



**South Australian  
Environment Protection Authority**



**Container Deposit Scheme  
Economic Analysis Review**

**Addendum Report**

January 2021

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## 1 EXECUTIVE SUMMARY

The South Australian Environment Protection Authority (EPA), on behalf of the South Australian Government, is currently reviewing the Container Deposit Scheme (CDS). The aim of the EPA review is to examine changes in the CDS that would further promote beverage container product stewardship, continue to support reduced litter in the State and enhance recovery of resources embedded in beverage container materials.

As part of the EPA review, Hudson Howells was engaged to undertake an Economic Analysis Review addressing the following specific elements of the overall review:

- Determine the value of SA's Container Deposit Scheme.
- Determine the extent to which there is unrealised value within SA's Container Deposit Scheme.

Following the CDS Economic Analysis Review December 2020 report (Main Report), Hudson Howells was engaged to undertake further research, analysis, and economic modelling in relation to 7 additional scenarios detailed below along with a summary of findings:

1. **Additional analysis of captured containers - incorporation of the currently excluded containers analysis be undertaken without plain milk i.e. retaining the current unflavoured milk exemption.**

The modelling in the Main Report provides an estimate of a net benefit from including currently excluded containers (including unflavoured milk) of \$86.19 million, making it the first ranked option in terms of providing an overall net benefit to the community.

The core conclusion from this additional analysis is that excluding plain unflavoured milk and only including flavoured milk of greater than 1 litre would reduce the net benefit to \$76.10 million and would move this scenario to the second ranked option after increasing the deposit from 10¢ to 20¢.

2. **A further analysis of transitional and ongoing costs and the distribution of those costs to SMEs versus larger operators, including**
  - a. **Include costs for new entrants (first year and ongoing)**
  - b. **Analysis of costs for each milk (plain and flavoured up to 3L), wine/spirits and fruit/vegetable juice (concentrated and pure up to 3L) separately,.**

The core conclusions of this modelling are that:

- The costs assumed in the Main Report modelling of 10-11¢ per container, which are then annualised, calibrate effectively to the findings of the additional modelling and support the underlying assumptions in the Main Report.
- However, the presence of fixed costs and economies of scale in the application and administration process mean that small operators with multiple products bear a significantly higher proportion of costs, and per container cost, from being brought into the scheme.

*It is therefore recommended that application fees be reviewed to keep industry costs to a minimum, application processes to be simplified to realise cost efficiencies and that costs/fees be more equitably spread across company size and sectors, especially to reduce fees for smaller operators.*

3. Analysis of unrealised value and impacts for currently excluded containers (separately) i.e. build on scenario 3 disaggregating the impact analysis for
  - a. Wine/Spirits
  - b. Milk (plain milk and flavoured milk up to 3L)
  - c. Fruit/Vegetable Juice (concentrated and pure up to 3L)

To undertake this analysis, the model used as the base in the Main Report was disaggregated to review the contributions of each of the possible in scope containers. The results of the analysis are presented in Tables 5.1-5.4 in the body of the report. The results of the modelling are summarised as follows:

- In terms of overall net benefit, wine bottles contribute the most to the overall benefit, while currently excluded flavoured milk and juice have less impact because of the smaller underlying volumes.
- The sources of the net benefit are quite different, a consequence of the different make-up of the product. Wine and spirit bottles currently are primarily returned through the kerbside bin and material recovery facility, and as such tend to be recycled as lower value materials with a portion continuing to go to landfill. However because of breakage and contamination rates in the Kerbside/MRF system, including them in the deposit scheme results in a higher level of return of high value recovered product, which results in greater opportunities in recycling.
- In general, for all product categories, economic activity is created in terms of opportunities in depots, while reducing the weight in the recycling bin sees

offsetting, and in some cases greater reductions in the level of economic activity in terms of local government provided services. This is particularly the case for including currently ineligible products (e.g. wine bottles). However, including these other products means more goes through depots and therefore produces cleaner recycled product which results in greater employment opportunities through processing.

4. Analyse the extent that the increase in supply of high quality recovered glass, aluminium, plastic (HDPE and PET) and liquid paperboard will facilitate the realisation of increased local (SA) processing and re-manufacturing of products and packaging (containing at least 50% recycled content for glass and at least 20% recycled content for PET and 30% for HDPE), including:
  - a. Resultant benefits on employment and income within SA

The additional EPA consultation and latest Rawtec reports confirm the findings of the Main Report, including the employment and income findings.

Other core conclusions of this review of processing opportunities as outlined in Section 6 of this report include:

- There are various initiatives led largely by commercial and local government interests in increasing the level of processing that occurs locally.
- There is a significant gap in the local market in terms of interest in supplying recycled product, but this must be matched by increased focus on demand.
- Environmental concerns are likely to keep attention on circular economy initiatives.
- There is a range of supporting financing and funding options to encourage/support investment.

As such it is important to understand that the opportunities for developing a strong circular economy and processing base around recycling are not formulaic and will require behavioural responses in the market, and ongoing policy and even funding encouragement. Improving the quality of material flows is an endemic and indeed the key feature of the container deposit scheme that can be considered to justify the assumptions used in the modelling in the Main Report.

5. Identify the collective capital value of the SA depots, the collective capital value of the SA Super Collectors and collective capital value of the SA MRF's.

The following table compares the Raw Data supplied by the Valuer General with the final adjusted data incorporating the Valuer-General's estimated occupancy capital values<sup>1</sup> (where part of a larger enterprise), Hudson Howells' adjusted capital values where the Valuer-General has been unable to decide, adjustment for market value (increased by 15% on the capital value) and adjustment for capital equipment (at 13%).

#### Collective Capital Values (2020/21 Raw Data and Adjusted Values)

	V-G Raw Data	Average	Adjusted Data	Average
<b>Depots</b>	\$57.81 million	\$0.44 million	\$54.12 million	\$0.42 million
<b>Super Collectors</b>	\$3.15 million	\$1.05 million	\$3.05 million	\$1.02 million
<b>MRFs</b>	\$15.35 million	\$3.84 million	\$15.97 million	\$3.99 million

(Source: Office of the Valuer-General and Hudson Howells)

The Depot average value above has been disaggregated below into the Greater Metropolitan Adelaide average and the Regional average:

- Greater Metropolitan Adelaide - \$761,000
- Regional South Australia - \$231,000

Based on the above adjusted collective capital values, it is estimated that the South Australia's CDS directly supports \$73.14 million of industry infrastructure (land, buildings and equipment).

6. Extent to which incorporating currently excluded containers would encourage the establishment of additional return points due to increase in quantity of CDS containers available for return and deposit redemption including:
- a. Where additional return points would be most likely to be established due to geographical gap in the market, and
  - b. Impact on depots resulting from the establishment of the additional return points.

The key issue for establishment of additional return points is the capacity of existing Depots to absorb additional throughput (an additional 103.7 million containers increasing from 605.6 million to 709.3 million containers). The industry's major representative organisation, Recyclers of SA Inc, was consulted several times as part of this additional work and confirmed the Main Report consultation estimating that capacity was on average at 50% in the metropolitan area and even lower in the regions. This estimate was based on existing shifts and not 24/7 operations.

<sup>1</sup> This is where the Valuer-General has identified that the entity is located in part of a larger enterprise and has been able to estimate the entity's individual occupancy capital value.

However, consideration needed to be given to the existing industry structure and possibility that existing depots would not expand operations to accommodate currently excluded containers. It was therefore important to consider the demand for additional return points based on no capacity being available at existing depots, and existing depots being able to expand operations to cater for the increased demand, recognising that other issues such as peak demand, sorting and processing limitations may impact individual depots.

Firstly, **assuming that existing depots are at full capacity** there would be a distribution of new Depots/return points as follows:

- Greater Metropolitan Adelaide – 21 new Depots/return points
- Regional – 6 new Depots/return points
- Current population per Depot (132 Depots) – 13,272

Section 8 of this report further disaggregates this additional demand for Depots/return points by major urban area/town and prioritised as follows:

- Metropolitan Adelaide (19)
- Gawler
- Mount Gambier
- Whyalla
- Murray Bridge
- Mount Barker
- Victor Harbour
- Crafers (which appears to be a major gap in the existing Depot network)
- Port Lincoln

Under the full capacity scenario and the need to establish 27 new Depots/return points, there will be capital and ongoing operating costs for each new Depot. Average capital costs across metropolitan and regional depots are estimated to be \$420,000 as per the adjusted Valuer-General's valuations in the previous section (land, building and equipment) with Greater Metropolitan Adelaide averaging \$761,000 and Regional South Australia averaging \$231,000. Other value added by depots (in addition to wages) was estimated in Stage 1 to be \$11.48 million or \$39,300 per employee suggesting additional operating costs for the 63 additional employees and 27 depots of \$2.476 million per annum or \$18,757 per Depot (132 Depots).

**Based on an existing 292 FTE jobs in Depots and 50% capacity**, existing Depots have ample capacity to absorb the demand created by incorporation of currently excluded beverage

containers up to 3L into the CDS (103.7 million additional containers) by increasing labour inputs. Under this scenario, additional costs are mainly in the wages for the additional 63 employees and other variable operating costs (e.g. power). Economic modelling in Stage 1 estimated total wages for 292 Full Time Equivalent jobs at \$13.56 million with an average of \$46,500 per employee. The total cost to depots for 63 additional employees would therefore be \$2.9 million, or on average \$22,900 per Depot (0.5 employees per Depot on average). As noted above, other value added by depots was estimated in Stage 1 to be \$11.48 million or \$39,300 per employee suggesting additional operating costs for the 63 additional employees of \$2.476 million per annum, or \$18,757 per Depot.

A major benefit under this scenario is the economies of scale that would be achieved in Depots via the utilisation of existing capital and any underutilised labour. Recyclers of SA Inc. did note the potential for vastly improved efficiencies via agreements with Super Collectors to implement compacting technologies in the Depots thereby reducing collection volumes and time.

Based on the above analysis and the additional industry consultation, the Depot industry believes that the additional containers associated with including currently excluded containers in the CDS can be comfortably accommodated within the existing Depot network and shifts, and that there is no need for additional Depots (except for the apparent gap in Crafers/Stirling/Aldgate noted in this report).

