

Container Deposits:

The Common Sense Approach

“Financial Analysis of Costs & Benefits of a National Container Deposit System”

V2.1: May, 2008

“If industry hasn't dramatically improved (recycling rates) and got its act together, then it deserves to be regulated.”

Maree McCaskill: CEO, Beverage Industry Environment Council 7:30Report 21 Jan 2005



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The Boomerang Alliance:

- Australian Conservation Foundation • Arid Lands Environment Centre • CleanUp Australia •
 - Conservation Council of South Australia • Conservation Council of Western Australia •
- Environment Centre of the Northern Territory • Environment Tasmania • Environment Victoria •
- Friends of the Earth • Greenpeace Australia Pacific • Local Government & Shires Association of NSW •
 - NSW Nature Conservation Council • Queensland Conservation Council •
 - Tasmanian Conservation Trust • Total Environment Centre •

IN SUPPORT OF CONTAINER DEPOSITS

*Container deposits are a sensible and timely idea. They work well in other places so why not here? I am convinced they are a practical way of reducing the huge amounts of packaging which are a blight on our natural and built environments. **Peter Garrett, Federal Environment Minister - As ACF President 1998***

*CONTAINER DEPOSITS ARE EFFECTIVE - Tonnage rates achieved in South Australia for beer bottles, soft drink glass and plastic soft drink containers are far in excess of those achieved in other States of Australia. South Australia recovers 85% of non refillable glass soft drink bottles, compared with 36% nationally. The return rate for Plastic Soft Drink containers, (PET), is 74% whilst the national return rate is 36%. Liquid Paperboard, a recent inclusion, has a return rate of 40% increasing. **Recyclers of South Australia Inc.***

*"We think the recycling Scheme (CDL) works very well in South Australia and we've been supporters of it for many years, I think there's merit to the scheme operating outside of South Australia, just in terms of environmental impact. **I believe that kerbside recycling systems are compatible with CDL, as the value of the deposits is used to offset the cost of kerbside operations**" **Tim Cooper, Managing Director Coopers Brewery Ltd***

*"Maintaining the status quo is not an option if the government of Western Australia wants to reduce the number of beverage containers in waste and litter. Research conducted for this submission suggests that, of the range of interventions available, CDL consistently presents as the preferred option both in terms of recovery rates and cost of operation". **Clayton Ford, Manager, External Affairs, Diageo Australia***

*"Deposit systems are both well suited and needed to operate alongside existing kerbside systems. Deposits complement and subsidise the kerbside system by a) addressing its key weakness – away-from-home recycling, and b) reducing its net costs. A further benefit is the reduction in glass contamination of the paper recycling stream as glass containers are reduced in the commingled collection." **Markus Fraval CEO Revive Recycling Aust.***

*"The simple fact is, that until it becomes economic to do so, there is no incentive for many organizations to recycle, to reduce landfill or to change their operational practices to reduce or reuse their waste products. This means that in the short term, organisations that are behaving responsibly are at a competitive disadvantage compared to those who are not bearing the appropriate costs associated with addressing the environmental impacts of their business activities." **Mike Ritchie National Marketing Manager SITA Australia***

*"I am embarrassed and appalled to see my bottled water products discarded on the side of the road. I feel a personal sense of responsibility about it. I hardly ever see discarded soda products as litter. The so-called 'Bigger Better Bottle Bill' needs to be passed in New York." **Andrew Swanander, CEO Mountaintown Spring Water***

*"Beverage container recycling rates are appallingly low in most states. 40% of the rubbish we collect on Clean Up Australia Day is bottles and cans, but in South Australia, where they have container deposits they are just 8.4% of the rubbish we collect" **Ian Kiernan AO Founder of Clean Up Australia and past Australian of the year***

*"If we are committed to sustainability, matters which have dropped off the radar because they don't get universal support) will need to be put back on the agenda. Keep Australia Beautiful (Qld) is starting with a simple one today: Container Deposit Legislation." **Tor Hundloe Chairman Keep Australia Beautiful (Qld)***

*"Containers consumed away from home at places like parks and football games are the containers not getting back into the system. In Perth, we have a poor recycling industry. This new system will really help waste reduction as well as creating more jobs and giving people an opportunity to make a difference and reduce waste. It will also reduce the cost of kerbside recycling." **Dr Sue Graham Taylor, Conservation Council of WA***

*"Container deposit legislation is a no-brainer. There is evidence all around the world that the energy that is needed to produce a new aluminium can or beverage container is 10 times the energy that is consumed if the aluminium container is recycled. South Australia already has container deposit legislation in a particular form. I am delighted that the minister has asked me to chair a working party comprised of representatives from industry and environmental groups and others, such as those who, like me, have a background in local government. Local government has seen the huge benefits of container deposit legislation." **John Hyde MLA Perth***

*"CDL is a proven system for ensuring high return rates of recyclable containers in good condition. Containers made from materials such as plastics, glass, steel, Aluminium and liquid paperboard are expensive to collect through kerbside systems, due to their weight and/or bulk, and the need to avoid cross contamination. They are also the products where historically, financial returns have been less reliable and less likely to cover the cost of collection. Kerbside has proven to be an ineffective tool for containers, and only achieves return rates in the order of 20-40%." **Genia McCaffery President NSW Local Government & Shires Association***

*"If the goal is to capture the maximum amount of materials possible, then kerbside recycling, deposits and dropoff centres should all be part of a well-thought out pollution prevention and waste reduction plan." **Lanier Hickman, Former Director Solid Waste Management Assoc. of North America***

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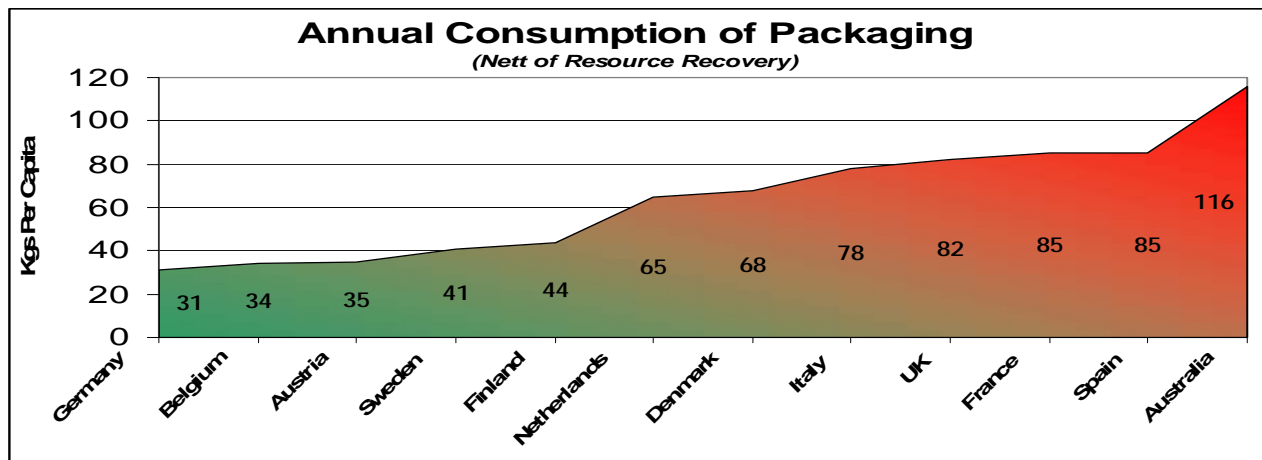
1. Executive Summary

This report demonstrates a guaranteed and financially viable approach to lift the recovery and recycling of beverage container waste to at least 80%, compared to the current 41%, through the implementation of a National Container Deposit System (CDS). Such a system has very significant collateral financial and environmental benefits, including improvement of the viability of kerbside and establishing a mosaic of collection hubs that could form the basis for receipt of other high priority wastes for recycling.

There is no evidence that the alternative system proposed by industry and the current National Packaging Covenant (NPC), such as improved public space recycling supported by local government or ad hoc industry levies on materials, would lead to the same results. Rather the system will become more complex for recyclers, consumers and administrators; and much more expensive due to the cost of public space recycling facilities influenced by the number of extra bins and (council) operational costs. It would be unsustainable and could not effectively tackle the burgeoning 'away from home' consumption issue that is supposed to be a high priority for the NPC.

