

# Environment Protection Authority

## *Consultancy report:*

---

# **Container deposit legislation: Economic and environmental impacts**

---

*This report has been prepared by consultants for  
the Environment Protection Authority (EPA) and the views expressed  
do not necessarily reflect those of the EPA.*

*The EPA cannot guarantee the accuracy of the report, and does not accept liability for any loss or  
damage incurred as a result of relying on its accuracy.*



# **Container Deposit Legislation**

***Public Report on the  
Review of the Economic and Environmental  
Impacts of the Beverage Provisions of the  
Environment Protection Act 1993  
(Container Deposit Legislation)  
in South Australia***

Prepared For

**Environment Protection Agency**

**Department for Environment, Heritage and Aboriginal Affairs**

Prepared By

**Phillip Hudson Consulting Pty. Ltd.**

in association with Cole Solicitors

March 2000

---

<b>1.0 INTRODUCTION AND TERMS OF REFERENCE .....</b>	<b>1</b>
<b>2.0 THE LEGISLATION AND THE CDL SYSTEM.....</b>	<b>2</b>
<b>3.0 QUALITATIVE SURVEY RESULTS .....</b>	<b>4</b>
4.1 STRENGTHS AND WEAKNESSES OF CDL .....	4
3.2 ANOMALIES IN THE APPLICATION OF CDL .....	5
3.3 SUGGESTED IMPROVEMENTS TO CDL .....	5
3.4 COMMUNITY BENEFITS AND COSTS ARISING FROM CDL.....	5
3.5 UNQUANTIFIABLE ECONOMIC IMPACTS.....	6
3.6 LOCAL GOVERNMENT - ENVIRONMENTAL EFFECTS OF CDL.....	6
<b>4.0 ENVIRONMENTAL ASSESSMENT .....</b>	<b>7</b>
4.1 ENVIRONMENTAL ISSUES.....	7
4.1.1 Litter .....	7
4.1.2 The Waste Stream .....	8
4.1.3 Landfill Reduction .....	8
4.1.4 Compatibility of CDL with Kerbside Collections .....	9
4.1.5 Local Government - Environmental Effects .....	10
4.1.6 Virgin Material Replacement .....	10
4.2 ENVIRONMENTAL IMPACTS OF EXTENDING THE LEGISLATION.....	12
4.2.1 Litter Reduction .....	12
4.2.2 Raw Material Substitution .....	13
4.2.3 Landfill Reduction .....	14
4.3 PUBLIC SUPPORT .....	14
4.4 SUMMARY OF ENVIRONMENTAL IMPACTS .....	15
<b>5.0 ECONOMIC AND COST/BENEFIT ASSESSMENT.....</b>	<b>16</b>
5.1 EMPLOYMENT .....	16
5.2 RECYCLING IMPACTS.....	18
5.2.1 Containers Handled.....	18
5.2.2 Economic Impact - Replacement of Virgin Materials Manufacture.....	19
5.2.3 Economic Impact - Offset of Importation of Virgin Materials .....	20
5.2.4 Economic Impact - Export of Recovered Material .....	20
5.3 ADDITIONAL COSTS INCURRED TO COMPLY WITH CDL.....	20
5.3.1 Beverage Fillers and Distributors .....	20
5.3.2 Retailers.....	23

---

---

5.3.3	<i>Material Recyclers</i> .....	24
5.3.4	<i>Collection Depots</i> .....	24
5.3.5	<i>Supercollectors, Industry Interest Groups and Local Government</i> .....	24
5.4	OTHER ECONOMIC BENEFITS FROM CDL .....	24
5.4.1	<i>Litter Reduction</i> .....	24
5.4.2	<i>Public Perceptions</i> .....	25
5.4.3	<i>Local Government and Landfill Reduction</i> .....	25
5.5	EXTENSION OF THE LEGISLATION TO OTHER BEVERAGES/CONTAINERS - REMOVAL OF ANOMALIES AND EXEMPTIONS .....	26
5.5.1	<i>Beverage Fillers/Distributors</i> .....	26
5.5.2	<i>Retailers</i> .....	28
5.5.3	<i>Material Recyclers</i> .....	28
5.5.4	<i>Collection Depots</i> .....	28
5.5.5	<i>Supercollectors</i> .....	29
5.5.6	<i>Local Government</i> .....	29
5.5.7	<i>Cost to Industry and the Consumer</i> .....	29
5.5.8	<i>Employment Impact</i> .....	31
5.5.9	<i>Environmental and Economic Benefits</i> .....	31
5.6	SUMMARY OF ECONOMIC IMPACTS AND BENEFIT/COST ASSESSMENT .....	32
6.0	<b>MAJOR FINDINGS AND CONCLUSIONS</b> .....	<b>38</b>

**APPENDIX 1: List of Documents Reviewed**

---

## 1.0 INTRODUCTION AND TERMS OF REFERENCE

This summary report details the major findings of the review conducted by Phillip Hudson Consulting, in association with Cole Solicitors, on the Economic and Environmental Impacts of the Beverage Provisions of the Environment Protection Act 1993 (Container Deposit Legislation (CDL)) in South Australia.

The major objective of this study was to provide quantitative and qualitative data regarding the container deposit system and to analyse the data to provide a detailed cost/benefit analysis for the State.

The specific Terms of Reference for the study were to:

- ⇒ Quantify the numbers of people employed directly as a result of the system in operation within the industry and follow on employment levels within the recycling industry.
- ⇒ Quantify where possible the economic and environmental benefits arising to the State as a result of:
  - The replacement of virgin materials manufacture.
  - Offset of importation of virgin materials.
  - Export of recovered material.
- ⇒ Identify and quantify the cost(s) of the system to:
  - The beverage industry.
  - The consumer.
  - The government.
- ⇒ Consider unquantifiable economic impacts which have been generated.
- ⇒ Make recommendations as appropriate to streamline the government system to reduce costs to affected companies and suggest strategies to enhance the legislation.
- ⇒ Make recommendations as appropriate regarding any perceived or measured inefficiencies of the system.
- ⇒ Identify costs to consumers, industry and government should the legislation be extended to other beverage products.
- ⇒ Provide consolidated summary tables of all environmental benefits and impacts.
- ⇒ Provide consolidated summary tables of overall findings of the economic analysis.

## 2.0 THE LEGISLATION AND THE CDL SYSTEM

Essentially, the *Environment Protection Act*, 1993 controls the proliferation of container litter by requiring:

- ⇒ approval of specified beverage containers before they may be sold; and
- ⇒ retailers to be located within collection areas to which specified classes of containers can be taken.

The legislation imposes deposits on specified classes of containers which can be redeemed by the public on the return of particular containers to specified locations. The container deposit legislation does not apply to wine and spirit bottles unless they are made for the purpose of containing a wine-based beverage or spirit-based beverage. The application of the Act to the latter class is intended to regulate the use of containers for mixers and wine coolers [section 66]. Certain containers may be exempted by regulation [section 67]. Those exempted at present are:

- ⇒ glass containers used for the purpose of containing alcoholic and non-alcoholic ciders;
- ⇒ deposit bearing glass containers that are designed to be refilled and are used for the purpose of containing water or carbonated soft drinks or waters;
- ⇒ containers constructed of cardboard and plastic, cardboard and foil or cardboard, plastic and foil (commonly known as casks or aseptic packs) containing at least 1 litre of wine, wine-based beverage or water;
- ⇒ containers constructed of plastic or foil or plastic and foil (commonly known as sachets) containing at least 250ml of wine;
- ⇒ any containers containing more than 3 litres of beverage; and
- ⇒ glass containers used for the purpose of containing an alcoholic beverage derived from the fermentation of fruit, other than an alcoholic beverage that is a wine-based beverage [Environment Protection (Beverage Container) Regulations, 1995 - Schedule 2].

“Ring pull containers” are prohibited by section 72 of the Act as are “plasti-shield containers” [regulation 10]. The application of the beverage container provisions of the *Environment Protection Act* to various containers and their products is summarised in the table on the following page:

<b>Table 2.1</b>	
<b>Beverages To Which The Environment Protection Act Applies</b>	
<b>Beverages</b>	<b>Applicable Containers</b>
<ul style="list-style-type: none"> <li>• Carbonated Soft Drinks</li> </ul>	Non-Refillable Glass, Cans and Plastic (PET, PVC etc.)
<ul style="list-style-type: none"> <li>• Waters</li> </ul>	All Containers
<ul style="list-style-type: none"> <li>• Beer, Ale etc.</li> <li>• Wine Based Beverages</li> </ul>	All Containers
<ul style="list-style-type: none"> <li>• Spirit Based Drinks</li> </ul>	Cans, Plastic and Glass
<ul style="list-style-type: none"> <li>• Cider</li> <li>• Alcoholic Beverages Derived from the Fermentation of Fruit</li> <li>• Spirits</li> <li>• Wine</li> </ul>	Cans and Plastic
<b>Exemptions</b>	
<ol style="list-style-type: none"> <li>1. Glass containers used for the purpose of containing alcoholic and non-alcoholic cider.</li> <li>2. Deposit bearing glass containers that are designed to be refilled and are used for the purpose of containing water or carbonated soft drinks or waters.</li> <li>3. Glass containers used for the purpose of containing an alcoholic beverage derived from the fermentation of fruit, other than an alcoholic beverage that is a wine-based beverage.</li> <li>4. Containers constructed of cardboard and plastic, cardboard and foil, or cardboard, plastic and foil (commonly known as casks or aseptic packs) containing at least 1 litre of wine, wine-based beverage or water.</li> <li>5. Containers constructed of plastic or foil or plastic and foil (commonly known as sachets) containing at least 250ml of wine.</li> </ol>	
<b>Omissions</b>	
The Act does not apply to:	
<ol style="list-style-type: none"> <li>1. Flavoured, non-carbonated (still) waters, fruit juice or milk.</li> <li>2. Containers with a capacity of more than 3000ml.</li> </ol>	
<i>Source: Environment Protection Agency, 1999</i>	

### 3.0 QUALITATIVE SURVEY RESULTS

Industry participants were surveyed and consulted during the study in order to obtain primary research data on the environmental and economic impacts of CDL in accordance with the requirements detailed in the Terms of Reference.