7. Additional analysis of the 4<sup>th</sup> (glass) kerbside bin based upon the findings of the EPA industry consultation (attached) to:
  - a. Identify the impacts of additional glass bins on recovery rates, analyse and identify the impacts on glass container recovery rates including glass breakage and value of colour segregated glass (via CDS) versus mixed recovered glass arising from the 4<sup>th</sup> (glass) kerbside bin scenario, and
  - b. Analyse and identify the impacts of a 4<sup>th</sup> (glass) kerbside bin on the CDS containers returned through the CDS depots (metro and regional).

The Main Report assumed a 5% reduction of CDS glass going to Depots because of the 4<sup>th</sup> bin. However, it is important to note that EPA consultation reported conflicting views, including an expectation that the 4<sup>th</sup> glass bin would alert the community to the deposit scheme and result in an increased volume being processed by Depots. We have therefore modelled in the Main Report alternative scenarios which include an increase in throughput to Depots because of the 4<sup>th</sup> bin.



For the 4<sup>th</sup> bin system the assumptions of containers going to depots being reduced and instead put into the 4<sup>th</sup> bin result in modelled increases in breakage/contamination and therefore less being recovered and more going to landfill – 1,017 tonnes compared with 1,028 tonnes. This is an important finding as a major outcome of the CDS scheme is providing an efficient way to collect high value (colour sorted and uncontaminated) materials that can be recycled back into glass bottles.

Another important consideration is that the *4<sup>th</sup> bin kerbside* scenario includes an assumption of the need to invest in a glass optical sorting plant (to be established within a dedicated facility) at an assumed capital cost of \$12 million. This is confirmed by the EPA consultation.

For the 4<sup>th</sup> bin kerbside system there is also an assumed extra cost of a pick-up per fortnight, as well as the costs associated of slight increases in tonnages due to diversion from depots. Industry feedback suggested that a collection every second week was the most likely scenario, although there was a need to investigate the monthly option.

Based on the above, including the additional EPA consultation and Rawtec reports, the modelling results for the 4<sup>th</sup> glass bin option estimate a reduction in the number of containers recycled of 5.7% or 2.9 million containers.

## 2 INTRODUCTION AND PROJECT OBJECTIVES

The South Australian Environment Protection Authority (EPA), on behalf of the South Australian Government, is currently reviewing the Container Deposit Scheme (CDS). The aim of the review is to examine changes in the CDS that would further promote beverage container product stewardship, continue to support reduced litter in the State and enhance recovery of resources embedded in beverage container materials. The EPA review is broad in scope and encompasses an examination of containers included within the CDS, incorporating currently excluded containers, the role of new technology, governance structures, markets for recovered materials and contribution towards a circular economy.

As part of the EPA review, Hudson Howells has been engaged to address the following specific elements of the overall review:

- Determine the value of SA's Container Deposit Scheme.
- Determine the extent to which there is unrealised value within SA's Container Deposit Scheme.

The Main Report submitted to the EPA in December 2020 provides a summary of our findings in relation to the specific project specifications and terms of reference, and specifically modelling and analysing the value of SA's current 10c baseline deposit scheme and an increase to 20c in relation to the following proposed scenarios:

- Current SA CDS operations, efficiencies, container and financial flows, beneficiaries, and workable competition.
- The contribution and value of SA CDS to the SA economy and circular economy.
- An increase to a four bin kerbside system, incorporating a glass waste bin.
- Incorporation of the currently excluded beverage containers up to 3L in accordance with the *Environment Protection Act 1993* and *Environment Protection Regulations 2009*.
- Harmonising the refund/deposit per container to 20c across all jurisdictions that currently have or intend to have a CDS including SA.
- Transition costs to a single scheme coordinator model (change from the current multiple Super Collectors to a single scheme coordinator). Specifically benefits and costs to Government, existing Super Collectors and existing Depot owners i.e. capital and infrastructure costs and maintenance or otherwise of existing current contracts.
- Transition costs of a retained multiple scheme coordinator model (retain current Super Collectors) with an altered governance arrangement to improve dispute resolution and enable Depot owners to contract with a single Super Collector. Specifically benefits and costs

to Government, existing Super Collectors and existing Depot owners i.e. capital and infrastructure costs and maintenance or otherwise of existing current contracts.

- Transition costs associated with additional return points. Specifically benefits and costs to Government, existing Super Collectors, and existing Depot owners.

Based on the CDS economic footprint detailed in the Main Report, economic modelling estimates the following South Australian economic impacts associated with current CDS activities<sup>2</sup>, incorporating the CDS proportion of operations of Depots, Super Collectors and Material Recovery Facilities (MRFs):

- Direct Impact
  - Employment (FTE's) – 469
  - Gross State Product/Value Added (\$m) - \$47.6
- Induced (or Multiplier) Impact
  - Employment (FTE's) – 914
  - Gross State Product/Value Added (\$m) - \$110.0
- Total Impact
  - Employment (FTE's) – 1,383
  - Gross State Product/Value Added (\$m) - \$157

The Main Report was undertaken on a **mutually exclusive** basis – i.e. each scenario being implemented without the other scenarios, plus on a **non-mutually exclusive basis** whereby the above impacts are modelled for each scenario including the refund/deposit per container increasing to 20c across all State/Territory jurisdictions that currently have or intend to have a CDS, including SA.

In relation to overall community benefit cost outcomes, the **mutually exclusive** modelled benefit cost outcomes measure the estimated per annum unrealised value in the South Australian CDS associated with the range of options available to improve the scheme. The options/scenarios (mutually exclusive) are ranked below in order of the priority in which they could contribute per annum unrealised value to the South Australian community:

- Incorporating Currently Excluded Containers (up to 3L - plain milk; glass wine/spirit bottles; fruit juice over 1L; flavoured milk over 1L) - \$86.19 million.
- Increase the Deposit Rate from 10 to 20 cents – \$85.69 million.
- Additional Return Points - \$75.84million.

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<sup>2</sup> The size of the sector is indicative and based on modelling in that auditable data is not available. What data exists comes from different periods, and in many cases is not available due to the businesses being private operations and as such accounting records are not publicly available. In addition, many of the operators undertake recycling outside of CDS eligible containers.

- 4<sup>th</sup> Bin Kerbside System - \$58.41 million.
- Single Scheme Coordinator - \$55.73million.
- Enable Depot Owners to Contract with a Single Super Collector - \$53.52 million.
- Improved Dispute Resolution - \$49.81 million.

The full economic modelling was also undertaken on a **non-mutually exclusive** basis whereby the above impacts are modelled for each scenario including the refund/deposit per container increasing to 20c across all State/Territory jurisdictions that currently have or intend to have a CDS, including SA. The modelled benefit cost outcomes measure the estimated per annum unrealised value in the South Australian CDS associated with the range of options available to improve the scheme. The options/scenarios (not mutually exclusive) are ranked below in order of the priority in which they could contribute increased value to the South Australian community:

- Incorporating Currently Excluded Containers (up to 3L - plain milk; glass wine/spirit bottles; fruit juice over 1L; flavoured milk over 1L) - \$171.88 million.
- Additional Return Points - \$161.53 million.
- 4<sup>th</sup> Bin Kerbside System - \$144.10 million.
- Single Scheme Coordinator - \$141.42 million.
- Enable Depot Owners to Contract with a Single Super Collector - \$139.21 million.
- Improved Dispute Resolution - \$135.50 million.

In summary, all scenarios delivered a positive benefit cost to the South Australian community and warrant serious consideration for implementation from a South Australian perspective, with *incorporating currently excluded containers* having the greatest potential to capture unrealised CDS value (in conjunction with a rate increase to 20c).

It was therefore **recommended** to prioritise the inclusion of *incorporating currently excluded containers (up to 3L - plain milk; glass wine/spirit bottles; fruit juice over 1L; flavoured milk over 1L)* in SA's CDS and *increase the deposit rate from 10 to 20 cents* subject to the commissioning and review of national consumer based research to determine elasticities of demand across all container types and a review of our economic modelling which has been based on an overall elasticity of -0.5 on discretionary products. In relation to deposit harmonisation, we note that this is a national issue for container deposit schemes and deposit harmonisation and would benefit from the above recommended national approach and research.

The other modelled scenarios all are modelled as producing positive economic benefit and Circular Economy outcomes, and it is therefore **recommended** that the non-mutually exclusive priority order

above be adopted by the EPA for future CDS policy decision making, thereby maximising unrealised value and the scheme's contribution to the State and national circular economies.

Following the initial CDS Economic Analysis Review (Main Report), Hudson Howells was engaged to undertake further research, analysis, and economic modelling in relation to the above scenarios as follows which details the EPA's additional requests:

1. Incorporation of the currently excluded containers analysis be undertaken without plain milk i.e. everything else included (up to 3L) but plain milk remains out as per current exemption.
2. A further analysis of transitional and ongoing costs and the distribution of those costs to SMEs versus larger operators, including
  - a. Include costs for new entrants (first year and ongoing)
  - b. Analysis of costs for each milk (plain and flavoured up to 3L), wine/spirits and fruit/vegetable juice (concentrated and pure up to 3L) separately,.
3. Analysis of unrealised value and impacts for currently excluded containers (separately) i.e. build on scenario 3 disaggregating the impact analysis for
  - a. Wine/Spirits
  - b. Milk (plain milk and flavoured milk up to 3L)
  - c. Fruit/Vegetable Juice (concentrated and pure up to 3L)
4. Analyse the extent that the increase in supply of high quality recovered glass, aluminium, plastic (HDPE and PET) and liquid paperboard will facilitate the realisation of increased local (SA) processing and re-manufacturing of products and packaging (containing at least 50% recycled content for glass and at least 20% recycled content for PET and 30% for HDPE), including:
  - a. Resultant benefits on employment and income within SA
5. Identify the collective capital value of the SA depots, the collective capital value of the SA Super Collectors and collective capital value of the SA MRF's
6. Extent to which incorporating currently excluded containers would encourage the establishment of additional return points due to increase in quantity of CDS containers available for return and deposit redemption including:
  - a. Where additional return points would be most likely to be established due to geographical gap in the market, and

- b. Impact on depots resulting from the establishment of the additional return points.
7. Additional analysis of the 4th (glass) kerbside bin based upon the findings of the EPA industry consultation to:
- a. Identify the impacts of additional glass bins on recovery rates, analyse and identify the impacts on glass container recovery rates including glass breakage and value of colour segregated glass (via CDS) versus mixed recovered glass arising from the 4<sup>th</sup> (glass) kerbside bin scenario, and
  - b. Analyse and identify the impacts of a 4<sup>th</sup> (glass) kerbside bin on the CDS containers returned through the CDS depots (metro and regional).