Recycling of post-consumer packaging now stands at a paltry 43%, far behind the national 2010 target of 65%. Containers represent almost 30% of the packaging tonnes consumed in Australia and are the worst performing area, including glass where recovery is declining. They are a significant part of Australia's serious packaging waste problem, where we perform poorly compared to other countries.

Australian's are amongst the greatest consumers of packaging in the world, each consuming 203 kgs of packaging annually; nett of resource recovery this represents a staggering 116kgs of packaging waste per capita landfilled annually, including over 740,000 tonnes or 8.4billion containers.



Big Benefits come in Small Packages:

Modelling by Boomerang Alliance of a National 10¢ Container Deposit System indicates that such a system will more than double recycling rates from their current levels current and also indicates that the improved recovery rates of bottles and cans will produce substantial environmental benefits, including:

- An increase in container recovery rates from a current 41% to nearly 82%
- A 6% reduction in municipal waste to landfill – 631,008 tonnes per annum
- A 12-15%⁷ reduction in the volume of litter

⁷ Based on halving the current 29.38% of total litter volumes (11.95% of all litter items) –Data from KAB 2006 National litter Index

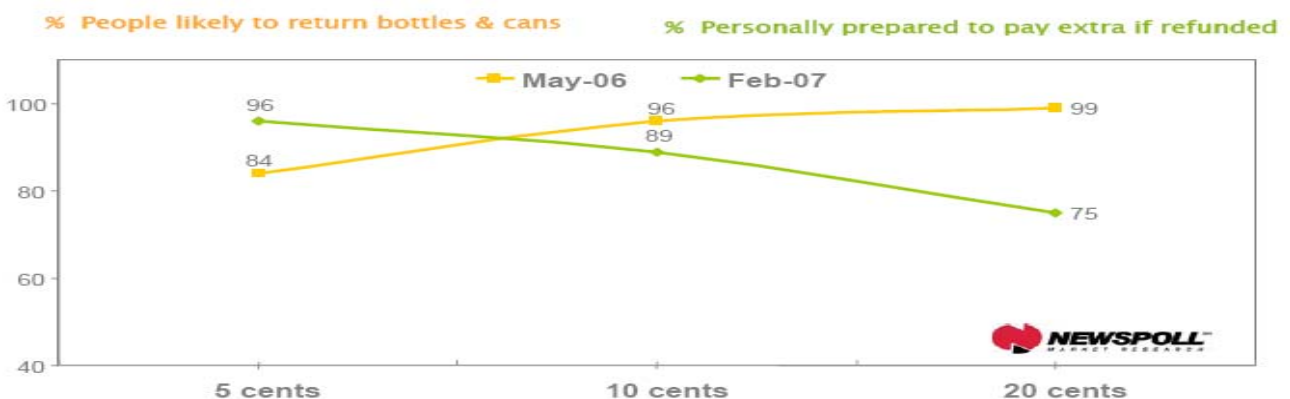
- 1.38million tonnes of Co2-e p.a. in Greenhouse Gas Reductions (equivalent of switching 182,000+ homes to 100% renewable energy)
- A saving of 5.6 gigalitres of drinking water p.a. (enough to supply 16,784 homes)
- Improved Air Quality by 610million gC2H4-e (like taking 141,000 cars off the road)
- Provision of over 250,000 Australian homes with recycling services for the first time
- The creation of at least 1,000 new jobs

Popularity & The Community's Willingness to Pay:

There are very few environmental initiatives that enjoy such strong popular support. The following is summary of National Newspann research conducted for Boomerang Alliance:

- 84% of all Australians believe that packaging waste and litter is a problem
- 91% of people believe that Governments need to intervene to reduce the amount of packaging waste and litter Australian create
- 75% of people believe there is too much packaging
- 77% of people believe that packaging producers should pay for the costs of dealing with packaging waste and litter. 56% believe retailers should pay.
- Only 34% supported the current approach where rate payers should meet the cost of dealing with packaging waste and litter.

Further research by NewsPoll, when WA announced it was considering a container deposit system showed over 94% of people supported the initiative; this is consistent with polling on the popularity of CDL in SA. NewsPoll also conducted an analysis of people's willingness to pay for a container deposit system, with 89% of Western Australians willing to pay a 10¢ deposit on their beverages if they could receive a refund for returning their containers:



Why don't Polluters pay for their waste?

The community and government has increasingly signalled that they regard industry as mainly responsible for packaging waste. Yet beverage packaging waste, costs Australian tax and ratepayers a staggering \$257million+ p.a; and the beverage industry contributes just a very small part – through its contribution to the \$3million p.a. provided by the entire packaging industry to the National Packaging Covenant. The following table shows the full cost of the collection and disposal system for packaging waste.

Table 1:
Annual Cost of Packaging
The Status Quo:

	Kerbside Recycling (@ \$248.47 / tonne)*	Landfill Cost (Containers @ \$51.08 / tonne	Litter Cost (National litter cost X 29.38%)	Gov't & Ind NPCC Funding	Total Cost
The current cost to manage beverage containers	\$154,613,873	\$37,960,132	\$58,760,000	\$6,000,000	\$257,334,005

* nett of the sale of recycleate

Cost Effective:

Despite the misleading and inflammatory efforts of some in the beverage industry (in particular Coca Cola, Fosters and Lion Nathan), container deposits are a very cost effective way to recover our precious natural resources, as the major costs (the deposit) are actually refunded. The total impact on our economy is actually a saving of some \$3million p.a. and increases to \$84.9million p.a. if government returns operating surpluses to tax payers via rates or income tax. This represents an annual saving of some \$11.52 per Australian Household.

The summary of our assessment is as follows:

Table 2: Summary Financial Costs and Savings of a Combined CDS and Kerbside System	
Costs	\$ Per Annum
Existing Cost to Collect & Recycle Packaging via MSW [Kerbside & Other] (nett of recycle sales)	-\$154,613,873
NGO System Administrator	-\$4,000,000
Handling Fees for collection and Hubs [supercollectors] (nett of recycle sales)	-\$140,575,916
Existing Costs of landfilling container currently	-\$37,960,132
Existing Cost of containers 'share' of litter abatement (28.38% of litter volume)	-\$58,760,000
Less Savings & Benefits:	\$ Per Annum
Increased paper recycle sales through reduced contamination	\$14,265,248
Savings to operation of kerbside and MSW recycle	\$18,928,717
Savings to MSW be reduced volumes of landfill	\$26,631,962
Savings from reduced volumes of Litter (reduction @ 12% of total litter)	\$24,000,000
Additional Greenhouse Abatement @ \$35 / tonne	\$48,360,715
Additional Water Savings	\$9,403,495
Total Cost	-\$254,319,785
Less Existing Costs (Status Quo)	-\$257,334,005
Annual Savings if a National CD System is introduced:	\$3,014,221
Annual Savings if Government Refunds System Surpluses via Taxes or Rates	\$84,944,167

This report also shows that Container Deposits are far cheaper and effective than an uncertain public space recycling scheme based on a variety of bins and an increased allocation of time and resources from local councils.

After exhaustive research of the different approaches and instruments used to manage packaging waste across the world it is clear that Container Deposits are the only sustainable mechanism we have found that can lift our container recycling performance and establish a recycling system that can lift packaging recovery to the NPC 2010 target of 65%.

It is clear that adopting a National 10¢ Container Deposit System is simple common sense. It is an effective mechanism for resource recovery; responsible citizens can avoid all costs by recycling their containers, and there is a big environmental benefit.



2. Introduction

This analysis has been prepared to rebut the exaggerated claims of the beverage industry, regarding the costs of a National CDS. While this does not represent the exhaustive cost / benefit analysis that should be prepared for any substantial regulatory reform, it does provide a reasonable snapshot of the financial flows and environmental impacts that could reasonably be expected from the introduction of a National CDS. It also addresses the parameters that a net benefit to the community test should assess (note below and our detailed comments on the 'convenience' cost in section 5).

National packaging data and recycling rates are based on the latest reports compiled by industry experts for the National Packaging Covenant Council. Where this data was not available or provided, alternative data sources were sought to create a more accurate picture. Costs of landfill are conservative, and do not include collection costs. Costs relating to kerbside and MSW recycling are sourced from compliance reporting for the existing Used Packaging NEPM that underpins the Covenant. Litter costs are based on assessments used within the current Regulatory Impact Statement to consider regulatory intervention on plastic bags.