In total, 69 organisations were consulted and surveyed during the study, with 62 of those organisations completing a formal survey. Following is the breakdown of the number of surveys completed:

Beverage Fillers/Distributors	7
Retailers	2
Collection depots	21
Supercollectors	4
Material Recyclers	3
Local Government	14
Industry Interest Groups	11
<b>Total</b>	<b>62</b>

#### 3.1 Strengths and Weaknesses of CDL

The following key issues were identified by the industry survey (they are not necessarily the views of the Consultants):

##### *CDL Strengths*

1. CDL's litter reduction effectiveness is widely accepted by the industry and other stakeholders.
2. CDL's effectiveness in achieving a higher rate of container return than the Australian average is highly recognised by the industry.
3. CDL's impact on roadsides is mostly recognised by collection depots and local government.
4. The employment impact of CDL in South Australia is recognised mainly by collection depots and supercollectors, those organisations where the employment benefits are obvious.
5. Collection depots rated highly the impact of CDL on the provision of cleaner and more valuable recyclables.
6. Local government recognises that CDL provides an incentive to recycle.



### *CDL Weaknesses*

1. Anomalies in the current legislation (referring to omissions and exemptions) are seen by the industry and stakeholders to be the major weakness of the system.
2. Some collection depots and local government agencies consider the 5 cents deposit too low in view of inflation over the last twenty years.

### **3.2 Anomalies in the Application of CDL**

The industry survey reflected a wide ranging concern about inequities in the current application of CDL, mainly caused by the identified anomalies and exemptions. It is an issue that crosses all sectors of the industry and one which creates some confusion in the market place. It also adds significantly to industry costs as it requires segregation of empty containers into deposit and non-deposit categories.

### **3.3 Suggested Improvements to CDL**

Organisations surveyed were asked to identify opportunities to improve the system and its efficiency of operation. Three key areas emerge for attention:

1. Broadening the legislation to encompass from some to all of the current anomalies and exemptions.
2. Reducing industry costs by streamlining operations, including reducing the number of industry participants, and eliminating barriers to the bulking of containers for processing.
3. Reviewing the deposit value.

### **3.4 Community Benefits and Costs Arising From CDL**

The following major community benefits and costs were identified by organisations surveyed:

### *Community Benefits*

1. Income opportunities for community groups and disadvantaged people.
2. Reduced litter and a cleaner environment.

### *Community Costs*

1. Fuel and other running costs incurred by consumers returning containers to the collection depots.
2. Higher consumer prices paid for CDL items.

## **3.5 Unquantifiable Economic Impacts**

The survey responses revealed a range of unquantifiable economic impacts associated with CDL (as perceived by the survey respondents). The most important in the context of this study were:

1. Distorted consumer choice.
2. Competitive disadvantage due to anomalies.
3. System inefficiencies.
4. Improved environmental outcomes.

## **3.6 Local Government - Environmental Effects of CDL**

The Local Government survey asked respondents to identify the environmental effects that CDL has had the area (where introduced).

It was evident from the responses that CDL is contributing to improved environmental outcomes in the areas of reduced litter, reduced stormwater litter and lower landfill volumes.

## 4.0 ENVIRONMENTAL ASSESSMENT

### 4.1 Environmental Issues

#### 4.1.1 Litter

In terms of raw figures obtained through this review, the total number of containers collected by collection co-ordinators annually is as follows:

- ⇒ glass - 133,000,000 units
- ⇒ aluminium cans - 149,000,000 units
- ⇒ PET containers - 77,000,000 units

The original and fundamental objective of the *Beverage Container Act* was to control container litter within South Australia (*Parliament of SA, Environment Resources and Development Committee, 1997*). However, it is virtually impossible to quantify the economic or environmental benefits which accrue to the community as a consequence of an improved aesthetic environment resulting from effective litter control [see Warren, page 4].

Nevertheless, the popularity of the consumer deposit legislation (reputedly in the area of 95% - see EPA, 1993) would indicate that the South Australian population is prepared, if necessary, to pay more for its retail beverages than interstate counterparts in order to maintain relatively low levels of public litter in the State. Of those interviewed for the purposes of this review, 47% commented that the consumer deposit legislation had beneficial effects for South Australian in terms of reducing litter.

Having said this, it should be noted that the additional costs to beverage fillers are probably passed on nationally with the benefits to South Australians being, in effect, subsidised by interstate consumers of the same beverage types.

Whilst it cannot be claimed that all CDL items would otherwise have constituted litter on roadsides or at other public places, it can be argued that a substantial portion would have otherwise been disposed of in this manner.

#### **4.1.2 The Waste Stream**

The consultants did not obtain specific information on the impacts of CDL on the waste stream in South Australia other than the raw figures, above, indicating total numbers of containers returned annually.

Nevertheless, the litter strategy monitoring undertaken by KESAB on a quarterly basis, does present information which relates the litter stream generally to CDL.

McGregor Marketing, on behalf of KESAB, in its Wave 5 Litter Strategy Monitoring Report of February 1999 indicates that virtually all items counted in the survey for that preceding quarter were non-beverage. Litter items regulated by CDL accounted for only 1.7% of the litter stream.

Information is not readily available on a comparative basis with other States. However, Recyclers of SA Inc<sup>1</sup> suggest that South Australia recovers more than double the quantities of beer bottles, soft drink glass and plastic soft drink containers than do other States of Australia.

#### **4.1.3 Landfill Reduction**

The figures presented in Section 5 provide approximate totals for the diversion of glass, aluminium and PET deposit containers away from the waste stream in South Australia.

The Adelaide Metropolitan Waste Analysis (Recycle 2000, 1998) indicated a contribution of 7.3% by CDL depots to a total diversion rate of 17.4% when the entire waste stream for domestic waste is included.

Whilst useful comparative figures from the different Australian States and Territories are not available comparisons between the jurisdictions in the United States are. The Container Recycling Institute (CRI, 1990) states that "State waste management officials reported that bottle bills were diverting an estimated 6-8% of the waste stream, reducing disposal costs and saving landfill space" (Overview and Executive Summary, p.ii).

In 1990 the US General Accounting Office (GAO) calculated that the redemption rates within States possessing recycling and deposit laws were sufficiently high that the laws reduced solid waste to landfill by 3% to 4% by weight. Reports reviewed by the GAO, in reaching their conclusions, indicated that deposit laws in the USA reduce solid waste by 1% to 6% by weight and up to 8% by volume. On this basis, the GAO concluded that deposit laws could play a significant role in helping United States to meet the EPA's recycling goals.

---

<sup>1</sup> Recyclers of SA Inc represents the majority of Collection Depots approved under the Act.

The GAO and CRI findings would appear to compare with the Recycle 2000 diversion rates for CDL considered above. It might fairly be concluded, therefore, that in South Australia, at least, the container deposit legislation is making a significant, decrease in the annual total tonnages of waste being sent to landfill.

The South Australian Government has endorsed through the Australian and New Zealand Environment and Conservation Council (ANZECC) a National Kerbside Recycling Strategy which incorporates a set of targets for achievement by the year 2000. The targets are designed to ensure:

- ⇒ a 50% reduction in the total quantity of solid waste going to landfill;  
and
- ⇒ a 50% reduction in the quantity of domestic waste going to landfill on a per capita basis.

(see *Integrated Waste Strategy for Metropolitan Adelaide, 1996-2015*, EPA 1996, p.11).

On the basis of the above figures, it would appear that the container deposit legislation is making a substantial contribution to achieving these objectives.

#### **4.1.4 Compatibility of CDL with Kerbside Collections**

The issue of compatibility of CDL with kerbside recycling was raised several times in interviews with sector representatives. Collection depot operators tended to argue that at worst CDL had no adverse effect on kerbside collections and at best provided benefits in terms of reducing total volumes of waste to be sent to landfill and introducing a valuable element into the waste stream. To the question “What practical effects has CDL on your kerbside recycling program?”, three local governments indicated that CDL added value to kerbside recycling schemes. However, one local government suggested that CDL resulted in loss of product from kerbside recycling. From the responses, it may reasonably be inferred that of the councils interviewed, none saw CDL as having a major deleterious effect on kerbside recycling programmes.