### 3 ADDITIONAL ANALYSIS OF CAPTURED CONTAINERS

The brief which underpinned the modelling in the Main Report included the scenario defined as “Incorporating Currently Excluded Containers (up to 3L - plain milk; glass wine/spirit bottles; fruit juice over 1L; flavoured milk over 1L)”.

This Addendum Report provides a more detailed specification of containers that might be included as (specifically excluding plain milk):

- Wine (made from the fermentation of grapes) in glass bottles.
- Spirituous liquor in glass bottles.
- Pure fruit juice (90% or more juice content) in containers of one (1) litre or more.
- Flavoured milk in containers of one (1) litre or more.

The wine and spiritous liquor specification are as modelled in the Main Report. However in this report the other containers are considered in more detail. Containers of both plain and flavoured milk are primarily part of the HDPE and PET categories of container.

The data provided by Rawtec examines the flows of containers returned through depots and those included in council recycling or general waste bins as collected from residents. For milk containers this data indicates that:

- HDPE non CDS milk containers make up 77% of the number of HDPE containers disposed to either CDS depots or the kerbside bin system, while currently CDS eligible containers are 16.1% and non-CDS juice containers are 6.3%.
- PET non CDS milk containers make up 1.3% of the number of PET containers disposed to either CDS depots or the kerbside bin system, while currently CDS eligible are 95.8% and non-CDS juice are 2.8%

HDPE milk containers include plain and flavoured milk (e.g. the 2 and 3 litre bottles sold in supermarkets - chocolate, coffee, strawberry, etc) which are considered in scope for this scenario. What is excluded in the above is plain milk. Flavoured milk is constrained to 1 litre or more containers, but smaller containers are generally already included in CDS, and as such would be negligible.

HDPE juice containers include pure fruit juice in containers of less than one litre and diluted fruit juices of greater than 1 litre. There are many fruit juices (diluted and pure) at less than 1 litre, but

these are already CDS included and the main expansion would be to include here the 2 litre juice bottles sold mainly in supermarkets.

The number of non-CDS PET milk is only 4.4% of the numbers of HDPE milk containers and as such PET containers have a much smaller proportional impact relative to what milk containers have on the overall modelling. Milk in PET containers includes some plain milk (mostly 1 litre and long-life) and some flavoured milk, but there will be small volumes of 1 litre or over, and most would be under 1 litre and already CDS included.

Non CDS PET juices are quite significant (16% greater than the number of non-CDS HDPE) and therefore assumptions in this context could be expected to have more impact on the modelling outcomes. But again all the smaller juices are mainly already CDS included.

Based on these data, indicative assumptions about what would become available under this scenario are applied as follows:

- That the coverage of containers identified in the Rawtec data represents 90% of the total container base, with the additional being containers consumed/disposed of through commercial premises, through public bins, or in litter streams.
- 10% of non-CDS milk containers are in flavoured milk of 1 litre or more – with the remainder being in plain unflavoured milk.
- 50% of non-CDS juice containers are in pure juice in containers of 1 litre or more.

**The modelling in the Main Report provides an estimate of a net benefit from including currently excluded containers (including plain milk) of \$86.19 million, making it the first ranked option in terms of net benefit to the community, slightly ahead of increasing the deposit from 10¢ to 20¢.**

This has been remodelled excluding plain milk and also tested for sensitivity to the above assumptions as follows. In summary the sensitivities tested are:

- That a lower estimate of the number of containers are in flavoured milk or pure fruit juices. The lower assumption is that 5% (relative to 10% in the base modelling) of non-CDS milk containers are in flavoured milk of 1 litre or more, and that 25% (relative to 50%) of non-CDS juice containers are in pure juice in containers of 1 litre or more.
- A higher estimate of the number of containers are in flavoured milk or pure fruit juices - with an assumption that 15% of non-CDS milk containers are in flavoured milk of 1 litre or more, and that 75% of non-CDS juice containers are in pure juice in containers of 1 litre or more.



The core conclusion from the analysis is that only including flavoured milk of greater than 1 litre would reduce the net benefit to \$76.10 million, which is a significant outcome, but would move it to the second ranked option after increasing the deposit from 10¢ to 20¢.

The sensitivity analysis suggests that if flavoured milk and pure juices were lower than assumed, this scenario would fall to third in the ranking (falling below increasing the deposit from 10¢ to 20¢ and adding additional return points).

**Table 3.1 – Modelled Core Outcomes for Incorporating Currently Excluded Containers Under Alternative in Scope Assumptions**

	Main report Modelling - including plain milk	Excluding plain milk	Sensitivity to Assumptions re excluding plain milk - lower estimates	Sensitivity to Assumptions re excluding plain milk - higher estimates
Number of eligible containers sold	916.1	869.5	864.7	874.2
# containers recycled (million) through CDS	709.3	679.1	676.0	682.2
Percentage change in containers recycled	17.7%	12.7%	12.2%	13.2%
Recycling rate of eligible containers	77.4%	78.1%	78.2%	78.0%
Propn directly through depots	60.1%	60.7%	60.8%	60.6%
Propn through other	17.3%	17.4%	17.4%	17.4%
Possible value of material going to landfill (\$m)	\$0.90	\$0.80	\$0.79	\$0.81
Estimated local govt waste management costs (\$m)	\$57.5	\$57.2	\$57.2	\$57.2
Employment directly in CDS (Depot/Supercollectors)	480	457	444	458

**Table 3.2 – Tonnes of CDS Product Going to Landfill (Including Proposed included Containers) for Incorporating Currently Excluded Containers Under Alternative in Scope Assumptions**

	Main report Modelling - including plain milk	Excluding plain milk	Sensitivity to Assumptions re excluding plain milk - lower estimates	Sensitivity to Assumptions re excluding plain milk - higher estimates
Aluminium	152	152	152	152
Glass -currently eligible	925	925	925	925
Glass- wine	1,149	1,149	1,149	1,149
Glass - other current non-eligible	626	626	626	626
HDPE	253	96	84	108
LPB	242	242	242	242
PET	455	450	447	453
<b>Total</b>	<b>3,802</b>	<b>3,640</b>	<b>3,625</b>	<b>3,655</b>

**Table 3.3 – Summary of Modelled Benefit Cost Outcomes for Incorporating Currently Excluded Containers Under Alternative in Scope Assumptions**

	Main report Modelling - including plain milk	Excluding plain milk	Sensitivity to Assumptions re excluding plain milk - lower estimates	Sensitivity to Assumptions re excluding plain milk - higher estimates
<b>Employment (FTEs)</b>				
<b>Direct</b>				
In CDS system (Depots and Supercollectors)	63.9	55.1	48.0	56.9
Local Government funded services	-121.8	-121.2	-109.0	-121.4
Product Suppliers and trade	-5.0	-5.0	-4.5	-5.0
MRFs	-45.2	-45.2	-40.7	-45.2
In processing opportunities	166.3	163.7	147.1	164.0
<i>Direct</i>	<i>58.1</i>	<i>47.4</i>	<i>41.0</i>	<i>49.2</i>
Induced	89.8	73.2	63.3	76.0
<b>Total Employment</b>	<b>147.9</b>	<b>120.5</b>	<b>104.3</b>	<b>125.3</b>
<b>Incomes (\$ million)</b>				
<b>Direct</b>				
Wages and Salaries	\$12.53	\$10.03	\$8.69	\$10.41
Increased Gross Operating Surplus	\$5.33	\$3.73	\$3.30	\$3.79
Impact on Taxes	\$0.41	\$0.31	\$0.27	\$0.32
<i>Direct Impact on Gross State Product</i>	<i>\$18.27</i>	<i>\$14.07</i>	<i>\$12.26</i>	<i>\$14.52</i>
Induced GSP Impact	\$28.87	\$25.70	\$22.62	\$26.26
<b>Total GSP Impact</b>	<b>\$47.14</b>	<b>\$39.77</b>	<b>\$34.89</b>	<b>\$40.77</b>

**Table 3.4 – Summary of Modelled Benefit Cost Outcomes for Incorporating Currently Excluded Containers Under Alternative in Scope Assumptions**

	Main report Modelling - including plain milk	Excluding plain milk	Sensitivity to Assumptions re excluding plain milk - lower estimates	Sensitivity to Assumptions re excluding plain milk - higher estimates
<b>Benefits</b>				
Benefits of reduced landfill	\$1.00	\$0.68	\$0.66	\$0.71
Income generated from returns	\$7.78	\$5.52	\$5.28	\$5.75
Net change in incomes through economic activity	\$47.14	\$39.77	\$34.89	\$40.77
Value of Environmental Benefits	\$2.00	\$1.22	\$1.15	\$1.29
<b>Total benefits</b>	<b>\$57.91</b>	<b>\$47.19</b>	<b>\$41.98</b>	<b>\$48.52</b>
<b>Costs</b>				
Change in consumer surplus on consumption	\$1.94	\$1.38	\$1.32	\$1.44
Direct local government costs	-\$34.12	-\$33.86	-\$30.43	-\$33.91
Investment by CDS system (annualised)	\$3.00	\$3.00	\$3.00	\$3.00
Change in annualised costs for scheme admin - product supplier	\$0.90	\$0.57	\$0.54	\$0.60
Change in annualised costs for scheme admin - govt	\$0.004	\$0.004	\$0.004	\$0.004
<b>Total costs</b>	<b>-\$28.30</b>	<b>-\$28.91</b>	<b>-\$25.57</b>	<b>-\$28.87</b>
<b>Net Annualised Benefits</b>	<b>\$86.21</b>	<b>\$76.10</b>	<b>\$67.55</b>	<b>\$77.39</b>

## 4 TRANSITIONAL AND ONGOING COSTS

The second aspect required of this more detailed analysis was to undertake a further analysis of transitional and ongoing costs and the distribution of those costs to Small and Medium Sized Enterprises (SMEs) versus larger operators, including:

- Include costs for new entrants (first year and ongoing).
- Analysis of costs for each milk (plain and flavoured up to 3L), wine/spirits and fruit/vegetable juice (concentrated and pure up to 3L) separately.

The inclusion of currently non-CDS containers has costs for beverage suppliers being the additional transaction costs for the approval system, and additional costs in the regulatory process. As discussed under the summary of the Hudson Howells 2013 review, these costs at the time were indicated to include:

- An increase for the currently non-eligible containers of between 2¢ and 5¢ per container in labelling and administration.
- A once off fee of \$26,500 for additional labelling application fees.