Suggested costs and charges for the Container Deposit System are based on a written quotation from existing recycling companies, in an attempt to work with real costs rather than the loose guesstimates that have been the characteristic of some early attempts to identify the costs and benefits of container deposit systems within an Australian context. The details of this bid has not been detailed herein for commercially in confidence purposes - the writer is happy to introduce them to government representatives for the purpose of further analysis.

Container Deposits cause little inconvenience with the average household simply dropping off their containers at a reverse vending machine or collection depot in their local supermarket car park. While some economists regard the time to return containers as direct impact on the economy, we reject this view. Rather we see it as a measure to compare the level of inconvenience for a consumer against an analysis of their willingness to pay. To this end we have not included inconvenience in our financial analysis but have considered whether lost time is reasonable when compared to both popular support and measurements of willingness to pay.

Methodology and approaches have been influenced by the leading U.S. report into costs and performance of various container collection regimes: 'Understanding Beverage Recycling' by the Business & Environmentalists Allied for Recycling (BEAR) 2002; and Institute for Sustainable Futures "Independent Review of Container Deposit Legislation in NSW, 2001".

The recovery rates, costs and benefits of any National CDS will vary depending how the system is designed and the various sectors that participate. To this end Boomerang Alliance has sought to analyse a system that will:

- Achieve effective recycling rates of at least 75% for each materials covered;
- Develop a collection network that can be expanded to collect other products as further Extended Producer Responsibility Schemes and voluntary Product Stewardship Programs are adopted, producing cost efficiencies and driving down logistics costs;
- Maximise consumer convenience and minimise operational costs and impacts on consumer spending;
- Operate from the widest possible recovery 'universe' to minimise any potential elasticity in pricing or market distortion;
- Provide opportunities for community service organisations to participate in the system in turn earning incomes for their good works.

To save confusion in comparing a number of different models a single system has been designed. Its characteristics are:

1. A 10¢ deposit on all glass, PET, HDPE, aluminium, steel containers. (LPB, PVC, and composite plastic containers would also be included within a scheme, but not modelled due to difficulty obtaining credible consumption and recycling data).
2. No requirement for retailers to collect containers.

3. No requirement for government investment in infrastructure or operational funding.
4. Collection Centres will be paid a handling fee of 3.7¢/container collected including transport to a local hub. Collectors sacrifice the value of recyclate sales to the system – meaning handling fees nett of recyclate sales are around 1.2¢/container). This is based on commercial bids made to Boomerang Alliance.
5. Allocation of \$8.2million in additional payments to an estimated 700 remote collection points and 120 remote collection hubs to ensure rural and remote Australians get equitable access to recycling facilities.
6. A system administered by a government (or government / industry) non-profit company – with \$4million p.a. allocated for 30+ staff to administer finances. This company operates a fund that: controls the deposit and refund of all redemptions; sells recyclate and retains income from same. The system uses material sales income & unredeemed deposits to pay all handling fees (collection centres) and processing fees (Hubs).
7. Rather than a Super Collectors like that in SA, we advocate for a decentralised “Hub & Spoke” System. In each region across Australia, Hubs will act as both a collection point and the interface for auditing, baling and sale of material. Hubs will be licensed to local government; existing material recycling facilities (MRFs); and community service organisations, being paid a processing fee of 0.5¢/container they receive.
8. Kerbside recyclers and local government will be able to redeem remnant containers they collect (and covered by the proposed system). This will allow both improved operational efficiencies and increased incomes. Bulk redemption from kerbside recyclers and C&I will redeem containers via the Hubs to minimise fraudulent activities.
9. The entire system is paid for by unredeemed deposits and material sales (which are retained by the System Administrator) and produce surpluses for other recycling etc.
10. There are no admin fees or charges to beverage companies and fillers. The system is completely funded by unredeemed deposits and the sale of recyclate. NB if overall recycling rates are significantly higher than the 81.68% projected herein there may need to be a small charge (0.1-0.2¢ per container) to fund handling fees to collectors.
11. \$25 million p.a. has been added to the costs of the CDS for Recycling Education / Promotions (\$10million p.a.) and for industry incentives to establish new reprocessing facilities and markets, ensuring maximum economic and environmental benefits.

A flow chart of the CD System, modelled would look as follows (detailed in Appendix 2):

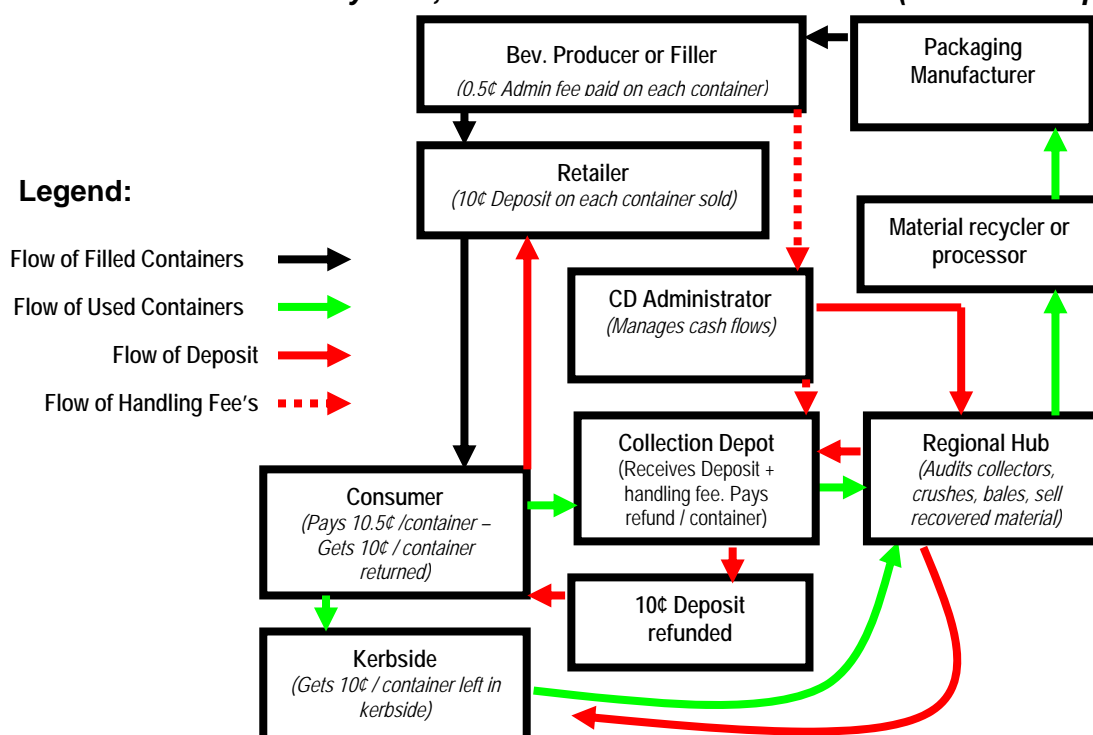


Figure 1: Flowchart of Modelled National CDS System

3. Consumption & Recycling Rates of Containers

Based on the most recent data from the National Packaging Covenant Council the recycling rates for packaging In Australia are as follows:

Table 3: Packaging in Australia (Tonnes P.A.):	Consumption ²		Recycling ³		
	Total	Kerbside	C&I	Total	Rate %
Packaging & Industrial Paper:	2,690,000	333,300	932,700	1,266,000	47.06%
Glass Packaging	893,031	150,000	190,000	340,000	38.07%
Steel Cans	92,399	34,760	0	34,760	37.62%
Aluminium Bev Containers	50,210	18,000	11,000	35,800	71.30%
PET	106,628	41,646	7,984	49,630	46.54%
HDPE	161,200	44,558	7,338	51,896	32.19%
All Plastics (including the above)	585,296	Unknown	Unknown	179,125	30.60%
TOTAL PACKAGING	4,310,936			1,855,685	43.05%

Using the above data the writer has prepared a breakdown of consumption and recycling of all containers. This looks as follows:

Table 4: Containers in Australia (Tonnes P.A.)	Consumption			Recycling	
	Tonnes that are containers	Av. # of Container / Tonne ⁴	Est. Total Containers Consumed	Best Case – Current Recovery	Rate %
Glass Packaging	893,031	4,784	4,272,260,304	340,000	38.07%
Steel Cans	92,399	13,875	1,282,036,125	34,760	37.62%
Aluminium Bev Containers	50,210	66,821	3,355,082,410	35,800	71.30%
PET	106,628	29,205	3,114,070,740	49,630 ⁵	46.54%
HDPE	112,840 ⁶	20,008	2,257,698,798	51,896	45.99%
TOTAL Containers	1,255,108	N/A	14,281,148,377	512,086	40.80%

Container Consumption Patterns:

To develop an accurate picture of containers (and in turn design a CD system) it is important to understand the patterns of container consumption, particularly the magnitude of containers consumed away from home.