*Nevertheless, the value of CDL should strictly speaking be assessed against the original objective of litter control. The incidental effects of marginally increasing recycling of materials may not be relevant to determining the effectiveness of CDL legislation with a stated aim of reducing litter in public places.*

#### **4.1.5 Local Government - Environmental Effects**

Aggregated survey responses from local government, specifically relating to environment effects, are as follows:

- ⇒ Reduction in litter - 5
- ⇒ Reduced pollution to stormwater - 2
- ⇒ Reduction in litter - reduced need for education and cleanup - 1
- ⇒ Increased safety - fewer glass bottles - 1
- ⇒ Incentive to recycle - 1
- ⇒ Reduced costs of waste going to landfill - 1

Two of the above observations justify special comment. The attention of State and local governments to metropolitan catchment management includes litter management in creeks and rivers. Effective CDL would logically contribute to this element of catchment management.

Second, it was noted by several respondents (9%) that CDL has a benefit of educating the public on environmental matters, particularly by raising the profile of litter control and recycling.

#### **4.1.6 Virgin Material Replacement**

##### Glass

Approximately 133 million glass containers are recycled annually in the State. Discussions with industry representatives indicate that most of this glass remains in South Australia and is used largely in the production of bottles for the expanding wine industry.

Glass manufacturing representatives indicated that the economic benefits of recycling glass compared with producing virgin product were “break even” or “borderline”. Although the glass manufacturing industry has historically paid more for cullet than virgin material the energy savings in recycling glass are apparently attractive.

An interstate representative of a glass recycling company suggested that the benefits to the glass manufacturers in using recycled glass were being underestimated but agreed that cullet had to be “landed” at a raw material replacement price.

The demand for cullet appears to be consistent and relatively high. On this basis environmental benefits would accrue from virgin material substitution and energy savings.

ACI produces approximately 150,000-170,000 tonnes of glass per annum in South Australia, only 25% of which is produced from cullet. It is of interest to note that the national average for the use of cullet is 43%. However, there is insufficient glass in South Australia to meet demand.

On that basis, in South Australia, 53% (79,500 - 90,100 tonnes) of the raw material used is sand, 12% (18,000 - 20,400 tonnes) limestone and 10% (15,000 - 17,000 tonnes) soda ash. In terms of total glass production in this State, therefore, substantial reductions are made in the mining of sand and limestone for glass manufacturing purposes. Considerable energy savings would also be made.

We estimate that in South Australia CDL contributes approximately 40% of the total volumes and value of replacement of virgin materials.

### Aluminium

Approximately 90 million cans (approximately 3000 tonnes of aluminium) are recycled annually in South Australia and ultimately exported interstate.

Discussions with the aluminium industry indicate that cost savings to aluminium sheet manufacturers through the use of recycled material are conservatively in the region of 10%.

Approximately 40,000 tonnes of aluminium cans are produced (annually) in Australia with approximately 34% of all cans sold in Australia being made from recycled aluminium. The recycled aluminium is recovered Australia wide.

The cost savings to manufacturers are sufficiently high that the industry will take as much aluminium as can be recycled in Australia.

Savings on the recycling of aluminium are not so much based on energy reduction as on the comparative market price of primary aluminium ingots. The aluminium smelting industry apparently purchases electricity at "bulk" rates thus reducing the economic benefits derived from energy savings through recycling. However the more significant economic benefits arise from the relatively high price of primary materials compared with the recycled product.

Although no energy and materials audit results have been obtained for the purposes of this study it appears that there are energy savings from the smelting of recycled product. A U.S. figure obtained from the Aluminium Association put the savings at 95% compared with the

energy spent on manufacturing an aluminium can from virgin material (US General Accounting Office, 1990). Similarly, raw material inputs, air emissions, discharges to water and de-forestation from bauxite mining will be reduced compared with the primary manufacture of aluminium.

*Nevertheless, as these environmental benefits arise from manufacturing processes outside South Australia it must be concluded that the incidental environmental benefits from the recycling of cans exported from South Australia may accrue to other local communities, and perhaps nationally, but not exclusively to South Australia.*

## PET

Little PET as raw material is manufactured in Australia. However, a blend of virgin and recycled material is used to manufacture PET containers. There is no PET manufacturing in South Australia. Most PET collected in South Australia is sent to other States where it is manufactured either as containers or other products. Approximately 10%-15% is exported overseas and used in textile manufacturing. Statewide exports a proportion of its collected PET directly overseas.

*On this basis, the use of the recycled product may benefit consumers nationally in terms of cost and in the States where PET is manufactured may reduce the total emissions and discharges associated with using virgin material. However, this will not result in any direct or local environmental advantage to South Australia as PET manufacturing does not occur there.*

## **4.2 Environmental Impacts of Extending the Legislation**

### **4.2.1 Litter Reduction**

Currently return rates for deposit containers is in the region of 80%. If the legislation were to be extended to encompass containers such as milk and fruit juice containers, certain plastic containers and glass containers not currently included in CDL it can be assumed reasonably that comparable returns would be obtained on those containers provided the deposit was at least five cents.

However, the extent of litter reduction will depend upon the degree to which the particular containers are contributing to the litter problem in South Australia. The more popular lunch time beverages are likely to be contributing more to the litter problem than some "boutique" imported alcoholic beverages.

The recent McGregor Litter Survey (Wave No.5) conducted for KESAB revealed that containers comprised only 6% of the litter stream with CDL containers representing 2% and non-CDL 4%. The latter would



largely represent liquid paper board containers. Other industry sources also indicated that extension of CDL would probably increase container recycling in the region of 5%.

#### **4.2.2 Raw Material Substitution**

##### Glass

If the CDL were extended to glass containers not currently included in the scheme an increase in recycled product (cullet) will further reduce the amount of raw product used in glass production in South Australia. The effect, however, may depend on the volume of glass containers not currently addressed by the legislation. Account must also be taken of the amount of non-CDL glass currently being recycled which would not be affected by applying a deposit to it.

##### Aluminium

There would appear to be a generally unlimited demand for recycled aluminium which substitutes for the raw product. However, whilst marginal cost benefits may accrue to the Australian community as a whole, including South Australians, environmental benefits will apply largely interstate.

##### PET

PET is not manufactured in this State. Consequently, any pollution/reduction benefits derived from extending the CDL system to PET containers currently not regulated at present will not accrue to South Australia. The beneficiaries in this sense will be the locations and communities in proximity to the PET manufacturing facility.

##### Plastic (HDPE)

Non-deposit plastic containers are recycled in South Australia for the manufacture of agricultural and industrial plant and equipment. To this extent they replace virgin material. It is assumed that an increase in the availability of these materials will result in further production of this type and commensurately less reliance on virgin plastic.

Currently, however, the plastic containers are provided to material recyclers free of charge by councils who find it more expensive to take the containers to landfill. The introduction of a deposit would result in the material recyclers incurring a cost which presently they do not.

It is possible that material recyclers would benefit from the allocation of a five cent deposit to HDPE containers through the acquisition of greater volumes of materials. Presently, however, the material recyclers are obtaining all the HDPE that they require.

### Liquid Paper Board

This packaging is recyclable and is currently subject to recycling in other States. The recovered fibre is used for office paper manufacture. The plastic (or aluminium in the case of “long life” products) is currently sent to landfill. Again, it appears that environmental benefits from the recycling process accrue nationally rather than exclusively to South Australia.

### **4.2.3 Landfill Reduction**

The Recycle 2000 1998 Metropolitan Waste Analysis calculated a contribution of 7.3% by CDL depots to a total diversion rate of 17.4%. If it is assumed that the most optimistic forecast is that an extension will increase the total container collection under CDL by 10% the diversion rate due to CDL is likely to increase to approximately 8%.

### **4.3 Public Support**

The economic costs associated with CDL should be considered in light of the environmental objectives of the legislation and the apparent public support of it. The original *Beverage Container Act, 1975* was introduced for the purpose of controlling litter in public places (see *SA Parliament, Environment, Resources and Development Committee, 1997*).

It is clear that the legislation has substantially achieved this goal and that removal of containers from the waste stream has been evidenced by return rates in excess of 80% to the “super collection” agencies.

The popularity of the legislation is evidence by several surveys conducted in the State. A telephone survey conducted by the EPA in 1993 revealed that 95% of people called supported the concept of a refundable deposit on drink containers.

It is not unusual for community costs to be attached to environmental legislation either through a surcharge being applied to goods or through fiscal measures such as taxation or levies. Water resource and catchment management in South Australia is an example of the public’s paying for environmental goods. The popularity of the container deposit legislation in South Australia would tend to argue that the population is prepared to pay for a relatively litter free environment.

#### 4.4 Summary of Environmental Impacts

The following table summarises the environmental costs and benefits discussed in this section of the report.