The assumption used in the modelling in the Main Report was an upfront administrative cost to product suppliers averaging 11¢ per container in coming under the system. This includes an assumption that there is a small unreimbursed cost in terms of government administration. Based on the estimated inclusion of product in the base year, the inclusions of the product as discussed in Section 3 is simply modelled as an upfront cost of \$8.8 million (including an additional 80 million containers in total in scope), which is capitalised at a market discount rate.

### Structure of the Impacted Industries

The South Australian industries impacted include:

- Local manufacturers/producers of wine, liquor, milk, and fruit juice.
- Retailers/wholesalers of local, but also imported wine, liquor, milk, and fruit juice.

**The South Australian wine industry** is diversely structured and made up of large corporates through to many small to medium enterprises, including family businesses. The wine sector produced a processed value of \$2.8 billion in 2018/19, amid a period of significant growth<sup>3</sup>. \$1.9 billion of the value was exported, \$419 million in local retail sales, \$351 million in food service sales, and \$134 million as net interstate trade.

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<sup>3</sup> PIRSA, Primary Industries Scorecard 2018-19

The industry comprises some 1,000 wineries<sup>4</sup>. Three quarters have annual revenues of less than \$5 million, and 35-40% are less than \$1 million<sup>5</sup>. Wine sales make up two thirds of their revenue, and one third by wine related tourism. 11% of the sector indicated they were not profitable (profitability needed to “significant improve”) and 55% said they were profitable but “it needs to improve”. 15% believed they were profitable and sustainable, while 19% said that they were generating a reasonable return.

Wineries have been hit by three significantly negative factors in 2020:

- Bushfires in the Adelaide Hills in early 2020.
- COVID and its impact on the hospitality sector.
- Trade constraints caused by Australia’s relationships with China.

However, while these issues represent significant concern, the situation will be helped a little in the short term as a large portion of the industry indicate they have low levels of stock.

In addition to the above, South Australia has 31 distilleries in operation producing whisky, gin, vodka, rum and other spirits, all small boutique operations.

**The dairy industry** had a processed value of \$531 million in 2018/19, with overseas exports of \$72 million. Milk powder exports were over 50% of this at \$38 million, while cheese also made up a substantial percentage. 32% have sales less than \$200,000 annually, 50% have sales between \$200,000 and \$2 million and 21% between \$2 million and \$5 million.<sup>6</sup> Many of the producers already have CDS included product in their portfolio of products.

The fruit juice industry has in the order of 20 suppliers ranging from larger operations such as Berri Fruit Juice, Crusta, Nippys and Mountain Valley Fresh, to smaller boutique operations. Like the dairy industry many of the producers already have CDS included product in their portfolio of products. Further, some products cross interstate boundaries where there are different CDS jurisdictions.

### **Cost impacts**

The core costs incurred by new product entrants include:

- Application costs:

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<sup>4</sup> <https://www.winecompanion.com.au/wineries/south-australia>

<sup>5</sup> SA Wine Industry Association, South Australian Wine Industry Snapshot December 2020

<sup>6</sup> Australian Bureau of Statistics, Businesses in Australia, 2018-19

- Application preparation cost – the time and input required to complete an application.
- Application submission fee (which is charged at a cost recovery basis of government costs). It should be noted that this could be an item for fee consideration, and expansion of products in scope could well coincide with efficiency.
- Waiting costs – the inability to undertake sales while waiting for approval.
- Labelling costs: The design of the container label to include notification of the deposit. This needs to be undertaken on approval, and on a regular ongoing basis. This is likely to be a minor cost, mainly incurred in the context that the supplier will need to contract two print runs of the same label – one with the CDS notification and one without (or even more if participating in multiple markets with different CDS deposit amounts in play). Label design can vary considerably, but in the case of CDS it is mainly an issue of simply adding the deposit notification to an existing label design, or including it in a new design, which would generally not be expensive. A label run with a provided design would cost indicatively around 40-50¢ for a smaller run and 15-20¢ for a much larger run<sup>7</sup>. The wine industry will run new labels for every vintage, and more broadly it is unlikely that a producer will hold substantial stocks of labels and renew on a just in time basis.
- Ongoing administration costs: These are mainly expected to be oversight, requiring input from an experienced manager in the organisation.

The core factors that will impact the relative costs to beverage manufacturers will include:

- The number of separate products that are produced that require approval (note that this is more an issue for wineries than liquor producers). Further it will depend on the balance of product produced for local consumption versus for consumption in other markets. Fees charged for application are as follows:

### Application fees

The following fees apply to **new** applications for beverage container label approvals. Please note your application for approval will not proceed unless payment is made. The application fee is not refundable. If the required supporting information is not received by the EPA within a reasonable time, the application may be cancelled.

Description	Fee
Application with 1 label	\$328.50
Application with 2–5 labels	\$547.50
Application with 6–10 labels	\$810.30
Application with 11–20 labels	\$1,335.90
Application with more than 20 labels	\$2,387.10

<sup>7</sup> <https://digitalstickers.com.au/stickers/wine-labels/>

- The extent to which an existing label will need substantial redesign to accommodate notification (again noting this is not expected to be significant).
- The number of markets in which the supplier participates, including non-domestic markets. For the wine industry there is also the factor of wine tourism experience, which complicates the matter further in that the consumer does not take possession of the product. Conversely there is imported product where interstate and overseas producers will need to accommodate local product requirements, or the wholesaler will need to relabel.

### **Modelling and Modelling Assumptions**

To provide an indication of the implications of these costs, indicative modelling has been undertaken. The modelling parameters and outcomes are provided in Table 4.1 below. Table 4.2 details the assumptions used for the modelling.

**Table 4.1 – Illustrative Modelled Costs for the Wine Industry for CDS Inclusion**

	Small	Medium Small	Medium	Large	Very Large
<b>Number of entities</b>	<b>225</b>	<b>135</b>	<b>315</b>	<b>180</b>	<b>45</b>
Proportion of entities	25%	15%	35%	20%	5%
Average value of sales	\$150,000	\$650,000	\$3,000,000	\$6,000,000	\$15,000,000
Number of sales	15,000	65,000	300,000	600,000	1,500,000
<b>Assumptions</b>					
Number of SA CDS products	3	6	12	18	27
Number of non SA CDS product	3	6	12	18	27
Proportion sold under SA CDS	50%	40%	30%	25%	20%
Run per CDS product	2,500	4,333	7,500	8,333	11,111
Application fee	\$548	\$810	\$1,336	\$1,336	\$2,387
Preparation cost per application	\$1,200	\$1,500	\$1,875	\$2,109	\$2,373
Label design cost (CDS attributable)	\$250	\$250	\$250	\$250	\$250
Printing cost - CDS share	\$0.010	\$0.008	\$0.006	\$0.005	\$0.005
<b>Initial or Upfront Costs</b>					
Application costs	\$1,748	\$2,310	\$3,211	\$3,445	\$4,760
Label design cost	\$1,500	\$3,000	\$6,000	\$9,000	\$13,500
Printing cost - total	\$150	\$390	\$1,080	\$1,500	\$3,000
<b>Total costs</b>	<b>\$3,398</b>	<b>\$5,700</b>	<b>\$10,291</b>	<b>\$13,945</b>	<b>\$21,260</b>
CDS entry costs - proportion of annual revenue	2.27%	0.88%	0.34%	0.23%	0.14%
Initial/upfront costs per container of annual sales	\$0.45	\$0.22	\$0.11	\$0.09	\$0.07
<b>Annualised value of application/approval costs</b>					
	<b>\$204</b>	<b>\$342</b>	<b>\$617</b>	<b>\$837</b>	<b>\$1,276</b>
<b>Ongoing costs</b>					
CDS Administrator	\$420	\$840	\$1,680	\$2,520	\$3,780
Printing costs	\$150	\$390	\$1,080	\$1,500	\$3,000
<b>Total ongoing costs</b>	<b>\$570</b>	<b>\$1,230</b>	<b>\$2,760</b>	<b>\$4,020</b>	<b>\$6,780</b>
Annualised cost of application fees per container sold	\$0.027	\$0.013	\$0.007	\$0.006	\$0.004
Ongoing costs per container sold	\$0.019	\$0.008	\$0.003	\$0.002	\$0.001
<b>Annual Cost per CDS Container</b>	<b>\$0.046</b>	<b>\$0.021</b>	<b>\$0.010</b>	<b>\$0.007</b>	<b>\$0.005</b>

**Table 4.2 – Assumptions for Illustrative Modelled Costs for the Wine Industry for CDS Inclusion**

<b>Assumptions</b>	
<b>Number of entities</b>	<b>Distribution as indicated in wine industry data (see text)</b>
Average value of sales	Based on information provided in wine industry reports as cited
Number of sales	It is assumed on average, winery receives \$10 per bottle, relative to average retail price of \$15
<b>Assumptions</b>	
Number of SA CDS products	It is assumed that SMEs are more targeted but bigger companies offer more varieties
Number of non SA CDS product	It is assumed that the company targets export markets for all of its products
Proportion sold under SA CDS	The wine industry is heavily dependent on exports, it is assumed this dependence is higher for the bigger companies
Application fee	As per EPA information
Preparation cost per application	Assumed to be 10 hours for a base application @ \$120 per hour, covering 3 products, and increasing but with economies of scale for applications with more products
Label design cost (CDS attributable)	As per discussion in text
Printing cost - CDS share	It is assumed that 5% of the printing cost per label is based on including the CDS notification within the label
<b>Annualised Value of application/approval costs</b>	<b>Annualised at 6% discount rate</b>
<b>Ongoing costs</b>	
CDS Administrator	Assumed to be annual salary of \$100,000 and 1 hour per week to manage 25 labels/products, with costs proportional but with diseconomies of scale
Printing costs	This represents a need to run multiple printing jobs every year, with separate print runs for CDS and non CDS markets

The ongoing entry of new product and withdrawal of old product will incur some further cost, but this is likely to be marginal, adding to the annualised application cost, but not significantly increasing ongoing costs.

Detailed data on either dairy or fruit juice industry in terms of industry structure is not available to enable similar modelling for those sectors. However as already noted, the participants are generally smaller businesses, and they do not have the same degree of participation in export markets in the fresh milk and juice components of their product.

### Conclusions

The core conclusions of this modelling are that:

- The costs assumed in the Main Report modelling of 10-11¢ per container, which are then annualised, calibrate effectively to the above assumptions supporting the underlying assumptions in the Main Report.



