 shows assumed regional redemption rates to achieve an overall redemption rate of 80%.

**Table 27: Collection Point Redemption Rates**

Region	Year		
	1	5	10
Urban	43%	63%	87.5%
Regional	35%	54%	77.3%
Remote	20%	37%	57.3%

Table 28 shows the estimate kerbside diversion rate commensurate with the redemption rates outlined in the previous table. The diversion rate represents the proportion of beverage containers that are currently going through the kerbside recycling service that would be diverted through refund points. These estimates are based on data from the South Australian CRS.

**Table 28: Kerbside Diversion Rate (%)**

Year	Year		
	1	5	10
Kerbside Diversion Rate	10%	29%	52%

## Appendix 3: Cost assumptions

### Scheme costs

It is anticipated that the PSO will incur a range of costs associated with establishing and running the scheme. The costs affecting the overall cost of the scheme were summarised in Table 18 and are reproduced below. Below we discuss the major components of these costs.

**Table 29: Key financial inputs to the analysis**

Scheme type	not for profit
<b>Initial Investment</b>	
IT Systems (capital and support)	3,000,000
Business Set Up and Marketing	9,000,000
<b>Ongoing Admin</b>	720,000
<b>Processing &amp; Transport (\$ per container)</b>	
Aggregation / processing cost	0.005817
Transport CP to processing (urban)	0.001580
Transport CP to processing (regional)	0.005924
Transport CP to processing (remote)	0.010532
<b>Refund point handling fees (\$, incl. margin per container)</b>	
RVMs	0.048
Manual Refund Points (Urban)	0.054
Manual Refund Points (Regional)	0.065
Manual Refund Points (Remote)	0.168
Pop-up Refund Points (Regional and remote)	0.272
<b>Premium</b>	15%

### Refund point handling fees

By far the most significant costs to the scheme are costs associated with refund points. These are discussed in detail in section 4.1.4 of the report. As detailed in that section, estimates of refund point costs and associated handling fees were (costs plus margin) were derived by building-up costs from the bottom up (i.e. by considering all likely capital and operating costs and estimating container throughput at each refund point depending on its type and location). However, estimates derived through this method were validated against costs estimates for different types of refund points that have been revealed through the operation of schemes elsewhere.

As can be seen in the section on handling fees, RVMs are assessed to have lower costs overall than manual refund points, even manual points in urban areas. This situation reflects a balance between capital and operating costs, with RVMs having high capital costs and low operating costs and manual points the reverse. If RVMs have a high enough container throughput, estimated to be about 2.5 million containers per year, they are likely to be more cost effective (considered over their life) than manual refund points. Throughput of this magnitude is only likely to be achieved in a limited number of urban settings though, estimated to be about 20 for Tasmania. With lower container throughputs annual refund points be more cost effective.

### Scheme type

As discussed in section **Error! Reference source not found.**, we have modelled a not-for-profit scheme. The impact of a for-profit scheme would be to increase the cost to the consumer over time, albeit with some cost savings upfront.

### Scheme ongoing administrative costs

For the purposes of establishing a cost for the PSO's operations we have assumed that it would be located in Hobart, with a minimum staff of:

- One Chief Executive Officer;
- Three auditors;
- Vehicles for undertaking audits; and
- One leased office including administrative support.

Scheme coordinator set-up costs were informed by experience with the NSW and Queensland schemes. They do not include the regulatory costs to government.

### Initial investment

The initial set-up costs include the costs for the PSO to:

- Establish and fit-out an office in Hobart including furnishings, communications, its IT hardware;
- Legal and financial costs with establishing the entity, the contractual arrangements with suppliers and government;
- Initial marketing and information provision, including PSO website development and multi-media education, community and information provision. In addition, there will be information provision and training of refund points, processors and others in the supply chain

The IT system is developed to provide the on-line auction service and tracking of containers. It is assumed that these services will not require dedicated communications/monitoring infrastructure. Both up-front and on-going costs (including IT support) have been capitalised into an up-front figure. Both systems will comprise:<sup>39</sup>

- Facility to host online site;
- Cost of servers, and underlying software lease costs, communication;
- Redundancy costs;
- Development of dedicated software and its maintenance;
- Running and monitoring the systems;
- Training for internal and external users (including potentially a call centre).

### Ongoing administration

These comprise:

- Salaries and on-costs for directly employed staff;

---

<sup>39</sup> Where these costs may be incurred on an annual basis, such as leasing rather than purchase, we have capitalised to bring the figure forward to the year of establishment.

- Vehicle costs for auditors;
- Office consumables, communications and support.

### Costs and revenues linked to impacts of scheme on local councils and MRFs

As detailed in section 4.4, operation of the scheme is estimated to direct and indirect impacts on MRFs and local councils. These estimates entailed assumptions about a number of cost streams as detailed in Table 30. These estimates were obtained through consultations with council stakeholders and then validated against available published data and independent sources in relation to MRF costs.

**Table 30: Council and MRF costs**

Council costs	\$/ tonne
kerbside waste collection costs (urban)	82
kerbside waste collection costs (regional)	120
kerbside waste collection costs (remote)	120
kerbside recycling costs (urban)	135
kerbside recycling costs (regional)	277
kerbside recycling costs (remote)	277
MRF gate fee - \$75/ tonne;	75
MRF costs	\$/ tonne
MRF Fixed Cost - \$46/ tonne;	
MRF Variable Costs - \$55/ tonne	

### Revenue from recyclates

Additionally, the following prices are assumed for recyclates with and without a CRS scheme. These estimates are conservative, especially for plastics, considering current difficulties with markets for recyclates.

**Table 31: Value of recyclates with and without a CDS**

Value of recyclates – without CDS	\$/ tonne
LPB	-40
Glass	0
PET	30
HDPE	30
Aluminium Cans	1,330
Value of recyclates – with CDS	\$/ tonne
LPB	-40
Glass	9
PET	60
HDPE	60
Aluminium Cans	1,430