<b>Table 4.1</b>	
<b>CDL - Summary of Environmental Impacts</b>	
<b>Issue</b>	<b>Effects</b>
Litter Stream	<ul style="list-style-type: none"> <li>• Substantial reduction of containers into litter stream.</li> </ul>
Landfill Reduction	<ul style="list-style-type: none"> <li>• 7.3% contribution by CDL depots to a total SA diversion rate of 17.4%</li> </ul>
Local Government Services	<ul style="list-style-type: none"> <li>• Reduced litter;</li> <li>• Reduced pollution to stormwater;</li> <li>• Educational benefits.</li> </ul>
Virgin Material Replacement	<ul style="list-style-type: none"> <li>• Glass - approximately 40,000 tpa of raw material saved in SA; 16,000 of this from CDL.</li> <li>• Aluminium - 34% of all cans sold in Australia made from recycled aluminium. Energy savings 95% compared with manufactured from virgin material;</li> <li>• PET - recycled product displaces use of raw material. 85 - 90% recycled PET used in Australia.</li> </ul>
Pollution Reduction	<ul style="list-style-type: none"> <li>• Discharges from aluminium and PET reduced by use of recycled material. Benefits accrue interstate as this is where the manufacturing occurs.</li> </ul>
Fuel Consumption	<ul style="list-style-type: none"> <li>• Use of vehicles for transporting/managing collected items;</li> <li>• Use of private vehicles to return containers to depots.</li> </ul>

## **5.0 ECONOMIC AND COST/BENEFIT ASSESSMENT**

This section of the report assesses the economic impacts of CDL on the beverage industry and the economy of South Australia. An estimate is also made of the cost/benefits of CDL based on the company surveys, consultation and certain key assumptions.

The following sections specifically address the economic impacts of CDL based on the survey responses and consultation with industry and stakeholders during the study.

### **5.1 Employment**

All organisations responding to the industry survey were asked to identify the number of people employed on CDL related activities.

The responses from Beverage Fillers/Distributors, Retailers, Material Recyclers and Local Government identified a very low impact of CDL on the activities of these organisations. Some minor administrative and accounting functions have a combined impact estimated to be in the order of 1 - 2 full time jobs per annum.

Industry Interest Groups also contribute little to CDL related employment. A total of 3 full time jobs was identified for this group including one person looking after the members of Recyclers of SA Inc. and two persons involved in administration and compliance work in the Environment Protection Agency.

Collection Depots and Supercollectors account for the majority of CDL related employment.

Supercollectors identified that they employ the equivalent of 20.5 full time employees.

Collection Depots identified that they employ 158 people, a large proportion of which are part time employees. In addition, they identified 91 casual/seasonal positions (80 of these were with one organisation). However, only 22 of 114 Collection Depots responded to the survey (19%). Assuming that the 22 respondents are a representative sample of this sector, it is estimated that, in total, the State's Collection Depots employ 820 people in full and part time positions. In addition, it is estimated that the Collection Depots could provide up to another 200 casual positions throughout the year.

South Australian Input-Output tables and multipliers are used for calculating the follow on employment impacts of CDL. (It should be noted that in the absence of CDL there would be similar follow on benefits generated in other sectors of the national economy. This issue is discussed further below.) Employment multipliers are used to measure the additional (or indirect) employment impacts resulting from

the original (or direct) employment attributable to CDL. In view of the above assessment, and an employment multiplier of 2.1 based on South Australian Input-Output Tables, we estimate the total employment impact of CDL in South Australia to be 1,700 jobs, including full time and part time jobs in the same proportion as that in the collection depot industry.

*Two important issues need to be highlighted regarding the employment impacts of CDL:*

1. Firstly, we believe it is incorrect to assume, as many have, that the employment generated by CDL represents a boost to the overall national economy. We stress that this employment is supported by the industry's cost structure which provides for handling fees to be paid to collection depots. These costs are either passed on to South Australian consumers and consumers in other State/Territories, and/or are absorbed by the beverage fillers/distributors. As such, this reduces the amount of money consumers and producers have to spend on other products, investments, etc., with subsequent negative economic impacts possibly equivalent to the employment boost in the CDL system.

As demonstrated in later sections of this report, the costs and benefits of South Australia's CDL do not accrue only to South Australians. For example, costs associated with CDL are often incorporated into the national pricing strategies of major beverage fillers/distributors, while many environmental benefits, such as lower virgin materials demand, accrue to interstate beverage container manufacturers receiving the retrieved containers for recycling.

*We therefore believe that South Australia's CDL effectively shifts economic activity and jobs from a national to a State basis (ie: by contributing to the costs of CDL in South Australia, thereby supporting economic activity and jobs in South Australia with expenditure that could have been spent on economic activity in other States) .*

2. Second, and very important in the context of South Australia's regional development priorities, CDL has the effect of redistributing employment opportunities in favour of regional locations due to the number of collection depots located throughout the State.

Given the above, we have not factored CDL related employment into the assessment of the costs and benefits of CDL.

## 5.2 Recycling Impacts

### 5.2.1 Containers Handled

All respondents to the study survey were asked to identify the number of containers handled by their respective operations, including the sources of containers and the destination of containers processed. Much of the data supplied to the consultants was on the basis of 'commercial-in-confidence' which limits our ability in this report to provide disaggregated information and to document specific container flows.

This information is, however, essential in order to make assessments of the economic and environmental impacts of CDL, plus assessments of the impact of extending the legislation to other beverage products. Following, therefore, are the aggregated survey results by industry sub-sector which are used in other sections of this study to assess economic and environmental impacts.

#### Beverage Fillers and Distributors

Container Type	Volume pa
Glass Bottles	50,200,000 units
Aluminium Cans	6,900,000 units
Plastic (HDPE)	100,000,000 units
Liquid Paperboard	50,000,000 units

#### Material Recyclers

Container Type	Volume pa	Source	Destination
Glass	33,000 tonnes	Toll, Statewide & Non-Deposit	ACI Glass - SA
Non Deposit Plastic	130,000 tonnes	Industrial, Supermarkets, etc	Viticulture, Aquaculture, Mining & Local Government - SA
Non Deposit Plastic	12,000 tonnes	Reject Waste Plastic - Industrial, Commercial & Kerbside (Milk Bottles/Bags, etc)	Industrial - Replacement of Virgin Materials

## Supercollectors

### *Containers Collected*

<b>Container Type</b>	<b>Volume pa</b>	<b>Source</b>
PET	77,151,000 units	SA Depots
Aluminium Cans	149,053,000 units	SA Depots
Glass		SA Depots
HDPE (non dep)	133,162,000 units	
LPB (non dep)	Minimal	
	Minimal	

### *Containers On-Sold*

<b>Container Type</b>	<b>Volume pa</b>	<b>Destination</b>
Glass	133,162,000 units	SA - ACI
PET	3,364 tonnes	Hong Kong & China - Manufacture of Containers, Clothing, Toys, etc. (15%)
Cans - Alum.	1,398 tonnes	Victoria, NSW - Flat Sheet Multiple Use

## **5.2.2 Economic Impact - Replacement of Virgin Materials Manufacture**

By facilitating the recycling of container materials (glass and plastic), CDL conserves natural resources (virgin materials) and reduces energy consumption (see Section 4). However, the only beverage containers manufactured in South Australia are bottles.

As noted in Section 4, ACI produces approximately 150,000-170,000 tonnes of glass per annum in South Australia, only 25% of which is produced from cullet.

On that basis, in South Australia, 53% (79,500 - 90,100 tonnes) of the raw material used is sand, 12% (18,000 - 20,400 tonnes) limestone and 10% (15,000 - 17,000 tonnes) soda ash. In terms of total glass production in this State, therefore, substantial reductions are made in the mining of sand and limestone for glass manufacturing purposes.

The following estimates of savings from the replacement of virgin materials manufacture are made based on the lower production figures above, 25% cullet use and industry estimates of the price per tonne for each item:

Sand - 19,875 tonnes @ \$40 per tonne	\$795,000
Limestone - 4,500 tonnes @ \$15 per tonne	\$67,500
Soda Ash - 3,750 tonnes @ \$250 per tonne	\$937,500
<b>Total Savings</b>	<b>\$1,800,000</b>

However, these benefits can not all be attributed to the impact of CDL because, in the absence of CDL a proportion of waste glass will nevertheless find its way into the recycling stream (eg: via kerbside recovery). We have no reliable estimates on the difference between the two recovery rates but we can substitute recovery rates achieved in other States that do not have CDL. As noted elsewhere in this report, South Australia recovers and reuses a greater proportion of its glass beverage containers compared with a national average. A review of 1991 Industry Commission figures<sup>2</sup> indicates that recovery rates are up to 40% higher in South Australia. We therefore estimate that CDL in South Australia contributes in the order of \$720,000, or 40%, towards the total value of replacement of virgin materials.

### **5.2.3 Economic Impact - Offset of Importation of Virgin Materials**

As noted earlier in this report, there is an offset of importation of virgin materials attributable to CDL. However, other than in the case of glass, these benefits accrue to interstate manufacturers and communities and should therefore not be factored into a South Australian cost benefit assessment. Nevertheless, it is still important to recognise that these benefits, as detailed in Section 4, do occur as a consequence of CDL.