- However, the presence of fixed costs and economies of scale in the application and administration process mean that small operators with multiple products bear a significantly higher proportion of costs, and per container cost, from being brought into the scheme.

*It is therefore recommended that application fees be reviewed to keep industry costs to a minimum, application processes to be simplified to realise cost efficiencies and that costs/fees be more equitably spread across company size and sectors, especially to reduce fees for smaller operators.*

## 5 UNREALISED VALUE BY BEVERAGE TYPE

The next aspect of a more detailed analysis was to review the unrealised value and impacts for currently excluded containers separately i.e. build on Scenario 3 disaggregating the impact analysis for:

- Wine/Spirits.
- Milk (plain milk and flavoured milk up to 3L).
- Fruit/Vegetable Juice (concentrated and pure up to 3L).

To undertake this analysis, the model used as the base in the Main Report has been disaggregated to review the contributions of each of the possible in scope containers. The results of the analysis are presented in Tables 5.1-5.4 below. The assumptions used are as per the Main Report<sup>8</sup>.

The results of the modelling can be summarised as follows:

- In terms of overall net benefit, wine bottles contribute the most to the overall benefit, while currently excluded flavoured milk and juice have less impact because of the smaller underlying volumes.
- The sources of the net benefit are quite different, a consequence of the different make-up of the product. Wine and spirit bottles currently are primarily returned through the kerbside bin and material recovery facility, and as such tend to be recycled as lower value materials with a portion continuing to go to landfill. However because of breakage and contamination rates in the Kerbside/MRF system, including them in the deposit scheme results in a higher level of return of high value recovered product, which results in greater opportunities in recycling.
- In general, for all product, economic activity is created in terms opportunities in depots, while reducing the weight in the recycling bin sees greater reductions in local government provided services, being large for wine bottles. However, including wine bottles and producing cleaner product results in greater employment opportunities through processing of wine bottles.

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<sup>8</sup> The outcomes in the Tables do not add to the totals in Tables 3.1-3.4 (as per the main report) in that there is an assumption that increasing the scope of coverage provides an incentive to the population to increase returns across the board – while Tables 5.1-5.4 show only the specific outcomes for the nominated container types

**Table 5.1 – Modelled Core Outcomes for Incorporating Currently Excluded Containers by Type of Beverage (up to 3L)**

	Wine bottles only	Spirit Bottles only	Flavoured milk over 1 litre only	Juice 1 litre or more only	Flavoured and unflavoured milk only
Number of eligible containers sold	54.8	7.8	5.2	8.7	51.8
# containers recycled (million) through CDS	44.2	6.3	4.0	6.4	35.6
<i>Recycling rate of eligible containers</i>	80.6%	80.6%	77.1%	73.6%	68.8%
Possible value of material going to landfill (\$m)	\$0.13	\$0.08	\$0.24	\$0.29	-\$0.39
Employment directly in CDS (Depot/Supercollectors)	55	8	2	5	20

**Table 5.2 – Tonnes of CDS Product Going to Landfill (Including Proposed Proposed Included Containers) for Incorporating Currently Excluded Containers by Type of Beverage (up to 3L)**

	Wine bottles only	Spirit Bottles only	Flavoured milk over 1 litre only	Juice 1 litre or more only	Flavoured and unflavoured milk only
Glass- wine	1,121	0	0	0	0
Glass - other current non-eligible	0	626	0	0	0
HDPE	0	0	89	78	246
LPB	0	0	0	0	0
PET	0	0	457	546	457
<b>Total</b>	<b>1,121</b>	<b>626</b>	<b>546</b>	<b>624</b>	<b>703</b>

**Table 5.3 Summary of Modelled Economic Impact for Incorporating Currently Excluded Containers by Type of Beverage (up to 3L)**

	Wine bottles only	Spirit Bottles only	Flavoured milk over 1 litre only	Juice 1 litre or more only	Flavoured and unflavoured milk only
<b>Employment (FTEs)</b>					
<b>Direct</b>					
In CDS system (Depots and Supercollectors)	55.2	7.7	1.9	4.4	20.0
Local Government funded services	-106.6	-14.7	-4.3	-9.7	-4.8
Product Suppliers and trade	-5.0	-0.7	0.0	0.0	0.1
MRFs	-6.8	-0.7	-3.3	-5.3	-6.9
In processing opportunities	66.9	9.3	4.6	6.8	7.1
<i>Direct</i>	<b>3.7</b>	<b>0.8</b>	<b>-1.1</b>	<b>-3.7</b>	<b>15.5</b>
Induced	5.4	1.3	-1.7	-5.8	24.1
<b>Total Employment</b>	<b>9.1</b>	<b>2.1</b>	<b>-2.8</b>	<b>-9.6</b>	<b>39.5</b>
<b>Incomes (\$ million)</b>					
<b>Direct</b>					
Wages and Salaries	-\$0.26	\$0.03	-\$0.22	-\$0.79	\$3.21
Increased Gross Operating Surplus	\$1.04	\$0.20	-\$0.02	-\$0.10	\$0.43
Impact on Taxes	\$0.02	\$0.01	-\$0.01	-\$0.02	\$0.08
<i>Direct Impact on Gross State Product</i>	<b>\$0.80</b>	<b>\$0.23</b>	<b>-\$0.24</b>	<b>-\$0.92</b>	<b>\$3.72</b>
Induced GSP Impact	\$10.37	\$1.50	\$0.33	\$0.23	\$5.71
<b>Total GSP Impact</b>	<b>\$11.17</b>	<b>\$1.73</b>	<b>\$0.09</b>	<b>-\$0.69</b>	<b>\$9.43</b>

**Table 5.4 – Summary of Modelled Benefit Cost Outcomes for Incorporating Currently Excluded Containers by Type of Beverage (up to 3L)**

	Wine bottles only	Spirit Bottles only	Flavoured milk over 1 litre only	Juice 1 litre or more only	Flavoured and unflavoured milk only
<b>Benefits</b>					
Benefits of reduced landfill	\$0.56	\$0.00	\$0.08	\$0.18	\$0.39
Income generated from returns	\$3.32	\$0.47	\$0.30	\$0.37	\$2.67
Net change in incomes through economic activity	\$11.17	\$1.73	\$0.09	-\$0.69	\$9.43
Value of Environmental Benefits	\$0.85	\$0.00	\$0.25	\$0.76	\$1.00
<b>Total benefits</b>	<b>\$15.90</b>	<b>\$2.21</b>	<b>\$0.71</b>	<b>\$0.62</b>	<b>\$13.49</b>
<b>Costs</b>					
Change in consumer surplus on consumption	\$0.83	\$0.12	\$0.07	\$0.09	\$0.67
Direct local government costs	-\$29.81	-\$3.90	-\$1.11	-\$2.61	-\$1.32
Investment by CDS system (annualised)	\$2.10	\$0.30	\$0.30	\$0.30	\$0.30
Change in annualised costs for scheme admin - product supplier	\$0.39	\$0.06	\$0.04	\$0.05	\$0.37
Change in annualised costs for scheme admin - govt	\$0.002	\$0.000	\$0.000	\$0.000	\$0.000
<b>Total costs</b>	<b>-\$26.49</b>	<b>-\$3.43</b>	<b>-\$0.70</b>	<b>-\$2.17</b>	<b>\$0.01</b>
<b>Net Annualised Benefits</b>	<b>\$42.39</b>	<b>\$5.64</b>	<b>\$1.42</b>	<b>\$2.79</b>	<b>\$13.48</b>

## 6 PROCESSING OF HIGH QUALITY CONTAINERS

This section of the Addendum Report provides an analysis of the extent to which the increase in supply of high quality recovered glass, aluminium, plastic (HDPE and PET) and liquid paperboard will facilitate the realisation of increased local (South Australian) processing and re-manufacturing of products and packaging (containing at least 50% recycled content for glass, 20% for PET and 30% for HDPE). The analysis also includes estimates of the employment and income benefits in South Australia.

A review of the November 2020 Rawtec data indicates that:

- For glass materials:
  - 99% of depot collected material (by number of containers) is sent for processing (this includes CDS and non CDS material). 82% of CDS glass is returned to depots.
  - For material that goes through the recycling bin, 11% is sent for processing, while 67% is used in civil construction. Only 30% of non CDS materials is returned through depots, the remainder mainly goes to the recycling bin.
  - Material in the kerbside waste bin all goes to landfill.
- For HDPE materials:
  - 66% of CDS HDPE materials are returned to depots. 98% of depot collected material is sent for processing (this includes CDS and non CDS material).
  - 90% of non CDS HDPE materials are deposited in the recycling bin. For material that goes through the recycling bin, 98% is sent for processing, while 1% is used in processed engineered fuel production.
  - Material in the kerbside waste bin all goes to landfill.
- For PET materials:
  - 75% of CDS PET materials are returned to depots. 98% of depot collected material is sent for processing (this includes CDS and non CDS material).
  - 93% of non CDS PET materials are deposited in the recycling bin. For material that goes through the recycling bin, 83% is sent for processing, while 15% is used in in processed engineered fuel production.
  - Material in the kerbside waste bin all goes to landfill.

While similar data does not exist for aluminium and LPB containers, assumptions have been included in the Main Report.

In summary the data indicate that South Australian residents are strong users of the recycling bin opportunity with a much higher proportion of recyclable materials (both CDS and non-CDS) going into

the recycling bin (rather than general waste) and as such show a general commitment to environmental outcomes. However, while all the recyclable material that goes into general waste goes to landfill, it is also clear that recycling through the kerbside system is not as effective in delivering high value recycling opportunity as that returned to depots.

The modelling for the Main Report includes the following assumptions regarding where recycling currently occurs. Local processing is only significant for glass, and is more limited for all other CDS in scope containers with recycling occurring through Recycling Plastics Australia Pty Ltd. This suggests more local opportunities are possible within South Australia with access to more materials.

**Table 6.1 – Destination of Materials for Processing**

	Disposal by tonne			
	Local Reprocessing	Inter-state for Reprocessing	Export	Stock-piled
Aluminium	0%	0%	100%	0%
Glass -currently eligible	100%	0%	0%	0%
Glass- wine	100%	0%	0%	0%
Glass - other current non-eligible	60%	40%	0%	0%
HDPE	10%	90%	0%	0%
LPB	10%	30%	60%	0%
PET	10%	90%	0%	0%

The modelling in the Main Report includes strong assumptions about opportunities that arise from improving the quality of the flows of product because of the various scenarios increasing the proportion of product that flows directly to depots, rather than through the recycling bin and/or the general waste bin. In that modelling it was assumed that the creation of new opportunities with the scenarios induces a more than proportional opportunity with respect to processing opportunities (50% increase on top the underlying processing value). In economic terms this assumes a supply elasticity of 1.5 brought about by the attention achieved through the recognition of the value of the scheme. This is applied to processing activity based on both existing tonnage (as an increase from the base) and new tonnage, and it is therefore presumed that the increase in activity will be related to an increased focus on the opportunities based around any of the scenarios.