Patterns of 'at home' and 'away from home' consumption are based on data modelled by the Institute for Sustainable Futures "White Report". The writer has adjusted aluminium consumption patterns to an at home consumption rate of 44% (10% above the level currently recovered through kerbside collection) to reflect a more realistic figure for today's market. It is not that these figures are assumed to be incorrect rather it is assumed that significant portions of away from home consumption are likely based on bottle shops sales of cans of beer, soft drink, and Ready to Drink (RTDs) which are often consumed 'at other people's homes' during

² Source Data – NPCC Revised Data Report by MS2, with recommended adjustments by reviewers Pitcher Partners / Industry Edge included. Plastics Data sourced from 2006 PACIA Plastic recycling Survey to reflect 2 polymers PET & HDPE only as these are the polymers most commonly used for containers.

³ Source Data – As Above. NB Splits between kerbside recycling and C&I are estimates only as this breakdown was not undertaken in latest Data report by MS2. breakdowns between Kerbside and C&I has been sourced from earlier Data Reports for the NPCC by Ms2 and/or reporting for MSW collection of packaging made in the 2005/06 NEPC Annual Report

⁴ Source: ISF "Independent review of Container Deposit Legislation in NSW"

⁵ Source: PACIA 2006 plastics recycling Survey. NB The writer is not confident that this represents an accurate figure as PACIA include pre-consumer Industrial recycling, which is commonly excluded from recycling figures as the material has not yet been turned into an actual product. This creates a distorted picture and may mean considerably more PET & HDPE bottles available for redemption.

⁶ Discussions with Industry indicate that approx. 70% of HDPE packaging is represented by containers, with milk container the largest sector.

social activities. This adjustment reflects high levels of aluminium in MSW recycling (NB in a more detailed analysis revision of 'at home' and 'away from home' consumption of PET Bottles may need to be considered, with the popularity of 600ml+ bottled water becoming a major component of 'away from home' consumption):

Table 5:
Estimated Consumption Patterns

	Container Consumption	
	Away from Home	At Home
Aluminum (per White Report)	75%	25%
Adjusted to -	56%	44%
Glass	55%	45%
PET	30%	70%
HDPE	45%	55%
LPB	20%	80%
Other Plastic	10%	90%
Steel	10%	90%

The Status Quo:

Before any modelling of a proposed system it is important to characterise the current situation to establish baseline performance and associated costs. The most optimistic view of the current rate of packaging recycling stands at just 43.05% per annum (which we contend remains overstated), well short of the minimum 65% target recycling rate set by Ministers when the NPC was renewed in 2005. Container recycling rates are even worse, with a best case of just 40.8%. It is now an established fact that after 8 years the NPC has delivered little, if any, improvement in recycling rates or reductions in litter. This performance falls well short of recognised community expectations and creates a compelling case for intervention.

The NPC advocates 2 major forms of action to increase packaging recovery rates:

1. Improving the existing kerbside recycling system (which the NPC make little contribution towards); &
2. Public Place Recycling (where industry won't support operating costs only partial funding of establishment costs).

Analysis by various jurisdictions and performance of the current NPC has already shown that these policy options will not meet the public's expected recycling rates for packaging. NEPM reporting for used packaging show that the current costs of kerbside recycling⁷ equate to \$374million+ p.a., an average \$248.47 / tonne of material collected (nett of the sale of recycle).

Our projections show that a National CDS will increase resource recovery by some 631,008 tonnes. Assuming that the cost per tonne to recover via kerbside recycling remains reasonably constant (and in all likelihood the costs to institute a comprehensive public place recycling system will be significantly higher) the cost of increasing recycling via the status quo represents a cost to Australian families in the order of \$222 million p.a. We have established this as a benchmark cost to assess whether the costs of a National CDS are reasonable.

A breakdown of the costs and recovery rates across Australia is outlined in Table 4, below. Inaction also represents a significant cost to both the economy and environment. An estimated 743,022 tonnes of used container packaging is currently sent to landfill⁸. At an average cost of \$51.08 per tonne the public pays a hefty \$37.96million p.a. simply to dispose of containers.

⁷ Source: ISF "Independent Review of Container Deposit Legislation in NSW"

⁸ Source: Extrapolation of data from NEPC Annual Report 2005/06 – Reporting for the Used Packaging NEPM

⁹ Landfill and Waste levies only. No collection costs have been included. if collection costs were included these costs would be substantially higher.

Recovery of litter also represents a significant cost with government spending approx \$200million p.a.¹⁰ - discarded containers represent over 29.38%¹¹ of all litter volumes. Based on these proportions the cost to attempt (unsuccessfully in many instances) to recover littered container rubbish represents a further \$58+million p.a. in existing costs to the tax payer. A pie chart of the 10 most littered items found on CleanUp Australia Day 2006 can be found to the right. 6 of the Top 10 directly relate to the beverage containers.

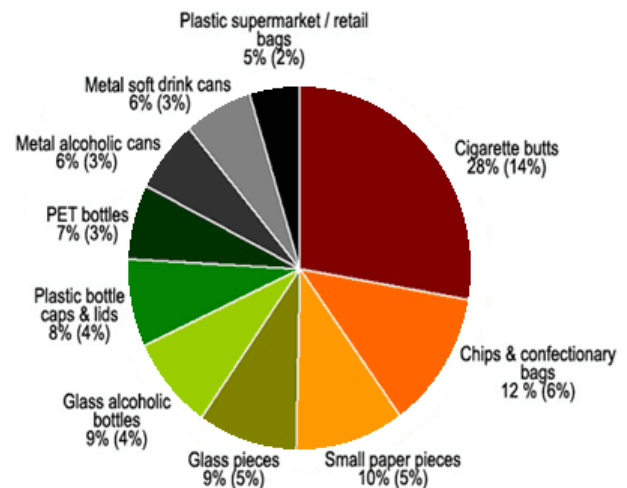


Figure 2: Top 10 Items Littered:
Source CUA 2006 Rubbish Report

Further environmental costs associated with the failure to recover containers for recycling include substantial GHG Emissions, increased consumption of water to manufacture packaging, and decreased air quality, which have been outlined later as benefits for a Container Deposit System.

Table 6: National Cost of Kerbside Recycling¹²

	Cost Per Household	Total Households	Total Cost ¹³	Tonnes of Recyclate	Cost / Tonne ¹⁴
Qld	\$38.00	1,441,300	\$54,769,400	224,255	\$244.23
NSW	\$58.23	2,571,063	\$149,712,998	557,044	\$268.76
ACT	\$22.00	130,000	\$2,860,000	32,689	\$87.49
Victoria	\$33.27	2,059,729	\$68,527,184	491,712	\$139.36
Tasmania	\$37.25	111,202	\$4,142,275	29,995	\$138.10
SA	\$35.38	592,402	\$20,959,183	99,291	\$211.09
NT	\$45.85	69,750	\$3,198,038	2,637	\$1,212.76
WA	\$107.00	659,600	\$70,577,200	70,593	\$999.78
National	\$49.08	7,635,046	\$374,746,277	1,508,216	\$248.47

Summary: The costs of maintaining the status quo:

Based on the above, the costs to do nothing more than maintain the existing NPC represents an existing cost to the Australian economy of \$257million p.a. just to deal with used containers. Regardless of the policy direction that governments adopt it would be prudent to immediately establish that under the polluter pays principle this become a liability of the food and grocery industry not local government.