### **5.2.4 Economic Impact - Export of Recovered Material**

As noted above, 15% of the 3,364 tonnes per annum of PET is exported from South Australia to Hong Kong and China. At \$300 per tonne (industry estimate), this represents an annual export income of \$150,000.

## **5.3 Additional Costs Incurred to Comply With CDL**

### **5.3.1 Beverage Fillers and Distributors**

National beverage fillers and distributors advised that the additional costs associated with South Australia's CDL were either absorbed by the company or passed on to national customers and, therefore, to

---

<sup>2</sup> *The Impact of Container Deposit Legislation on Kerbside Recycling*, Matthew John Warren, submitted in part fulfilment of the Honours Degree of Bachelor of Economics, University of Adelaide, 1994, p2.



national consumers of products - not just South Australian consumers. In these cases, interstate consumers (and producers) are bearing the costs of South Australia's CDL. National producers may tend to ignore the costs of servicing South Australia's CDL due to the small size of the population (market) compared with the larger eastern States. Alternatively, as claimed by more than one beverage filler/distributor, the costs of servicing CDL are absorbed into the national costing and pricing framework.

However, one South Australian organisation producing mainly for the South Australian beverage market indicated that its pricing is generally set at 'what the market will bear', regardless of CDL. The deposit (5 cents) and handling fee (average of 3.1 cents for glass and cans; 3.75 cents for PET - industry estimates) are not necessarily passed directly on to the consumer (ie: 8.1 cents per glass container or \$1.94 per case). In this situation, the producer is realising \$1.94 less per case than would otherwise occur in the absence of CDL because it has an obligation to refund the deposit plus handling fees when the containers are returned via the supercollectors. That is, in the absence of CDL the producer may still charge the same price. All other things being equal, a South Australian producer could therefore be receiving \$1.94 less per case than interstate counterparts supplying interstate markets (less deposits not refunded on non-returned containers). It is argued by beverage fillers/distributors that, in addition to profit loss, there is a flow on impact on the company's ability to reinvest in other aspects of the business which would generate other benefits and employment in South Australia. The risk to South Australia, albeit small, is that such producers look interstate for future investment in productive capacity.

Based on the identified 359,366,000 (282,215,000 glass and can; 77,151,000 PET) container units handled by the State's supercollectors, and average container handling fees of 3.1 and 3.75 cents, total handling fees incurred by beverage fillers/distributors, and paid to the supercollectors, is estimated to be in the order of \$11.6m per annum. This total handling fee is considered a reasonable estimate as it is supported by confidential handling fees provided to the consultants by a sample of beverage fillers/distributors (\$7.5m by three major producers). The payment of these fees by, in the main, national producers and consumers of beverages which attract a deposit in South Australia (beer and soft drinks), supports the collection depot industry in this State which relies substantially on the payment of handling fees for its income (estimated to be > 90% in most instances based on industry consultation).

As noted above, additional costs associated with South Australia's CDL are either absorbed by industry or passed on to national customers and, therefore, to national consumers of products - not just South Australian consumers. The specific impact on South Australian consumers will therefore be proportional to the number of containers bearing the deposit sold in South Australia with the number of

containers of the same product sold nationally. Population share is not a highly reliable estimate of this proportion as there are two major beverage fillers/distributors, Coopers and SA Brewing Company, that produce products predominantly for the South Australian market which should not be apportioned nationally. As market shares are protected by the companies and would not be disclosed to the consultants, it is necessary to estimate the proportional impact on South Australia. Based on the number of containers returned to the various supercollectors, including South Australian and interstate brands, we estimate that South Australia bears only 20% of the estimated national costs associated with CDL. (Based on an estimate of the number of South Australian brand containers and assuming that the balance of interstate brand containers represents the State's population share.)

On this basis, we estimate that the direct cost of CDL handling fees to producers and consumers in South Australia is in the order of \$2.3m per annum, compared with the \$11.6m cost borne nationally.

In addition to the payment of handling fees to supercollectors, beverage filler/distributors identified additional costs as follows:

- ⇒ Printing of separate labels for South Australia. One company estimated this to be in the order of \$200,000 per annum.
- ⇒ Holding additional stock units with loss of warehouse capacity.
- ⇒ Additional line change time and loss of production efficiencies.
- ⇒ Additional administrative and accounting work.
- ⇒ Cost impacts of small volume runs.

One of the larger beverage fillers/distributors indicated that it employed one person full time on CDL related administrative and accounting work, estimated to cost the company \$80,000 per annum. A smaller company indicated that CDL cost it \$15,000 per annum in administration and accounting functions while another indicated that CDL had only a minimal impact on its operations.

Based on the above, we estimate that additional costs incurred by beverage fillers/distributors for printing, administrative and accounting activities, and passed on to consumers in South Australia or absorbed by South Australian industry, to be in the order of \$1,000,000 per annum. We also recognise the additional unquantified costs noted above such as production inefficiencies, stock holdings, etc.

*It is important to note that, similar to the handling fees, these additional unquantified costs are not directly passed back to the South Australian consumer. For national brands, each State will attract a specific pricing strategy based on many factors including prevailing market conditions,*

*and the producer's competitive position. The additional costs of CDL are therefore either absorbed by the producer or passed on the national consumer through the company's costing/pricing strategy (or a combination of both).*

#### Non-Return of Deposit Containers

Industry estimates obtained during consultation indicate that the return rate of deposit containers is, on average, 85%. Based on the above cost estimates, this represents a saving to the beverage fillers/distributors in unredeemed deposits in the order of \$1.7m per annum.

*This is often incorrectly interpreted as a net benefit to the economy. However, in effect it represents a transfer of income from consumers who do not claim the deposit, to the beverage fillers/distributors who do not have to pay back the deposit and handling fee.*

*The net impact on the economy is therefore assumed to be zero.*

#### **5.3.2 Retailers**

Retailers identified costs of no significance in complying with CDL.

### **5.3.3 Material Recyclers**

Only one recycler identified a CDL related cost of significance being the payment of \$50,000 per annum for a forklift and driver to cater for the separation of containers.

### **5.3.4 Collection Depots**

As collection depots are substantially reliant upon CDL for their business, there were no additional costs identified by this group in order to comply with the legislation.

### **5.3.5 Supercollectors, Industry Interest Groups and Local Government**

These groups identified no significant costs associated with CDL compliance activities.

## **5.4 Other Economic Benefits From CDL**

### **5.4.1 Litter Reduction**

As noted in the environmental assessment (see Section 4), litter reduction attributable to CDL is significant. In addition to successfully achieving the litter reduction objective of the legislation, it also has an economic benefit associated with reduced landfill and litter collection costs of Local Government. (Offset by the costs to the consumer of transport, time, fuel etc.).

Additional benefits of reduced litter and increased recycling (that portion attributable to CDL) extend to:

- ⇒ Reduced water pollution
- ⇒ Reduced air pollution
- ⇒ Reduced greenhouse gas emissions (reduced power plant emissions)

Methods used to analyse and value these benefits remain controversial and a review of the literature suggests that caution should be exercised in factoring these benefits into the cost/benefit assessment. However, as noted in Section 4 on the environmental impacts of CDL, these benefits may be significant. While it is possible with sufficient and accurate data to estimate a value of these impacts by, for example, estimating and extrapolating reduced council clean-up costs associated with reduced litter, such data were not collected as part of this study.

*We have therefore regarded such benefits as 'unquantified benefits' and, importantly, the balancing item which gives a guide as to what the community is prepared to pay (ie: the net quantified cost of CDL) to receive the aesthetic and environmental benefits of reduced litter (given the very high acceptance rate of CDL in South Australia).*

#### **5.4.2 Public Perceptions**

Interestingly, one South Australian beverage filler/distributor claimed that CDL actually offered a positive benefit to the company because its containers are not seen as litter in the streets. The public therefore does not form a negative view of the company. One other non-South Australian company claimed that the deposit label helped promote the company as being 'green'.

#### **5.4.3 Local Government and Landfill Reduction**

CDL reduces litter and diverts solid waste away from landfill. It complements kerbside recycling by providing an incentive for consumers not to commit deposit containers to general waste by returning containers to recycle depots. However, CDL also reduces the volume of materials available for kerbside recycling and therefore its potential viability.

The Metropolitan Waste Analysis (Recycle 2000, 1998) indicated a contribution of 7.3% by CDL depots to a total diversion rate of 17.4% when the entire waste stream for domestic waste is included. However, what we are unable to ascertain, either through the literature or consultation with councils, is what proportion of the 7.3% (or 42% of diverted recyclables) would remain diverted (ie: via kerbside and other collection methods) in the absence of CDL (both legislated and voluntary). This would provide an accurate guide as to the cost savings attributable to reduced landfill as a consequence of CDL.

It should also be noted that Local Government and its contractors receive revenue from the deposit containers collected via kerbside and other methods - \$50,000 and \$90,000 per annum identified by two independent councils. *It is important to note, however, that these benefits only reflect a redistribution of income, not additional benefits associated with CDL.* That is, councils benefit from ratepayers foregoing redemption of their container deposits.