As noted throughout the Main Report, the impact of the alternative scenarios on the proportion of the flow through the depots, and the political attention given to recycling suggests that processing of materials (or stimulating the circular economy) provides the core source of benefit of an increased focus for the CDS system. This was clearly demonstrated through testing the modelling to sensitivities on the supply elasticity parameter.

As per the discussion in the Main Report, new products made from the recycled beverage glass include new glass bottles and jars, and a sand substitute in concrete. The value as a sand substitute has limited (indeed negative) commercial value (with the main value being in avoidance of disposal costs – it is cheaper to pay for the processing and use of low value mixed glass for use in roads than to dispose of as land fill. The value creation opportunity is therefore to increase the proportion for reprocessing.

In terms of the other materials:

- Aluminium is 100% processed, but this is all undertaken interstate. There has been no indication that this would be likely to change even with an increase in collection through depots and therefore has not been included as a benefit in the modelling. However, market forces may generate some future opportunities.
- HDPE containers recovered for recycling are sent to processing factories where the plastic is shredded, washed and formed into pellets or powder ready for remaking into new plastic products. HDPE can be recycled into a range of products, including detergent bottles, compost and garbage bins, and agricultural and irrigation pipes.
- PET containers recovered for recycling are sent to processing factories where the plastic is shredded, washed and formed into pellets or powder ready for remaking into new plastic products. PET can be recycled into a range of products, including textiles for clothing and furniture, and road stabilising material. Recycled PET can also be used in the making of new PET bottles.
- LPB containers recovered for recycling are sent to processing factories where the LPB is recycled into high quality products, such as office paper suitable for printers and copiers (source: Zero Waste SA).

Increased high value processing will in part be achieved through responses to market forces – the cleaner material provides processing efficiencies, partly linked to technological change and partly in response to social interest (correlated with the focus on the scenarios considered, but also more broadly<sup>9</sup>). Also, as is evident in Table 6.1, there is limited processing of anything in South Australia other than glass.

There are both demand and supply factors at play in the market. On the demand side, interest in recycled material (at an economic price) has been somewhat limited as illustrated below. It can be expected that interest will grow, as much as on Corporate Social Responsibility (CSR) grounds as purely commercial.

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<sup>9</sup> Australian Government, Department of Environment and Energy, Recycling market situation, Summary Review, 2019

Over the past decade, some of the glass manufacturing sites in Australia have been scaled back with the closure of furnaces due to flat demand<sup>10</sup>. Much of the furnace infrastructure is considered old. The capacity of the furnaces at each of the manufacturing sites is also not known. However, all can take more cullet if it is available and investment is being undertaken to facilitate this. Examples include the ORORA plant at Roseworthy, which recently undertook an upgrade to enable more cullet to be used, and while noting usage of cullet varies at Visy Glass sites based on colour and availability, they have committed to a 60% recycled content target.

Plastics have historically been mostly sent out of the state, including overseas. However, general plastics have been impacted by China and the rest of Asia refusing to accept product due to contamination<sup>11</sup>, while CDS plastics have more local demand. Local processing has seen some growth with, for example, the operations of Recycling Plastics Australia at Kilburn.

Using PET as an example of interest in recycling:

- There is 10-15,000 tonnes of PET beverage bottle recycling capacity in Australia (mostly Visy NSW)<sup>12,13</sup>.
- There are committed projects in the pipeline for approximately another 20-30,000 tonnes of PET beverage bottle recycling capacity, which is anticipated to be operational within the next 1-3 years. Over the next 2-4 years there may be another 10-20,000 tonnes of capacity coming online.<sup>14</sup>

Policy initiatives to support the current gap between commercial and social good, include:

- Green Industries SA provides funding to “unlock the potential of the Circular Economy, develop infrastructure to process and create new products from waste, seed funding for new technologies, and commercialise research in South Australia.” Of specific relevance are the Circular Economy Market Development Grants, which are Grants for councils, not-for-profit organisations, research institutes, and businesses that produce, manufacture, sell or promote South Australian recycled materials and recycled-content products. Grants are available at up to \$100,000 (GST exclusive) per applicant.

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<sup>10</sup> Australian Packaging Covenant Organisation, PACKAGING COLLECTION, SORTING AND RECYCLING INFRASTRUCTURE MAPPING, NOVEMBER 2019

<sup>11</sup> Blue Environment Pty Ltd, Data on exports of Australian wastes 2018-19, 1 November 2019

<sup>12</sup> Australian Packaging Covenant Organisation, PACKAGING COLLECTION, SORTING AND RECYCLING INFRASTRUCTURE MAPPING, NOVEMBER 2019

<sup>13</sup> APCO Packaging Material Flow Analysis 2018, February 2019

<sup>14</sup> Australian Government, Department of Environment and Energy Recycling market situation Summary Review, September 2019, Page 13, page 24



- The Australian Government through the Clean Energy Finance Corporation has an Australian Recycling Investment Fund. This \$100 million fund has a particular focus on large-scale projects which use clean energy technologies to support the recycling of waste plastics, paper, glass and tyres. The CEFC expects to provide either debt and/or equity finance to eligible larger-scale commercial and industrial projects through the Fund, typically requiring \$10 million or more of CEFC debt or equity capital. Smaller scale projects, from \$10,000 to \$5 million, may be eligible for debt finance through the CEFC's specialist asset finance programs. More broadly there are funding options in initiatives to reinvigorate manufacturing in Australia which suit circular economy initiatives, such as the Commonwealth Modern Manufacturing Strategy.

Core conclusions of this review of processing opportunities include:

- There are various initiatives led largely by commercial and local government interests in increasing the level of processing that occurs locally.
- There is a significant gap in the local market, but this must be matched by increased focus on demand.
- Environmental concerns are likely to keep attention on circular economy initiatives.
- There is a range of supporting financing and funding options to encourage/support investment.

As such it is important to understand that the opportunities for developing a strong circular economy and processing base around recycling are not formulaic and will require behavioural responses in the market, and ongoing policy and even funding encouragement. Improving the quality of material flows is an endemic and indeed the key feature of the container deposit scheme that can be considered to justify the assumptions used in the modelling in the Main Report.

## 7 CAPITAL VALUES – DEPOTS, SUPER COLLECTORS & MRFs

The EPA sought assistance from the Office of the Valuer-General which supplied assessed capital values for the following depots, Super Collectors and MRFs:

### Depots

- 126 of the 132 Metropolitan and Regional Depots

### Super Collectors

- Flag Can
- Statewide
- Marine Stores
- EnviroBank (not considered as based at Ikea car park)

### Material Recovery Facilities

- Visy Recycling Facility
- Visy Glass Beneficiation
- Northern Areas Waste Management Authority
- Southern Region Waste Resources Authority (currently in construction)

The Office of the Valuer-General provided a database of assessed capital values for the above properties but noted some issues with the data supplied including:

- Some values were uncertain due to the address/ownership supplied by the EPA not matching its mapping systems. In these cases the Office of the Valuer-General has made its best attempts to match locations using LocationSA maps.
- There are some locations where the depots are not assessed separately and the whole property value is not appropriate. In these cases, where possible the Office has estimated the depot occupancy value.
- Many depot locations have multiple uses on the property and the depot usage may be a smaller portion of the overall property.

Other issues that need to be addressed in estimating the collective capital values of depots, Super Collectors and MRFs include:

- Adjusting the assessed capital values to commercial/market values as the Valuer-General valuations are generally lower than market values.

- Providing for equipment in estimated capital values.

Notwithstanding the above issues, the collective capital values for 2020/21 supplied by the Office of the Valuer-General are as follows:

**Table 7.1 – Collective Capital Values (2020/21 Raw Data)**

<b>Depots</b>	\$57.81 million
<b>Super Collectors</b>	\$3.15 million
<b>Material Recovery Facilities</b>	\$15.35 million

(Source: Office of the Valuer-General)

The above raw data for Super Collectors and MRFs are suitable base valuations before adjusting for the Valuer-Generals' estimated occupancy capital value, market value and equipment. However, the assessed Depot capital value contains assessments for large properties where the actual depot is a small component of the site/business and the Valuer-General has been unable to determine a depot occupancy capital value (e.g. hotels/accommodation sites including depots).

Where provided by the Valuer-General, Hudson Howells has adopted the estimated occupancy valuation. Where the Valuer-General has been unable to determine a depot occupancy capital value, Hudson Howells has substituted depot values for similar locations based on population catchment area. Adopting this methodology reduces the collective Depot capital value to \$41.7 million before adjusting again for market value and equipment. As agreed with the EPA, the Valuer-General's capital valuations have been adjusted upward for market value and equipment as follows:

- Market value – 15%
- Equipment – 13% (based on the findings from the Stage 1 survey where annualised equipment costs were estimated to be 13% of all operating costs).

Table 7.2 below compares the Raw Data supplied by the Valuer General with the final adjusted data incorporating the Valuer-General's estimated occupancy capital values (where part of a larger enterprise), Hudson Howells' adjusted capital values where the Valuer-General has been unable to decide, adjustment for market value (at 15%) and adjustment for capital equipment (at 13%).

**Table 7.2 – Collective Capital Values (2020/21 Raw Data and Adjusted Values)**

	<b>V-G Raw Data</b>	<b>Average</b>	<b>Adjusted Data</b>	<b>Average</b>
<b>Depots</b>	\$57.81 million	\$0.44 million	\$54.12 million	\$0.42 million
<b>Super Collectors</b>	\$3.15 million	\$1.05 million	\$3.05 million	\$1.02 million
<b>MRFs</b>	\$15.35 million	\$3.84 million	\$15.97 million	\$3.99 million

(Source: Office of the Valuer-General and Hudson Howells)

The Depot average value above has been disaggregated below into the Greater Metropolitan Adelaide average and the Regional average:

- Greater Metropolitan Adelaide - \$761,000
- Regional South Australia - \$231,000

Based on the above adjusted collective capital values, it is estimated the South Australia's CDS directly supports \$73.14 million of industry infrastructure (land, buildings and equipment).