Table 7: Annual Cost of Packaging Status Quo:

	Kerbside Recycling (@ \$248.47 / tonne)*	Landfill Cost (Containers @ \$51.08 / tonne)	Litter Cost (Container's share of litter costs – 26%)	Gov't & Ind NPCC FUNDING	Total Cost
Current Costs	\$154,613,873	\$37,960,132	\$58,760,000	\$6,000,000	\$257,334,005

* Nett of Recyclate Sales

¹⁰ Calculation of the total cost of litter. Source: Plastic Shopping Bags – Analysis of Levies and Environmental Impacts – Nolan ITU Pty Ltd, December 2002

¹¹ KAB 2006 National Litter Index – Volume of litter, on an item count basis containers represent 11.95%

¹² NEPC 2005/06 Annual Report: Used Packaging NEPM

¹³ Cost Per Household reported via NEPC2005/06 Annual Report X Number of households reported in same report

¹⁴ Total Cost / Total Tonnes of recyclate

4. Understanding Container Deposits: Cost is Relative to Behaviour

From an economic standpoint, one of the greatest strengths of a CD system is the simple way in which the deposit 'cost' is borne by the consumer, rather than a simple blunt instrument like tax or rates. Nor do blunt tax based instruments reward people that avoid the use of packaging.

This, sharper approach of a CD system can be duplicated by other market based instruments commonly used within an EPR approach, such as an advance disposal fee. However CD systems go one step further - **the actual cost that a consumer bears is not only based on their consumption, but are also dependent on how well (or badly) an individual disposes of their packaging once the goods are consumed.** Every time a consumer disposes of a container, they choose whether they are willing to pay for the cost of disposal or they can choose to take a simple action to avoid the cost.

Obviously, the costs of waste disposal and recycling must be borne by society, ultimately the consumer. What has been missed by many within the current debate is the fact that CD systems are not about what it costs to recover resources, rather it is a question of how and where to levy the costs that already exist. Proponents of the National Packaging Covenant are not actually arguing for the current system; they are trying to avoid their liability for the cost of pollution. They support a waste and resource recovery system that is becoming increasingly overstretched, for the simple reason that recovery is funded from a blunt taxation based instrument – local government rates and state government taxes – rather than a charge embedded into the supply chain.

Rates and taxes can certainly generate the funding to encourage recovery, but they provide no price signal to the consumer or directly tie an individual's share of the cost to the extent they contribute towards the problem. This penalises consumers that are more frugal and rewards consumers that are wasteful. Rather than just charge each person on their consumption, a deposit / refund system only charges people on their consumption, less the resources they return for recycling or re-use (i.e. rewarding behaviour that minimises environmental costs).

This relationship between cost, consumption and behaviour is a vital advantage that *only* a deposit / refund system can offer. To illustrate the effect of the deposit below a series of scenario's based on 4 different households who all experience very different costs based on their consumption and disposal patterns. Scenarios are based on a system with a 10¢ deposit.

The cost impacts on 4 different homes (10¢ deposit) & a \$7.84 p.a. saving in MSW rates are:

- *The 1st house has a low consumption of just 10 containers a week, they are happy to forgo their deposit (willing to pay) and dispose of their containers by kerbside recycling. They will pay \$0.95/ week (10 cont. X 10¢ deposit - \$0.15 per week in MSW savings).*
- *The 2nd house consumes a typical 32 containers / week, they return all their containers (unwilling to pay) and the kids earn pocket money by picking up 100 littered containers a week. They earn \$10.15 per week (100 extra cont. X 10¢ + \$0.15/wk MSW savings).*
- *The 3rd house consumes a typical 32 containers / week and recycles 90% of their consumption. This house will save \$0.05 per week.*
- *The last house consumes a high 50 containers / week and has very poor returning behaviour with no containers for recycling. This house will pay \$4.63 per week for its recycling (50 cont. X 10¢ unredeemed deposit - \$0.15/wk MSW savings). This cost reflects the fact that their behaviour is irresponsible – i.e. the polluter pays.*

The burden of cost is only borne by the polluter rather than tax payers (rates) or consumers (an ADF) but on people who both consume and fail to do the right thing - in turn forfeiting deposits. This sliding cost for different consumption / recycling behaviour is demonstrated below, where significant cost is only incurred if there is high consumption & poor recycling:

Weekly Cost = Containers Purchased - Containers Returned

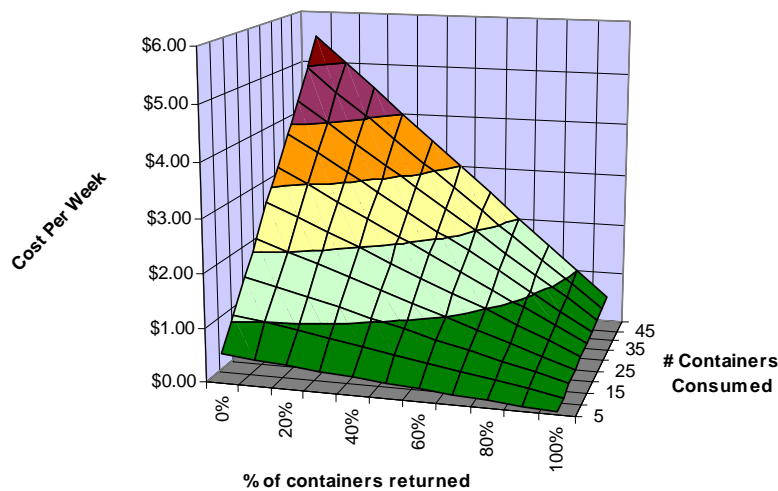
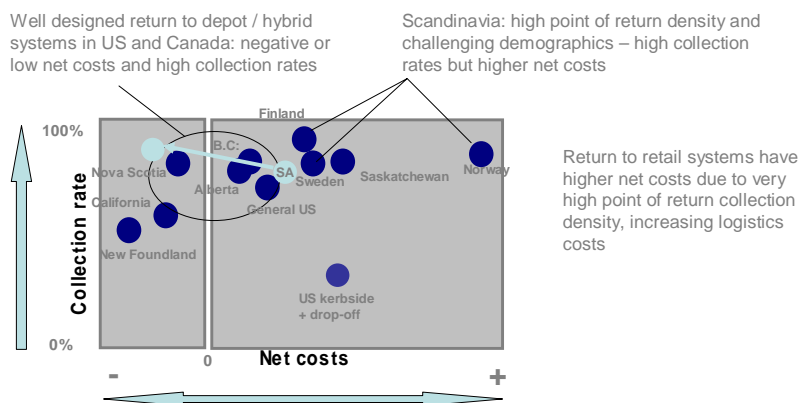


Figure 3: Costs based on CD charges per container @ 10¢ deposit & an admin fee

The debate about the costs of Container Deposits and / or kerbside is quite simply misleading. As stated earlier both systems can be low or high cost depending on the system design and the policy objectives. Some CD systems operate at a significantly higher cost than a kerbside operation (particularly if they are designed to recover refillables), others like California, New Foundland and Nova Scotia have been designed to operate so frugally that they actually operate cost negatively, where funds are sourced solely from unredeemed deposits, and they also subsidise kerbside recycling and/or provide other recycling and recovery initiatives. The graph below benchmarks the various costs for different systems.

Net costs vs. collection rate



Source: CM Consulting, BEAR Report – R.W. Beck, Revive estimates

Figure 4: Collection Rates & Net Costs of recovery systems around the world

A National CDS can be reasonably simple and direct producing guaranteed results without an onerous administrative burden. It is efficient, effective and minimises tax and rate payers investment in the recovery of used packaging containers.

5. Inconvenience

There has been substantial debate within various attempts to undertake cost / benefit analysis for a container deposit system about the concept of 'inconvenience costs'. Within a Container Deposit System, inconvenience costs are generally regarded as the time and expense that consumers experience to return their containers and receive the redemption.

Boomerang Alliance acknowledge that the concept of inconvenience is a legitimate consideration in the development of good policy, but we reject the notion that inconvenience is a core component of cost / benefit analysis as it does not impact on Gross Domestic Product, nor have any impact on lost sales or labour. To this end we have assessed inconvenience by:

1. Identifying reasonable out of pocket expenses that consumers experience to redeem;
2. Highlighting the amount of time that it will take for a household to participate in the system and benchmark against similar types of activities people already undertake; &
3. Comparing the inconvenience experienced against the public's willingness to pay.

Out of Pocket Expenses:

The modelling of this system is based on the extensive use of Reverse Vending Machines, conveniently located in the car park of every major supermarket; therefore there are no costs to transport containers, being easily redeemed when consumers do their grocery shopping.