## **5.5 Extension of the Legislation to Other Beverages/Containers - Removal of Anomalies and Exemptions**

The removal of omissions and exemptions under the existing legislation would bring the following products/containers into the CDL system:

- ⇒ Flavoured, non-carbonated (still) waters, fruit juice or flavoured milk in containers of less than 1 litre (which can include such products as fruit drinks, and fruit juice drinks, sports drinks and ready to drink cordials);
- ⇒ Glass containers used for the purpose of containing alcoholic and non-alcoholic cider (current exemption);
- ⇒ Deposit bearing glass containers that are designed to be refilled and are used for the purpose of containing water or carbonated soft drinks or waters (current exemption);
- ⇒ Glass containers used for the purpose of containing an alcoholic beverage derived from the fermentation of fruit, other than an alcoholic beverage that is a wine-based beverage (current exemption);
- ⇒ White milk (generally supplied in plastic (HDPE) containers and LPB containers) - current omission;
- ⇒ Wine, wine based beverage or water (generally supplied in glass and LPB/plastic containers (casks)) containing at least 1 litre - current exemption;
- ⇒ Containers constructed of plastic or foil or plastic and foil (commonly known as sachets) containing at least 250ml of wine - current exemption;
- ⇒ Containers with a capacity of more than 3000ml - current omission.

During consultation and survey, organisations were asked their views on extension of CDL to cover other beverages and containers, including the identification of any cost implications for their respective organisations. The views expressed are detailed below by industry sector.

### **5.5.1 Beverage Fillers/Distributors**

The major brewers, while generally not supporting the legislation, argue that if it is to be retained then it should be extended to cover all competitive alcoholic beverages. They argue that beer is currently at a competitive disadvantage against beverages such as alcoholic ciders

and lemonade that do not attract a five cents deposit. One brewer went on to argue that the legislation should be extended to capture wine, fruit juice and milk products as there is no economic justification for discrimination against beer and soft drink consumers. This brewer also pointed out that two thirds of wine consumed in South Australia is cask wine which has a high import content, most juice is now made from imported concentrate and that the milk market is dominated by major national players.

The wine industry believes that CDL currently works well, is achieving its litter reduction objective and that there would be no litter benefit achieved by extending the legislation to cover wine bottles. Wine, it is argued, is generally consumed at home or in restaurants and wine glass packaging is rarely seen in litter. Bag in box (cask) wine is also predominantly consumed at home. The industry also suggests that consideration be given to the current NEPM before burdening industry with additional costs or complicating collection and administrative functions.

The milk and juice industry is, understandably, highly concerned about any extension of CDL to liquid paperboard and HDPE containers. It believes that the deposit plus handling costs associated with CDL implementation will seriously erode sales and profitability as consumers shift to competitor products. Although the industry was unable to estimate potential profit and employment implications, one company with significant South Australian market share estimated additional artwork costs of \$60,000 pa, or \$50,000 pa should white milk be included in CDL. The industry is also concerned about the potential health risks (and smell) associated with residual milk in containers that are processed via a deposit/depot collection system. It is noted that over the last 3 years, some of the major companies in this sector have assisted local government to establish and promote kerbside recycling through the use of Beverage Industry Recycle Fund (BIRF) seed funds.

Beverage fillers/distributors point to the following additional impacts of extending the legislation to cover other beverage containers:

- ⇒ Increased prices for wine consumers and lower profits for wine producers/distributors.
- ⇒ One wine company estimates additional costs of \$200,000 pa should CDL be extended to wine bottles.
- ⇒ An increase in the base of recyclables through the CDL system will improve economies and reduce per unit handling fees.
- ⇒ Price rises in the order of \$1.20 per case for imported alcoholic beverages in containers not currently covered by the legislation.

Beverage fillers/distributors generally oppose any increase in the value of the container deposit, arguing that any increase would have only a marginal impact on the recovery of beer and soft drink containers which already have high recovery rates.

*Should the government consider extending CDL to a broader range of containers, this industry stressed the need for long lead times to minimise the potential write-off of packaging and product. For example, some products are contained in long life packs with nine months of shelf life. To cater for such situations, lead times of up to a year would be sought.*

### **5.5.2 Retailers**

Alcoholic beverage retailers consulted during the study indicated that the deposit and handling costs associated with extension of the legislation to other containers and products would be passed on to the consumer. From the retailer's perspective, there would be additional administrative and accounting costs but these were expected to be marginal and not have a significant impact on business profitability.

### **5.5.3 Material Recyclers**

Material Recyclers had a mixed reaction to extension of CDL to other containers and products. Companies currently obtaining feedstock at little or no cost (non-deposit containers) may be disadvantaged if containers are extracted from the waste stream which is their source of materials.

On the other hand, major glass recyclers could see significant benefits in a shift to having all glass containers under CDL. Such a move would remove the current requirement to separate deposit and non-deposit glass with a subsequent improvement in sorting, and transport and handling efficiencies worth in the order of \$50,000 pa (elimination of forklift operations due to bulk transport and dumping).

### **5.5.4 Collection Depots**

All collection depots surveyed during the study were highly supportive of extending CDL to a broader base of beverage containers. It was difficult for depots to estimate financial and employment impacts but there was universal agreement that turnover, profitability and employment opportunities would all increase as the range of containers captured by CDL broadened. Estimated employment increases ranged for 0 -100%.



### **5.5.5 Supercollectors**

Supercollectors also generally support extension of CDL to cover a broader range of beverage containers, especially containers that contribute to litter and are not deemed domestic use. They argue that industries currently not bound by CDL have had many opportunities to make specific target measures of recovery through voluntary systems without success. However, they do recognise the inefficiencies in the present system and warn against exacerbating this situation.

Like collection depots, supercollectors expect increased turnover and employment but are unable to forecast these with any accuracy.

### **5.5.6 Local Government**

Councils were generally supportive of extending CDL to containers which contribute to the litter stream. While councils recognised the increase in unit costs of collection when containers are diverted away from kerbside recycling, they highlighted the expected benefits to councils from extension of CDL as:

- ⇒ Less litter.
- ⇒ Reduced kerbside collection costs (often under contract) due to lower volumes.
- ⇒ Increased income through additional revenue obtained from the new CDL items in kerbside collections, estimated by one council to be worth in the order of \$25,000 per annum.
- ⇒ Cleaner waterways.
- ⇒ Less waste and lower landfill costs.

### **5.5.7 Cost to Industry and the Consumer**

As noted above, the removal of anomalies and exemptions under the existing legislation would bring the following products/containers into the CDL system:

- ⇒ Refillable glass containers for soft drinks;
- ⇒ Glass containers for cider and fruit based alcoholic beverages other than wine;
- ⇒ Glass containers for alcoholic lemonade;

- ⇒ All containers for non-carbonated flavoured waters such as fruit juices and sports drinks;
- ⇒ Glass, plastic and LPB containers for fruit juice;
- ⇒ White and flavoured milk (generally supplied in plastic (HDPE) and LPB containers);
- ⇒ Wine (generally supplied in glass and LPB/plastic containers (casks)).

Extending the application of CDL to other beverages and containers, and principally those containers contributing to litter and capable of being recycled, would incur costs to industry and consumers in the same manner as outlined under the current application of CDL. *In this analysis, we assume that the legislation is not extended to cover beverages predominantly consumed in the home or commercial establishments, and do not contribute substantially to general litter - white milk and wine in containers of 1 litre and greater (see McGregor Marketing survey results).*

It has been difficult in this study to isolate the anomalies noted above in terms of identifying the cost impact to the beverage filler/distributor from their inclusion in CDL. With market share information closely guarded and little data available on volumes of non-CDL items, we are unable to provide accurate cost estimates for marginal expansions of the legislation to eliminate certain anomalies.

Assuming that the legislation is not extended to cover white milk and wine, the largest impact of extension would be on liquid paperboard (LPB), used to contain flavoured milk, fruit juice, etc. For commercial reasons we have also been unable to obtain reliable figures on the total quantity of LPB and other non-CDL containers sold in South Australia. Due to the small number of suppliers, this is considered to be very sensitive market share information.

However, based on industry discussions during the survey, we estimate that flavoured milk, fruit juice and the anomaly items described above comprise in the order of 100,000,000 container units per annum. Applying a similar average handling fee as that applied to current glass and can deposit containers of 3.1 cents, the total cost to industry and consumers *nationally* should the legislation be extended to cover these items is estimated to be in the order of \$3.1m per annum.

It is again difficult to estimate the specific impact on South Australia in the absence of detailed market share information. However, similar to glass and can containers, we estimate the impact to be in the order of 20% based on the limited data supplied during industry consultations. On this basis, we estimate the impact on South Australian industry and consumers to be in the order of \$0.6m per annum.

In addition to the above, industry would incur extra costs associated with printing, administration and accounting functions as described above. Based on industry consultation we estimate these costs to be in the order of \$100,000 per annum for South Australian beverage fillers/distributors.

#### **5.5.8 Employment Impact**

Assuming a proportional increase in employment consistent with current collection depot employment levels, we estimate that extension of the legislation to capture the range of 'ready to drink' beverages identified above will increase direct and indirect employment as follows:

⇒ Direct Employment - Collection Depots - 205 Jobs (Full and Part Time);

⇒ Direct and Indirect Employment - 430 Jobs (Full and Part Time).