## 8 ADDITIONAL RETURN POINTS – LOCATIONS AND IMPACTS

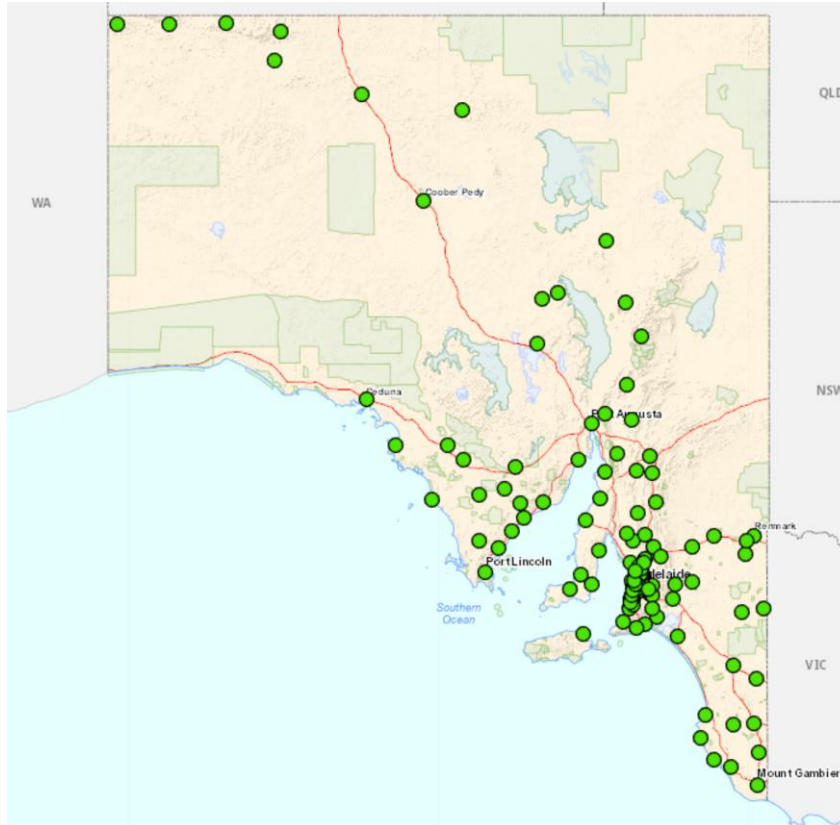
In Stage 1 of this Review (Main Report), Hudson Howells analysed the benefit/cost positions of a range of scenarios against the current baseline position including incorporation of the currently excluded beverage containers up to 3L (*plain milk; glass wine/spirit bottles; fruit juice over 1L; flavoured milk over 1L*).

In this extended work the EPA has sought an analysis of the extent to which incorporating currently excluded containers would encourage the establishment of additional return points due to an increase in quantity of beverage containers available for return and deposit redemption including:

- Where additional return points would be most likely to be established due to geographical gaps in the market, and
- Impact on depots resulting from the establishment of any additional return points.

Figures 8.1 and 8.2 below show the distribution of approved regional and metropolitan recycling container collection depots.

**Figure 8.1 - Metropolitan and Regional Approved Recycling Container Collection Depot Network Created from SA's Container Deposit Scheme Under the Environment Protection Act 1993.**



Source: LocationSAMapViewer – [www.epa.sa.gov.au](http://www.epa.sa.gov.au)

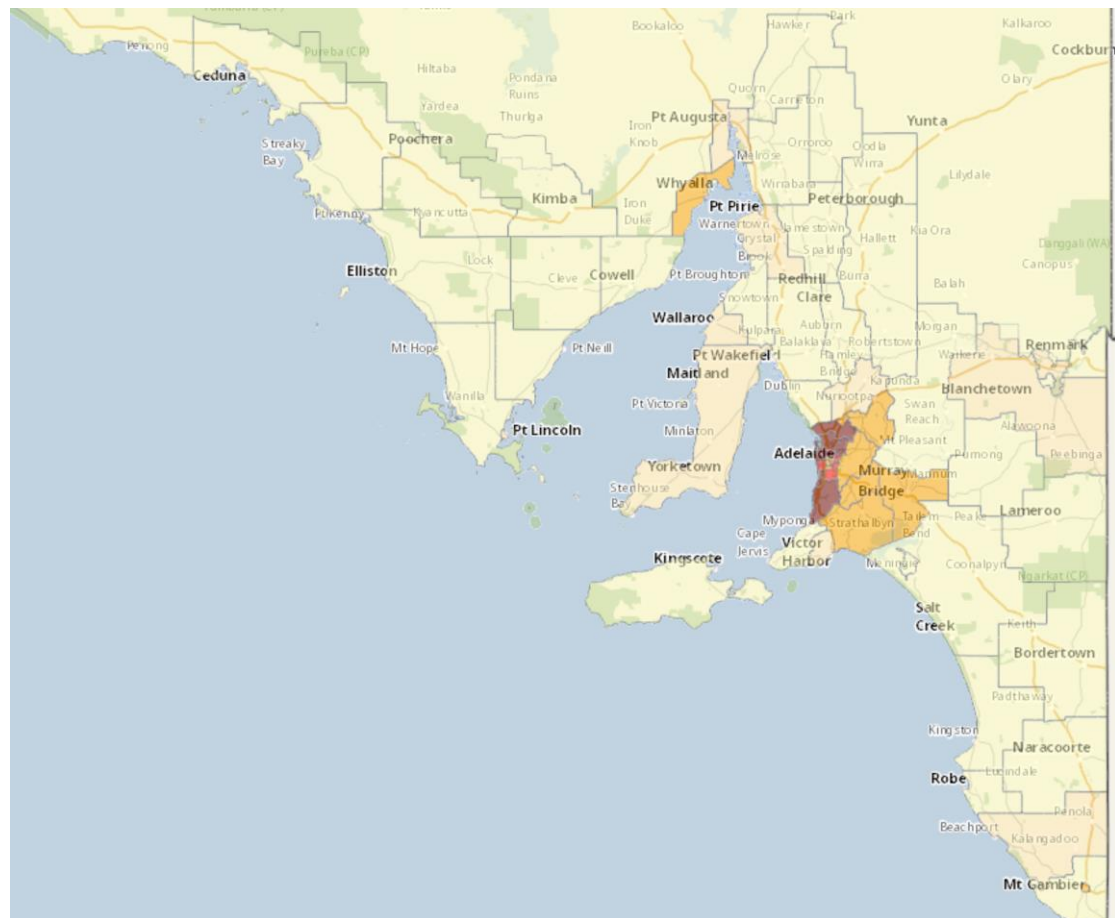
**Figure 8.2 - Metropolitan Adelaide Approved Recycling Container Collection Depot Network Created from SA's Container Deposit Scheme Under the Environment Protection Act 1993.**



Source: LocationSAMapViewer – [www.epa.sa.gov.au](http://www.epa.sa.gov.au)

The distribution of depots is broadly consistent with South Australia's population distribution by Local Government Area, as shown in Figure 8.3 below, with the only obvious gap appearing to be the Crafers, Stirling, Aldgate region of the Adelaide Hills which gets addressed in the priorities for new Depots/return points below

**Figure 8.3 – South Australia’s Population Distribution by Local Government Area 2016**



**2016 Population by Local Government Area**

- Less than 10,000
- 10,000 - 19,999
- 20,000 - 39,999
- 40,000 - 79,999
- 80,000 or Greater

Source: LocationSAMapViewer – [www.epa.sa.gov.au](http://www.epa.sa.gov.au)

The following key issues related to incorporating currently excluded containers were identified by Depots during the consultation phase of Stage 1 (Main Report):

- There will be increased throughput for Depots and Super Collectors, increasing business activity, economies of scale, profitability, and employment.
- It will potentially make Depots viable in regions where they are not currently struggling or not viable to establish.



- Additional investment will be required in property and equipment to handle increased volumes at depots.
- There will be increased frequency and scope of container return auditing and administration.

The following key data from the Main Report (refer to Table 5.1 - mutually exclusive results) are important for assessing the extent to which incorporating currently excluded containers would encourage the establishment of additional return points:

- Number of containers recycled through CDS – Increases by 103.7 million to 709.3 million per annum.
- Proportion directly through Depots - Increase from 59.9% to 60.1%.
- Employment directly in CDS – Increases by 63 Full Time Equivalents to 465 FTEs (assumes existing employment is at full capacity although capital equipment may be underutilised).

The key issues above from the Main Report Depot consultation indicate a belief that the existing Depots have the capacity to absorb the above increased volume throughputs through available capacity, employing additional staff and additional capital investment. However, consideration needed to be given to the existing industry structure and possibility that existing depots would not expand operations to accommodate currently excluded containers.

So the key issue for establishment of additional return points is the capacity of existing Depots to absorb the additional throughput. The industry's major representative organisation, Recyclers of SA Inc, was consulted several times as part of this additional work and confirmed the Stage 1 consultation estimating that capacity was on average at 50% in the metropolitan area but worse in the regions. This estimate was based on existing shifts and not 24/7 operations.

It is therefore important to consider the demand for additional return points based on no capacity being available at existing depots, and existing depots being able to expand operations to cater for the increased demand, recognising that other issues such as peak demand, sorting and processing limitations may impact individual depots.

Firstly, **assuming that existing depots are at full capacity** (no scope for additional throughput or additional shifts), then the required 63 additional FTE staff will be in new Depots/return points. The Stage 1 economic modelling estimated a total of 292 FTE jobs in Depots, or approximately 2.3 FTEs per depot, and on this basis, there would be a need for an additional 27 Depots/return points throughout the State (i.e. 63/2.3). The potential distribution of these additional depots needs to recognise that the 2.3 average FTEs per depot will be higher in metropolitan areas with higher



populations than in lower populated regional areas. The expected distribution of these 27 depots can therefore be indicated by population distribution across South Australia's major urban areas/towns.

As at the 30<sup>th</sup> June 2019, the Australian Bureau of Statistics (ABS) estimated South Australia's population as follows:

- Total SA Population – 1,751,963
- Metropolitan (Greater Adelaide) Population – 1,359,760 (77.6%)
- Regional Population – 392,203 (22.4%)

On this basis there would be a distribution of new Depots/return points as follows:

- Greater Metropolitan Adelaide – 21 new Depots/return points
- Regional – 6 new Depots/return points
- Current population per Depot (132 Depots) – 13,272

The following table further disaggregates this additional demand for Depots/return points by major urban area/town based on population share (metropolitan areas and regional towns) based on the ABS 2016 Census (total SA population 1,676,653). Note that the Metropolitan Adelaide demand is lower and regional higher in 2016 due to definition differences between Greater Metropolitan Adelaide and Metropolitan Adelaide where Greater Metropolitan includes Gawler, Adelaide Hills, Alexandrina, Barossa, Light, Adelaide Plains, Mount Barker, Victor Harbour and Yankalilla.