Washing of containers and separating caps from bottles attract no time or cost as it is a requirement of recycling not a particular system.

Inconvenience or Time Lost to participate in the CD System:

We have calculated that for an individual that returns 100% of their containers it will take the following time to make an actual redemption at a RVM:

- Time to walk 50 metres across a carpark to redeem containers at 2metres/second = 25 seconds per household per week;
- Time to process containers¹⁵ = 103 seconds per household per week

The average household will be inconvenienced by 1 minute & 43 seconds per week.

Comparison 1: Time to place the kerbside recycling bin on the street and collect same:

The writer conducted time trials to assess how long it took to put out and collect the kerbside recycling bin.

- An average 104 seconds per fortnight to take out the recycling bin each fortnight;
- An average of 123 seconds per fortnight to bring the bin inside each fortnight

Comparison 2: Litter avoidance.

- 30 second to walk 30 metres (each way) to place rubbish in a bin rather than litter;
- At least 2 times per week X 2.7 people per household;

Table 8: Comparisons of Inconvenience to a typical household per week		
Redeeming Containers	Kerbside Recycling	Not Littering
2 minute 08 seconds	1 minute 54 seconds	2 minutes 42 seconds

Conclusion: The time to redeem containers is a relatively minor inconvenience and it takes a similar amount of time to undertake similarly socially responsible actions such as not littering or putting out the kerbside recycling bin.

6. Public Support and Willingness to Pay

It is clear from Newspoll surveys commissioned by Boomerang Alliance that the public is calling for action. A survey conducted in Dec. '04 showed that 91% of respondents thought governments should intervene, making those responsible for packaging waste deal with the mess¹⁶.

¹⁵ Calculation based on time trail: Consumption of 12.79 containers per capita /week X 2.7 people per household X 3 seconds per container to redeem via an RVM (time trial)

¹⁶ Newspoll 2004

Subsequent research undertaken by Newspoll¹⁷ for the Boomerang Alliance in Western Australia in May '06 indicated that 94.45% of the adult population want CD with just 2.58% against. In Feb '07 the survey indicated 94.48% in favour and just 3.87% against.

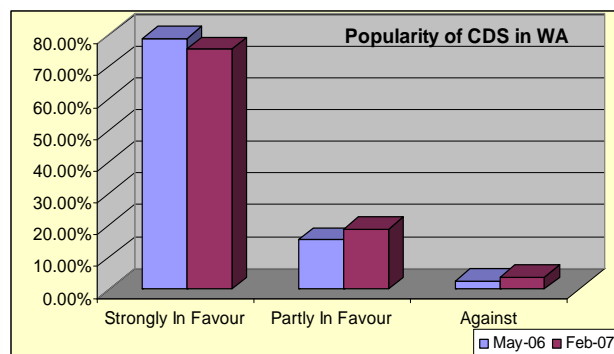
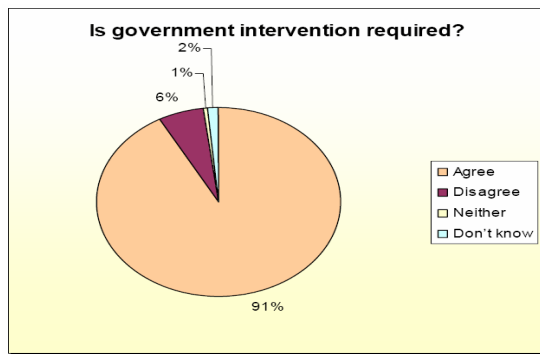


Figure 5: NewsPoll: Should government intervene to reduce the amount of packaging waste and litter?

Figure 6: Would you support the introduction of a container deposit / refund similar to that in SA?

The research shows a large majority of Australians want more action to be taken to address packaging waste. This belief has been supported by some members of the industry, including Coopers Brewery and Diageo, who have supported increased producer responsibility.

Three hundred households in Western Australia were surveyed, representing both metropolitan and regional households. Newspoll advises that the standard statistical assessment indicates this level of information will be accurate within a 6% variation.

Participants were firstly asked if they supported introducing a container deposit system:

Question: South Australia currently has a container deposit and refund scheme, which provides a refund for each empty bottle and can that is returned. Government is proposing to introduce a similar scheme to encourage recycling and reduce litter. Are you personally in favour or against the government introducing this type of scheme?

Results:

Strongly in favour	79%
In favour	15%
Against	3%
Neither / don't know	3%

This data indicates very high support for the introduction but also indicates a very strong "willingness to pay" that is a key aspect in determining the validity of implementing any policy. The survey then moved onto people's thoughts about what level of deposit they thought would be necessary to encourage them to return their containers. While there is recognition that CD means an upfront deposit, once again there is a very strong commitment to CD or 'willingness to pay' with 96% prepared to pay @ 5¢, 89% prepared to pay @ 10¢ & 75% prepared to pay at a high 20¢. The following graph is prepared by Newspoll and shows both the public's likely rates of returning and their preparedness to pay the deposit:



Figure 7: Newspoll Analysis: Returning Behaviour & Acceptance of Cost

¹⁷ Newspoll May 2006

Conclusion: The strong public desire to adopt a container deposit system (94+%) and willingness to pay a refundable deposit (89% at 10¢) far outweighs the relatively minor level of inconvenience each household would experience. If this level of inconvenience was considered to be a barrier to the implementation then no environmental policy would ever be implemented.

7. Projected Recovery Rates in a CD System

Obviously, a key component in assessing the merit of a National CDS is to consider the likely levels of containers that will be recovered and the associated costs. Rather, this assessment of likely returning levels are based on analysis of Newspoll surveying to assess the level of deposit necessary to achieve **at least** those traditionally experienced within the South Australian deposit system. Based on Newspoll surveying undertaken on packaging nationally and specifically about willingness to pay in Western Australia, it is reasonable to assume that a 10¢ deposit will achieve rates of return in the vicinity of 80+%.

Using the WA Newspoll data discussed earlier, the writer has assumed that those people who indicated that they were “very likely to return containers” will return 90% of all the containers they consume (whether at home or away from home), and that those who were “somewhat likely to return containers would return 90% of their estimated ‘at home’ consumption but were unlikely to make the effort to redeem their consumption away from home.

Remnant material retained in kerbside and redeemed by collectors have been factored by applying existing recovery rates to the proportion of materials that are not returned directly by the consumers. For example if a CDS system sees 75.31% of all aluminium beverage containers redeemed for a refund, it has been assumed that 49.39%¹⁸ of the remaining material will remain in kerbside with consumers forfeiting their deposits.

No allowance for third parties collecting litter as fund raising or supplementary income has been assumed in this modelling. While a 10¢ is certainly an attractive incentive for this type of activity, the writer feels it is prudent to understate system performance, and treat third party recovery as a ‘hedge’ to ensure performance will meet or exceed those modelled herein.

Based on this approach expected recovery rates for a National Container Deposit System with a 10¢ deposit / refund would be as follows:

Table 9: Projected Recovery via CDS	Consumption Patterns		Projected CDS Recycling Rate			Existing Recycling Rates	Increased Resource Recovery
	Away	Home	CD	Kerb	Total		
Glass	55%	45%	75.51%	4.11%	79.62%	38.07%	371,063
Steel	10%	90%	84.42%	5.86%	90.28%	37.62%	48,659
Aluminium	56%	44%	75.31%	8.85%	84.16%	71.30%	6,458
PET	30%	70%	80.46%	7.63%	88.09%	46.54%	44,301
HDPE	45%	55%	77.49%	6.22%	83.71%	32.19%	50,795
Reduced Paper Contamination							109,733

8. Value of Recyclate

It is commonly reported by local government that there is a widening gap between the costs to recover material through kerbside recycling and the sales value of recyclate. Conversely, in South Australian (like Nova Scotia & California), the state reprocess 65% of all plastics and nearly 100% of all glass locally, thanks to consistent volumes of high quality recyclate supplied by the CD system. In fact, SA recycling collectors report that the clean materials sourced by CD

¹⁸ the estimated recovery rate of aluminium cans via MSW recycling

systems sees re-processors pay a 25-50% premium for their material. Comparative recycle prices are¹⁹:

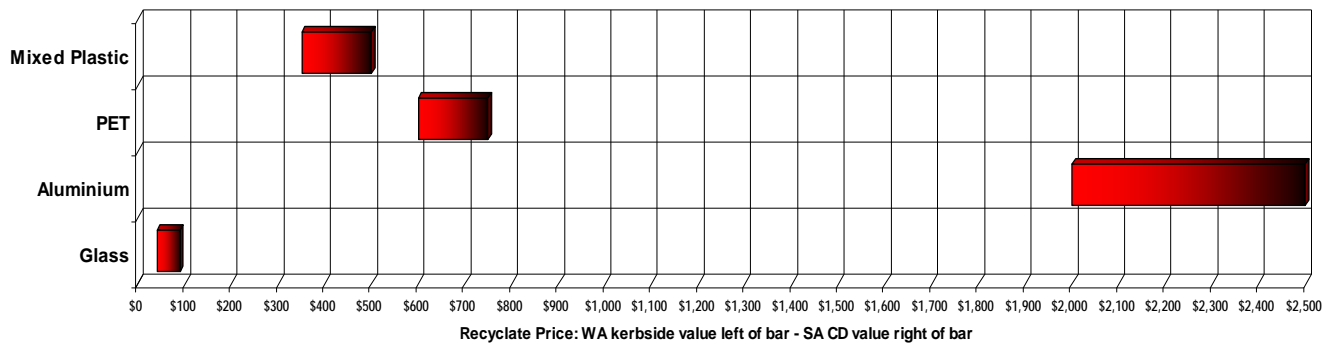


Figure 8: Comparison of prices paid for recycle: SA CD Vs Kerbside

This indicates that a priority in designing a CD system should be to develop incentives and policies that encourages the retention of materials collected for reprocessing locally rather than be exported (whether overseas or interstate).

Supporting the above testimony to the financial benefit of recycle sourced from CD systems in Boomerang Alliances possession is correspondence between leading the world’s largest glass packaging manufacturer O-I (Owens Illinois) Canada and the Liquor Control Board of Ontario (Canada). Quoting directly from same:

On the added attractiveness of glass recycle from CD approaches:

“Single-stream’ blue box collection of recyclables [kerbside recycling] means that more glass is being sent to landfill today than just a year ago. Ironically, as Ontario ships millions of tonnes of garbage to Michigan each year for disposal, OI Canada is importing cullet derived from Michigan’s deposit-refund based recovery system to manufacture glass in Ontario.”

“Of the Ontario sourced cullet, the overwhelming proportion was derived from packaging recovered through the Beer Store deposit-refund system with the remainder imported from Quebec and Michigan (both of which are deposit-refund jurisdictions).”

On the limited value of glass collected by kerbside recycling:

“The Blue Box is yielding less and less recyclable glass because of the shift towards ‘single stream’ curb-side collection of recyclable materials. Driven by collection cost savings this practice has the effect of mixing all recyclables together at the point of collection, which results in breaking and colour commingling of recyclable glass and cross contamination of other recyclable materials. The net effect is to reduce the highly recyclable clear, amber, and green glass dutifully put into the Blue Box into unrecyclable waste. Once subjected to single-stream collection, glass is largely ‘down-cycled’... Once subjected to single-stream collection subsequent processing for recycling into glass packaging is prohibitively expensive.”

Owens Illinois (OI) Canada’s conclusion on the optimal method of collecting glass recycle:

“...OI Canada currently pays a premium for the import of clean, colour separated glass from jurisdictions outside of Ontario.

Moreover, we would question the economic and environmental efficacy of rendering glass of rendering glass un-recyclable through single stream collection...-an approach that seems even more convoluted, expensive in contrast to the simple and effective recovery, and recycling of non-refillable glass bottles by the Beer Store Deposit-refund system.

¹⁹ Discussions with Statewide Recycling, East Waste and Zero Waste South Australia

This evidence demonstrates that consistent high volumes of clean high quality recyclate will attract new reprocessors. However as a strategy to fast track new reprocessing infrastructure, Boomerang Alliance recommends that it is in the interest of jurisdictions to utilise surplus funds from the CD system to establish short term grants (for say the first 3-5 years) to encourage recyclers to ‘fast track’ the establishment of new reprocessing industries especially for glass and plastics, particularly in Western Australia and Queensland. To this end, Boomerang Alliance advocates that the state offer bounties of say \$10 per tonne for glass, and \$25 per tonne for PET, and HDPE containers reprocessed (not just benefited) within a reasonable proximity of collection points to encourage the establishment of locally based re-processors. This, combined with the higher value recyclate will ensure that the whole of the resource recovery chain flourishes faster than if a ‘collection only’ focus is adopted.

It may also be worth considering introducing further incentives for and bounties for businesses that manufacture products from local recyclate as part of a state based ‘Buy LOCAL Recycled’ strategy, which would expand the new industry even further. Delivering further strong economic and environmental advantages to jurisdictions. Much of this new activity would be regionally based, advancing Australia’s already strong employment performance.

9. Technology – Reverse Vending Machines

Modelling of this system is based on substantially lower handling fees than those in SA (average 3.5¢ / container delivered to a hub or super collector vs. the current 4+¢ / container at the collection point in SA)²⁰ because we propose extensive use of Reverse Vending Machines. The use of RVMs provides a number of advantages to a deposit system.

RVMs dramatically reduce operating costs by lowering deposit system labour and land space requirements. Automatic compaction of containers at the collection point also reduces transport costs. Automated counting and data retrieval (explained below) reduces the needs for manual audits and lessens the administrative burden on the system administrator.

This assertion is strongly evidenced in the BEAR report, which highlights that CD systems using RVMs have much lower costs..

RVMs also make redemption much easier for consumers as they are easily located at the retailer or as stand alone centres in locations like the parking area of shopping centres and other high traffic locations that consumers already visit regularly (e.g. a petrol station). They are also far more presentable and provide a clean and attractive redemption environment – which is important if the collection point is going to be placed in a convenient point of collection such as a shopping centre or on a central high street location. The automated interface increases processing speed, which reduces queuing times. As an unmanned centre, RVMs also enable consumers to redeem containers around the clock. Obviously, greater convenience in turn means greater use and higher redemption rates.

Boomerang Alliance advocates a model similar to California where supermarkets of over 1,000 m² must be sited within 1 km of a collection centre or make the equivalent to 4 parking spaces in outdoor space available for the construction of a collection point. Shopping centre owners are paid an annual market rate rental. This ensures consumers find it convenient to drop off without forcing retailers to take back containers.



²⁰ It is important to recognise that when we refer to handling fees we are not referring to charges to bottlers like in South Australia. The handling fee is the amount paid to a collector not the cost to the system. To calculate possible charges to bottlers and/or their customers the equation would be: Handling Fees (collection) + Processing Fees (Hub) X % recovery rate (as prices impacts are based on container sold but charges are based on containers recovered) - recyclate sales value – unredeemed deposits i.e. (3.5¢ + 0.5¢) X 0.8 – (2.1 + 2) = -0.9¢ per container.

10. The Financial Impacts of a National CDS System

In any system there are winners and losers, based on our modelling which is detailed herein the broad impacts of a CDS system are as follows:

Consumers:

Consumers will face an increased label price of between 10¢ per container they purchase, having some impact on the grocery prices. However two key points need to be considered:

1. 10¢ of this cost is refundable when people return containers; this means any container redeemed will have little economic impact; &
2. Grocery price impacts will not occur at once; the deposit is only paid on containers that are labelled, meaning that any price impact on initial shopping bills (i.e. cash outlay before the opportunity to redeem) is spread over a number of months as products already on the shop shelf turn over.

The total annual gross cost to those consumers who don't redeem their deposit (i.e. polluters) is estimated to be \$226.5Million per annum.