As we have stressed in relation to the existing CDL system, we believe it is incorrect to assume that the employment generated by an extension of CDL will represent a boost to the overall national economy. We again stress that this employment would be supported by the industry's cost structure which would provide for handling fees to be paid to collection depots. These costs would be either passed on to South Australian consumers and consumers in other State/Territories, and/or be absorbed by the beverage fillers/distributors. As such, this would reduce the amount of money consumers and producers would have available to spend on other products, investments, etc., with subsequent negative economic impacts possibly equivalent to the employment gains in the CDL system.

#### **5.5.9 Environmental and Economic Benefits**

As with the existing CDL system, a range of environmental and economic benefits will be associated with an extension of the legislation to cover additional beverages/containers. These would include:

⇒ Reduced litter;

⇒ Reduced waste to landfill;

⇒ Reduced demand for virgin materials.

Such benefits need to be considered when assessing the implications of extending the legislation.

Most importantly, any changes to the legislation should reflect the prime objective of the legislation - litter reduction. An initial review of the latest McGregor Marketing litter survey (*Litter Strategy Monitoring Wave 5*, prepared for KESAB, February 1999) suggests that extending the legislation to cover anomalies and exemptions would not have a significant impact on litter in South Australia. The survey reveals that only 6% of litter was accounted for by beverage containers, of which 2% represented CDL items and 4% non-CDL items. The majority of litter items were cigarette butts, etc. It would appear therefore that an extension of the legislation may only capture an additional 2% of the litter stream (ie: bringing non-CDL into line with current CDL) and therefore may not be justified on cost grounds. However, the survey results do not take into consideration the size of the litter items, and therefore their visual impact. For example, one flavoured milk container may have the same visual impact as 100 cigarette butts.

## **5.6 Summary of Economic Impacts and Benefit/Cost Assessment**

### The Current CDL System

This section of the report summarises the overall economic impacts of the current CDL system and estimated impacts should the legislation be extended to cover other beverages. The assessment incorporates the follow on, or multiplier impacts, of the initial economic impacts utilising Input - Output multipliers as described at the commencement of Section 5. Table 5.1 on the following page summarises the direct and follow on economic impacts of the current CDL system as assessed during this study:

<b>Table 5.1</b>		
<b>Summary of South Australian CDL Costs and Benefits</b>		
<b>Existing System</b>		
<b>Costs</b>	<b>Value Per Annum \$</b>	<b>Value Per Capita* \$</b>
Handling Fees - Cost to Australian Industry and Consumers	\$11,600,000	\$0.61
Handling Fees - Cost to South Australian Industry and Consumers	\$2,300,000	\$1.55
Additional Operating Costs - Printing, Admin, etc. (Advised by Industry)	\$1,000,000	\$0.67
Production Efficiency Loss Costs	Unquantified	Unquantified
Additional Stock Holding Costs	Unquantified	Unquantified
Plus Other Consumer Costs (Time, Energy, Fuel, etc.)	Unquantified	Unquantified
<b>Total (SA Only)</b>	<b>\$3,300,000</b>	<b>\$2.22</b>
<b>Benefits</b>		
Virgin Materials Savings	\$720,000	\$0.48
Export Income	\$150,000	\$0.10
Landfill Reduction	Unquantified	Unquantified
Litter Reduction	Unquantified	Unquantified
Reduced Glass Accidents	Unquantified	Unquantified
Improved Quality of Recyclables	Unquantified	Unquantified
Pollution Reduction	Unquantified	Unquantified
<b>Total</b>	<b>\$870,000</b>	<b>\$0.58</b>
<b>Net Benefit/(Cost) Excluding Unquantified Items</b>	<b>(\$2,430,000)</b>	<b>\$1.64</b>
<b>Value Added Multiplier</b>	0.7 (Conservative estimate based on a range of 0.7 - 1.1 for all manufacturing categories)	
<b>Total Value Added Impact</b>	<b>(\$1,701,000)</b>	<b>\$1.14</b>

<b>Employment Multiplier</b>	0.015 (Conservative estimate based on a range of 0.015 - 0.02 for all manufacturing categories)	
<b>Employment Impact (Job Loss)</b>	26 jobs	
<b>Plus Jobs Gained in the Collection Depot and Other Sectors (See Section 5.1)</b>	1700 jobs	
<b>Net Job Gain in South Australia (Full and Part Time)</b>	<b>1674 jobs</b>	

\* Aust Population - 18,871,810; SA Population - 1,487,294: Source: ABS Estimated Resident Population 1998

The Terms of Reference for the project call for an assessment of the impacts of CDL on the State. However, it is important to re-state that the results of the study indicate that many of the economic and environmental impacts are distributed nation wide.

The initial employment impact on collection depots of 1700 jobs should therefore be considered in the context of the national economy as described earlier in Section 5.1. As described in Section 5.1, the impact of CDL effectively shifts consumer spending from other national industries to the beverage industry, where it is used to support the operations of the collection depots in South Australia. The loss of 26 jobs in South Australia as a result of handling fees and other impacts is therefore offset by the gain of jobs in the collection depot sector, the net impact being a gain of 1674 jobs in the State (effectively transferred from other States).

Notwithstanding this important finding, the results of this study detailed in Table 6.1 above indicate a net direct and follow on cost of CDL to the State of \$1,701,000 per annum or \$1.14 per capita per annum. This total net cost is offset by unquantified benefits including:

- Landfill Reduction
- Litter Reduction
- Reduced Glass Accidents
- Increased Quantity of Better Quality Recyclables
- Pollution Reduction

Given the community's very high acceptance level of the legislation and deposit system, we conclude that the net cost is how much the South Australian community is prepared to pay for the unquantified benefits associated with reduced litter and improved environmental outcomes - unquantified benefits identified during this study.

Extension of the Legislation to Other Beverages/Containers - Removal of Anomalies and Exemptions

Table 5.2 on the following page summarises the direct and follow on economic impacts of extending the current CDL system to cover other beverages except for white milk and wine:

<b>Table 5.2</b>		
<b>Summary of South Australian CDL Costs and Benefits</b>		
<b>Extension to Other Beverage Products</b>		
<b>Costs</b>	<b>Value Per Annum \$</b>	<b>Value Per Capita* \$</b>
Handling Fees - Cost to Australian Industry and Consumers	\$3,100,000	\$0.16
Handling Fees - Cost to South Australian Industry and Consumers	\$600,000	\$0.40
Additional Operating Costs - Printing, Admin, etc. (Advised by Industry)	\$100,000	\$0.07
Production Efficiency Loss Costs	Unquantified	Unquantified
Additional Stock Holding Costs	Unquantified	Unquantified
Plus Other Consumer Costs (Time, Energy, Fuel, etc.)	Unquantified	Unquantified
<b>Total (SA Only)</b>	<b>\$700,000</b>	<b>\$0.47</b>
<b>Benefits</b>		
Virgin Materials Savings	Minimal	-
Export Income	Nil	-
Landfill Reduction	Unquantified	Unquantified
Litter Reduction	Unquantified	Unquantified
Reduced Glass Accidents	Unquantified	Unquantified
Improved Quality of Recyclables	Unquantified	Unquantified
Pollution Reduction	Unquantified	Unquantified
<b>Total</b>	-	-
<b>Net Benefit/(Cost) Excluding Unquantified Items</b>	<b>(\$700,000)</b>	<b>\$0.47</b>
<b>Value Added Multiplier</b>	0.7 (Conservative estimate based on a range of 0.7 - 1.1 for all manufacturing categories)	
<b>Total Value Added Impact</b>	<b>(\$490,000)</b>	<b>\$0.33</b>
<b>Employment Multiplier</b>	0.015 (Conservative estimate based on a range of 0.015 - 0.02 for all manufacturing categories)	
<b>Employment Impact (Job Loss)</b>	7 jobs	



<b>Plus Jobs Gained in the Collection Depot and Other Sectors (See Section 5.5.8)</b>	430 jobs	
<b>Net Job Gain in South Australia (Full and Part Time)</b>	<b>423 jobs</b>	

**\* Aust Population - 18,871,810; SA Population - 1,487,294: Source: ABS Estimated Resident Population 1998**

The results of this study detailed in Table 5.2 above indicate a net direct and follow on cost to the State of extending CDL of \$490,000 per annum or \$0.33 per capita per annum. Again, this total net cost would be offset by unquantified benefits including:

- Landfill Reduction
- Litter Reduction
- Reduced Glass Accidents
- Increased Quantity of Better Quality Recyclables
- Pollution Reduction

## **6.0 MAJOR FINDINGS AND CONCLUSIONS**

The following major conclusions are drawn from the findings of this study:

### **CDL and Litter Reduction**

The deposit mechanism of Container Deposit Legislation has had, and continues to have, a positive impact on consumer and community behaviour in relation to the collection and return of deposit containers and thereby contributing significantly to the Government's overall litter reduction objectives.

*We believe that CDL's unique application in South Australia offers this State a 'point of difference' in its ability to market a more litter free environment associated with positive environmental outcomes. The system itself also has export potential should other States or nations seek similar benefits.*

### **The Costs and Benefits of CDL to Industry, the Consumer and Government**

While the Terms of Reference for the project call for an assessment of the impacts of CDL on the State, the results of the project indicate that many of the economic and environmental impacts are distributed nation wide.