**Table 8.1 – Estimated Distribution of New Depots Based on Urban Population Distribution**

Urban Area/Town	Population 2016	Population Share	Depot Demand
Metro Adelaide	1,165,639	69.52%	18.77
Gawler	26,470	1.58%	0.43
Mount Gambier	26,148	1.56%	0.42
Whyalla	21,505	1.28%	0.35
Murray Bridge	16,803	1.00%	0.27
Mount Barker	16,630	0.99%	0.27
Victor Harbor	15,267	0.91%	0.25
Crafers -	15,127	0.90%	0.24
Port Lincoln	14,062	0.84%	0.23
Port Pirie	13,743	0.82%	0.22
Port Augusta	12,894	0.77%	0.21
Goolwa	7,715	0.46%	0.12
Nuriootpa	5,685	0.34%	0.09
Strathalbyn	5,488	0.33%	0.09
Naracoorte	5,074	0.30%	0.08
Nairne	4,843	0.29%	0.08
Millicent	4,733	0.28%	0.08
Renmark	4,638	0.28%	0.07
Kadina	4,583	0.27%	0.07
Tanunda	4,325	0.26%	0.07
Moonta	4,175	0.25%	0.07
Berri	4,086	0.24%	0.07

Source: ABS and Hudson Howells Calculations

Based on these data and 2019 population distributions, the 27 additional Depots/return points would be prioritised as follows:

- Metropolitan Adelaide (19)
- Gawler
- Mount Gambier
- Whyalla
- Murray Bridge
- Mount Barker
- Victor Harbour
- Crafers (which appears to be a major gap in the existing Depot network)
- Port Lincoln

If prioritised by Local Government Area population, the 19 metropolitan Adelaide Depots would be prioritised as follows:

**Table 8.2 – Metropolitan Adelaide LGA Priorities by Population**

Local Government Area	Population 2018
Onkaparinga (C)	171489
Salisbury (C)	142555
Port Adelaide Enfield (C)	126120
Charles Sturt (C)	117382
Tea Tree Gully (C)	99694
Playford (C)	93426
Marion (C)	92308
Mitcham (C)	67253
West Torrens (C)	60105
Campbelltown (C) (SA)	51469
Burnside (C)	45706
Unley (C)	39145
Holdfast Bay (C)	37032
Norwood Payneham St Peters (C)	36750
Adelaide (C)	24794
Prospect (C)	21259
Walkerville (M)	7944

Source: ABS Cat No. 3218.0

As there are only 17 metropolitan Adelaide councils, Onkaparinga and Salisbury would warrant 2 additional Depots/return points after all Councils are allocated one each. **Again, this analysis assumes that all existing Depots are at full capacity.**

Under the full capacity scenario and the need to establish 27 new Depots/return points, there will be capital and ongoing operating costs for each new Depot. Average capital costs across metropolitan and regional depots are estimated to be \$420,000 as per the adjusted Valuer-General's valuations in the previous section (land, building and equipment) with Greater Metropolitan Adelaide averaging \$761,000 and Regional South Australia averaging \$231,000. Other value added by depots (in addition to wages) was estimated in Stage 1 to be \$11.48 million or \$39,300 per employee suggesting additional operating costs for the 63 additional employees and 27 depots of \$2.476 million per annum or \$18,757 per Depot (132 Depots).

Notwithstanding the above analysis and prioritisation of 27 new Depots/return points under a full capacity scenario, the Depot industry association (Recyclers of SA) has advised that on average Depots are at 50% capacity in the metropolitan area and lower in the regions (most Depots are only operating one shift).

**Based on an existing 292 FTE jobs in Depots and 50% capacity,** existing Depots have ample capacity to absorb the demand created by incorporation of the currently excluded beverage containers up to

3L into the CDS (103.7 million additional containers) by increasing labour inputs. Under this scenario, additional costs are mainly in the wages for the additional 63 employees and other variable operating costs (e.g. power). Economic modelling in Stage 1 estimated total wages for 292 Full Time Equivalent jobs at \$13.56 million with an average of \$46,500 per employee. The total cost to depots for 63 additional employees would therefore be \$2.9 million or on average \$22,900 per Depot (0.5 employees per Depot on average). As noted above, other value added by depots was estimated in Stage 1 to be \$11.48 million or \$39,300 per employee suggesting additional operating costs for the 63 additional employees of \$2.476 million per annum or \$18,757 per Depot.

A major benefit under this scenario is the economies of scale that would be achieved in Depots via the utilisation of existing capital and any underutilised labour. Recyclers of SA did note the potential for vastly improved efficiencies via agreements with Super Collectors to implement compacting technologies in the Depots thereby reducing collection volumes and time.

While the above analysis focuses on the potential for additional Depots, there are **options** available to absorb additional throughput and options that will potentially improve return point convenience and return rates, such as reverse vending machines (RVMs). RVMs are suited to locations such as:

1. Apartment communities.
2. Hotels.
3. Manufacturing Facilities.
4. Offices.
5. Retail Stores.
6. Convenience stores/petrol stations.

The RVMs accept eligible containers and will reject any item not covered by the CDS. When a user deposits an eligible container, the RVM will scan the barcode on the container, determine its eligibility under the CDS, crush and sort the container, and credit the user's account with the refund amount.

RVMs cost between \$10,000 and \$25,000 (Source: [www.bizjournals.com](http://www.bizjournals.com)) and are sold by several manufacturers, but Tomra appears to a dominant brand interstate where RVMs are part of the local CDS. In Sydney, the operators of one site pay the site owner a hosting fee \$6,000 (plus GST) per annum and an additional \$250 (plus GST) per annum for electricity costs associated with the machine's operation.

Notwithstanding the attractiveness of RVMs, industry consultation indicates that testing in South Australia has resulted in barcode recognition problems (e.g. contamination) and that 40% of items are

rejected by current machines tested (Source: Recyclers of SA). However, there is no evidence of similar failures interstate where RVMs have been implemented.

Based on the above analysis and the additional industry consultation, the Depot industry believes that the additional containers associated with including currently excluded containers in the CDS can be comfortably accommodated within the existing Depot network and shifts, and that there is no need for additional Depots (except for the apparent gap in Crafers/Stirling/Aldgate noted above). The major impact on existing Depots will be in additional wages and other variable costs as noted above. Community wait times and other accessibility factors were not considered limiting factors by Recyclers of SA.

## 9 ADDITIONAL 4<sup>th</sup> GLASS BIN CONSIDERATIONS

The objective of this additional work was an analysis of the 4<sup>th</sup> (glass) kerbside bin based upon the findings of the EPA industry consultation to:

- Identify the impacts of additional glass bins on recovery rates, analyse and identify the impacts on glass container recovery rates including glass breakage and value of colour segregated glass (via CDS) versus mixed recovered glass arising from the 4<sup>th</sup> (glass) kerbside bin scenario, and
- Analyse and identify the impacts of a 4<sup>th</sup> (glass) kerbside bin on the CDS containers returned through the CDS depots (metro and regional).

The findings of these additional investigations have been substantially included in the Main Report update which takes into consideration the EPA consultation and Rawtec reports. Section 6 of this Addendum Report on Processing of High Quality Containers also incorporates the updated Rawtec reports.

Currently, people place eligible containers into kerbside or public recycling bins which are collected by a waste collector and taken to a Materials Recovery Facility (MRF). The MRF sorts and recovers a range of recyclable materials including CDS eligible containers for refund through a contractual arrangement with a Depot. There are major issues with breakage and contamination, so the system is somewhat inefficient.

The recycling of recovered glass back to bottles is dependent on the supply of colour segregated cullet (meeting the sizing and colour requirements) that does not contain ceramics, stone and porcelain. The inability to achieve this standard of cullet will lead to recovered glass being supplied to low value recycling markets e.g. sand replacement in civil works or disposed to landfill. The beneficiation of depot glass results in a high proportion of cullet meeting the required standards for glass bottle re-manufacturing. Glass return to depots (including volumes of wine, spirit and other non-CDS bottles) clearly achieves that but the view/concern expressed in the industry consultation was that the 4<sup>th</sup> bin would reduce direct returns to depots.

Consistent with this, the Main Report assumed a 5% reduction of CDS glass going to Depots because of the 4<sup>th</sup> bin. However, it is important to note that EPA consultation reported conflicting views, including an expectation that the 4<sup>th</sup> glass bin would alert the community to the deposit scheme and result in an increased volume being processed by Depots<sup>15</sup>. We have therefore modelled in the Main Report alternative scenarios which include an increase in throughput to Depots because of the 4<sup>th</sup> bin.

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<sup>15</sup> Source: EPA Consultation Notes supplied to Hudson Howells

For the 4<sup>th</sup> bin system the assumptions of containers going to depots being reduced and instead put into the 4<sup>th</sup> bin result in modelled increases in breakage/contamination and therefore less being recovered and more going to landfill – 1,017 tonnes compared with 1,028 tonnes. This is an important finding as a major outcome of the CDS scheme is providing an efficient way to collect high value (colour sorted and uncontaminated) materials that can be recycled back into glass bottles.

Another important consideration is that the *4<sup>th</sup> bin kerbside* scenario includes an assumption of the need to invest in a glass optical sorting plant (to be established within a dedicated facility) at an assumed capital cost of \$12 million. This is confirmed by the EPA consultation.

For the 4<sup>th</sup> bin kerbside system there is also an assumed extra cost of a pick-up per fortnight, as well as the costs associated of slight increases in tonnages due to diversion from depots. Industry feedback suggested that a collection every second week was the most likely scenario, although there was a need to investigate the monthly option. The cost to Councils for implementing the 4<sup>th</sup> bin is estimated to be \$24.83 million per annum based on Councils needing to purchase additional equipment to facilitate the 4<sup>th</sup> bin collection including provision of the additional bin to ratepayers.

Based on the above, including the additional EPA consultation and Rawtec reports, the modelling results for the 4<sup>th</sup> glass bin option estimate a reduction in the number of containers recycled of 5.7% or 2.9 million containers.