Notwithstanding this important finding, the results of this study indicate a net costs of CDL to the State of \$1,701,000 per annum or \$1.14 per capita per annum which is offset by unquantified benefits including:

- ⇒ Landfill Reduction
- ⇒ Litter Reduction
- ⇒ Reduced Glass Accidents
- ⇒ Increased Quantity of Better Quality Recyclables
- ⇒ Pollution Reduction

Overall, it is estimated that CDL has a positive direct and follow on (multiplier) employment impact on the State of 1674 full and part time jobs (taking into the consideration the negative impacts of handling fees and other costs).

Given the community's very high acceptance level of the legislation and deposit system, we conclude that the net cost is how much the South Australian community is prepared to pay for the unquantified benefits associated with reduced litter and improved environmental outcomes - unquantified benefits identified during this study.

## **The Structure of Collection Depots**

CDL supports a fragmented (ie: many small businesses) recycle depot structure throughout the State, estimated to support the direct employment of over 800 people in 114 businesses. These businesses are wholly exposed to CDL and any changes to the legislation will have immediate impacts on their businesses. It is also important to note that many of these businesses are located in regional centres where there are limited employment opportunities. In the context of the State Government's regional development priorities, these employment opportunities are most important.

The results of this study reveal some concern in the industry that the high number of collection depots is having a negative impact on overall efficiency and profitability. Certainly it is the nature of highly fragmented industries not to display 'super normal' profits. With such low barriers to entry and exit, any tendency for profits to rise would normally be met by new entrants seeking a share of the benefits. Companies leaving the industry are therefore quickly replaced as new entrants take up opportunities. Without government intervention, we would expect this situation to prevail, to the benefit of the consumer, and find no justification to recommend that the State Government intervene to alter the existing structure.

## **CDL and Kerbside Recycling**

We find it difficult to accept the argument that CDL adds a significant net cost to the kerbside recovery system of Local Government. Notwithstanding pilferage from the kerbside, the ability of Local Government and contractors to redeem deposit containers remaining in the kerbside waste should significantly offset any increase in the unit cost of collection caused by the diversion of deposit containers to collection depots. This is evidenced by the high annual revenue streams identified by two councils responding to the study survey.

While the literature and Local Government evidence suggests that CDL containers cost more per unit to collect than kerbside collections (mainly due to sorting costs), an important consideration for policy makers is that the CDL system 'internalises' the costs of collection through the costing/pricing mechanism whereby the consumers and/or the producer ultimately meet the costs of handling the containers. On the other hand, kerbside collection depends on Local Government funding with the consumer only indirectly impacted via annual rates.

## **Deposit Value**

Given the current high return rates achieved on deposit containers, and a continuing trend in recent years of rising container return rates, we find no environmental or economic justification at this time to increase the current deposit of 5 cents.

## **Extension of the Legislation - Elimination of Omissions and Exemptions**

Litter surveys illustrate the positive impact of CDL in South Australia with only 6% of litter comprising beverage containers (McGregor). Deposit containers comprise 2% and non-deposit containers 4%. Notwithstanding the issues of equity and contribution to litter discussed in this report, we are concerned that the costs associated with extension of the legislation to cover all or a portion of other beverage containers (or products) do not appear to be justified by potential litter reduction outcomes in percentage terms. However, we note that the McGregor Marketing survey results do not take into consideration the size of the litter items, and therefore their visual impacts which could be significant comparing beverage containers with, for example, cigarette butts.

Subject to confirmation that extending the legislation will have a significant impact on the visual aspects of litter, as a principle we are in favour of changes to the legislation that attempt to capture a broader range of beverage containers that contribute to the litter stream by eliminating omissions and exemptions related to 'ready to drink' beverages consumed outside the domestic environment. These are generally containers with a capacity of less than 1 litre.

We are also of the opinion that the legislation should not discriminate between competing products that are marketed in the same containers.

## **The Costs to Industry, the Consumer and Government Associated With Extension of the Legislation**

The results of this study indicate a net direct and follow on cost to the State of extending CDL of \$490,000 per annum or \$0.33 per capita per annum. This total net cost would be offset by unquantified benefits including:

- ⇒ Landfill Reduction
- ⇒ Litter Reduction
- ⇒ Reduced Glass Accidents
- ⇒ Increased Quantity of Better Quality Recyclables
- ⇒ Pollution Reduction

Overall, it is estimated that extending CDL could have a positive direct and follow on (multiplier) employment impact on the State of 423 full and part time jobs (taking into the consideration the negative impacts of handling fees and other costs).

## **Streamlining the System and Reducing Costs**

Consultation with industry highlighted that the streamlining of sorting, recording and accounting procedures has the potential to substantially reduce the cost of the CDL system to beverage fillers/distributors and consumers.

The current system appears inefficient because of the need to sort and account for containers based on the originating beverage filler/distributor. When combined with the need to also sort by glass colour and deposit and non-deposit containers, the system becomes quite inefficient, lacking in the benefits of bulk processing. The existence of more than one supercollector (based on brands) also contributes to system inefficiencies.

We have reviewed all available literature and considered many options to improve the CDL system in a manner that will reduce overall costs and provide satisfactory operating arrangements for industry participants. We concur with the view expressed by industry that that the system requires streamlining with particular attention to minimising handling and associated costs. However, we believe that it would be premature to recommend particular changes without a more detailed assessment of options and consultation with industry participants prior to implementation of a preferred option. In principle, we believe that the State Government should give consideration to changes that:

- ⇒ Centralise and simplify the system.
- ⇒ Reduce the number of industry sectors involved in the system.
- ⇒ Minimise conflict between industry sectors, particularly in relation to handling fees.

## **APPENDIX 1**

### **List of Documents Reviewed**

*Draft National Environment Protection Measure and Impact Statement - Used Packaging Materials - South Australian Jurisdictional Reference Network*, compiled comments from various South Australian Government agencies

*Used Packaging Materials*, National Environment Protection Measure, 2 July 1998

*The National Packaging Covenant*, Australian and New Zealand Environment and Conservation Council (ANZECC), Draft - 24/3/99

*Regulation Impact Statement for the Draft National packaging Covenant*, for consideration by the Australian and New Zealand Environment and Conservation Council

*Life Cycle Assessment, Australian Data Inventory Project, Summary Report*, Centre for Design at RMIT and CRC for Waste Management and Pollution Control, Release 1.1 April 1999

*Consumer Deposit Legislation and its Potential Impact on Kerbside Recycling in Adelaide: A Tentative Appraisal*, prepared for the Economic Development Authority, South Australian Government, prepared by SA Centre for Economic Studies, July 1994

*The Economics of Packaging and the Environment*, SA Centre for Economic Studies, April 1993

*Container Deposit Legislation & Kerbside Recycling*, prepared for Environment Protection Authority and the Local Government Recycling and Waste Management Board, April 1995

*Why South Australians Favour Container Deposit Legislation*, Recyclers of South Australia (Inc)

*Beverage Container Act: Soft Sector Review, A Review of the Provisions of the Beverage Container Act and Regulations as Applied to Non-Alcoholic Beverages*, Leanne Burch and Robert Naismith, September 1993

*1998 Metropolitan Waste Analysis*, Recycle 2000, November 1998

*The Impact of Container Deposit Legislation on Kerbside Recycling*, Matthew John Warren, submitted in part fulfilment of the Honours Degree of Bachelor of Economics, University of Adelaide, 1994

*Drink Container Deposit Survey*, prepared for Environment Protection Authority, prepared by Tan Research Pty Ltd, November 1993

*Materials Recycled 1997, Recycling Pays*, Recyclers of SA (Inc), March 1998

*Litter Strategy Monitoring Wave 5*, prepared for KESAB, prepared by McGregor Marketing, February 1999

*Litter! It's Your Choice*, Public Discussion Paper, Environment Protection Authority, March 1996

*Integrated Waste Strategy for Metropolitan Adelaide 1996 - 2015*, Environment Protection Authority, June 1996

*Attitudes and Opinions on Iowa's beverage Container Recycling Law*, prepared for Waste Management Assistance Division, Iowa Department of Natural Resources, prepared by Robert E. Kramer and Gene M. Lutz, June 1998

*Preliminary Analysis: The Costs and Benefits of Bottle Bills*, a draft report to US Environmental protection Agency, prepared by F. Ackerman, D. Cavander, J. Stutz and B. Zuckerman, January 1995

*Beverage Container Deposit Systems in the United States 11*, Container Recycling Institute, December 1996

*Bottle Bills and Curbside Recycling: Are They Compatible?*, Congressional Research Service, Report for Congress, prepared by James E. McCarthy

*An Analysis of the Costs and Benefits of Expanding the Scope of the Bottle Bill in Massachusetts*, prepared for Massachusetts Department of Environmental Protection, prepared by Tellus Institute, June 1997

*Trade-offs Involved in Beverage Container Deposit Legislation*, Report to Congressional Requesters, US General Accounting Office, November 1990