Distributional impacts are important; the following identifies the cost per household of unredeemed deposits @ a consumption of 12.79 container per capita / week will be based on the size of the household and the recycling behaviour of the household. These are as follows:

Table 10: Direct Household Impacts	2 Person household	4 Person Household
Households that Are Redeemers: I.E. Returning 100% of all containers consumed	A saving of 27¢ per wk: <ul style="list-style-type: none"> • 27¢ / wk reduced MSW charges Or: A saving of 48¢ per wk <i>If Gov't refunds surplus</i>	A cost of 27¢ per week: <ul style="list-style-type: none"> • 27¢ / wk reduced MSW charges Or: A cost of 48¢ per wk <i>If Gov't refunds surplus</i>
Households that are Donators (returning some of their containers only): If returning 50% of consumption i.e. containers consumed at home	A cost of -\$1.01 per week: <ul style="list-style-type: none"> • \$1.28¢ / wk unredeemed deposit • Less 27¢ / wk reduced MSW charges Or: A cost of -80¢ per wk <i>If Gov't refunds surplus</i>	A cost of -\$2.29 per week: <ul style="list-style-type: none"> • \$2.56 / wk unredeemed deposit; • Less 27¢ / wk reduced MSW charges Or: A cost of -\$2.08 per wk <i>If Gov't refunds surplus</i>

Bottlers and Fillers:

Based on this modelling, bottlers and fillers will incur no charges at all. There may be a small internal cost of labelling, but given that nearly all retailers already have to meet labelling requirements for the existing SA container deposit system, we believe that these costs are not material to the overall calculation.

Rate Payers and Local Government:

Local government and in turn rate payers are a major winner in the adoption of a national CDS system with estimated saving of \$59.8 million per annum in the cost for councils to provide waste and recycling services.

Reduced incidence of littering should also save tax payers approx. \$48million p.a.

The combined total of these savings represents a saving of \$14.17 per annum or 27.25¢/week

Recyclers and Reprocessors:

Recycling collectors, materials reprocessors and the waste management industry will receive significantly increased incomes coming from 3 sources:

- Based on international and South Australian experience the price of recycle collected is likely to be worth as much as 30% more than current payments for recycle;

- Increased materials recovery and lower levels of contamination will see recyclers income from material sales grow by an estimated \$299million per annum;
- reprocessors will be eligible for around \$15million per annum in bounties and incentives to establish new regional reprocessing facilities

Overall the waste management, recycling and reprocessing industries will grow by an estimated \$314million per annum.

Government:

Over and above the operation of a national container deposit system, income from sales of material and unredeemed deposits will produce an estimated \$81.9million p.a. in surpluses to be channelled into environmental and social policies or as a rebate of existing externalities such as waste management, resource recovery and litter:

We would suggest a possible distribution of these funds would be reasonable:

- \$15 million p.a. to encourage regional reprocessing and end use markets;
- \$9.6 million p.a. to promote container and other recycling initiatives;
- \$10million p.a. to support litter abatement and litter education
- \$7.3million p.a. in 'best practice' MSW and public place recycling grants
- \$20million p.a. to combat binge drinking and the responsible consumption of alcohol (a direct societal cost related to the sale of packaged alcohol);
- \$20million p.a. to combat childhood obesity (a direct societal cost related to the sale of soft drinks etc.)

This type of breakdown provides funding for identified government initiatives in both the social and environmental policy arena and avoids the need to raise further charges which may be seen as inflationary.

Should government decide to distribute surpluses via a rebate on waste charges in rates or tax refunds it will produce a further saving per household of \$10.73 p.a or 21¢ per week.

Greenhouse

The implementation of a National CDS produces very significant greenhouse gas reductions, largely but not solely as a result of capturing the embodied energy in packaging materials. Boomerang Alliance believes that the increased container recycling outlined herein will create reduction in the order of 1,381,735 tonnes of Co₂-e p.a.²¹. Based on the current secured 2010 contract carbon price in the EU trading scheme @ \$35 per tonne²² this level of abatement has an economic benefit of \$48.361million per annum.

Water

Water security has become a major issue in Australian environmental policy and the increased level of container recycling produces substantial water savings, estimated at 8.106 gigalitres of water p.a. – enough to permanently supply some 24,126 homes.

Nearly every state in Australia has announced the need to construct desalination plants in Australia to meet growing demand; accordingly we have costed water savings on the direct costs of water supplied via desalination. Using the cost estimates for water produced from Australia's only operating desalination in Perth²³ we would estimate that the level of increased container recycling outlined in this model provides an economic benefit of \$9.402million p.a.

²¹ using calculations provided by Wanken ISE for Ecos Corporation – see Carbon Abatement Proposition of Container Deposit Recycling

²² Source: Total Environment Centre modelling for national Emissions Trading Scheme

²³ \$1.16 per Kilolitre – source: WA Water Corporation

11. Overall Impacts of Container Deposits

Our earlier calculations of the Status Quo revealed that the current costs nett of the value of recycle as per below:

Table 11: Cost of Packaging Waste & Recycling	Recycling Costs	Landfill Cost	Litter Cost	Funding of NPCC	Total Costs
The current cost to manage beverage containers	\$154,613,873	\$37,960,132	\$58,760,000	\$6,000,000	\$257,334,005

Based on the modelling herein the overall costs of a combined CD and Kerbside System are:

Table 12: Costs of A Combined CD & Kerbside System	
Costs	\$ Per Annum
Existing Nett Cost to Collect & Recycle Packaging via MSW [Kerbside & Other] (after recycle sales)	-\$154,613,873
System Administrator (Non Profit company)	-\$4,000,000
Direct Operating Costs of CD network: Handling Fees paid to collection centres; processing fees paid to Hubs [supercollectors]; and additional payments to remote recyclers less income from recycle sales)	-\$140,575,916
Existing Costs of landfilling containers currently	-\$37,960,132
Existing Cost of litter abatement (i.e. containers 'share' of litter @ 28.38% of total litter volume)	-\$58,760,000
Less Savings & Benefits:	\$ Per Annum
Increased income from sale of paper recycle through reduced levels of glass contamination	\$14,265,248
Savings to the operation of kerbside and MSW recycling (increased income by sacrificing recycle sales in favour of redemption of 10c deposit; and reduced gate fees at MRF)	\$18,928,717
Savings to MSW via reduced volumes of landfill (Excluding and reductions in collection costs through lower volumes)	\$26,631,962
Savings from reduced volumes of Litter (based on a 12% reduction of total litter volumes)	\$24,000,000
Greenhouse Abatement (over and above current MSW & C&I recycling) @ \$35 / tonne	\$48,360,715
Additional Water Savings (over and above current MSW & C&I recycling) @ \$1.16 / Kl cost of 'new' water via desalination	\$9,403,495
Total Cost of a Combined CD and Kerbside System (costs less benefits)	-\$254,319,785
Less Existing Costs (The Status Quo)	-\$257,334,005
Nett Annual Savings if a National CD System is introduced:	\$3,014,221
Annual Savings if Government Refunds System Surpluses via Taxes or Rates	\$84,944,167

12. Costs of Alternative Policy Options

i. National Packaging Covenant

Environment Ministers agreed to renew the National Packaging Covenant in 2005 with firm targets, identifying minimum acceptable performance standard and assurances from regulators in NSW, Victoria and the Federal Government. They were:

- That the NPC had a strategy²⁴ based to meet these targets by focusing on:
 - a. Expansion of 'best practice kerbside recycling across Australia;
 - b. Introduction of a comprehensive public place recycling system;
 - c. Private & State government investment (over and above agreed commitments to NPC) would fund the development of new Materials Recycling Facilities, a number of regional reprocessing facilities in the more remote states (particularly Qld & WA)

²⁴ See National Packaging Covenant - Schedule 1 "Implementation Context for the Covenant" further detail based on BA records of final 'Covenant Working Group Meeting' D.West and J.Angel of TEC attending

Based on the above Boomerang Alliance undertook an analysis of the best case scenario for increased packaging recycling and costs of same²⁵. The results of this analysis are as follows:

Table 13:
Annual Operating Costs to implement the NPC Strategy

	Estimated Total Cost P.A. ²⁶	Est. Tonnes Needed to meet NPC Target	Projected Additional Tonnes - NPC Strategy ²⁷	Estimated Cost per Tonne	Shortfall NPC Target of strategy
MSW Additional cost - Kerbside incl. educ'n & promo	-\$148,243,901	263,000	190,000	\$780.00	-73,000
MSW Permanent Public Place – incl. Educ'n & promo	-\$42,062,500	71,000	23,555	\$1,786.00	-47,445
MSW Seasonal Public Place (high traffic etc.) - incl educ'n & promo	-\$5,804,625	46,000	1,413	\$4,107.00	-44,587
C&I: Shopping Malls/food courts excl. educ'n & promo	-\$18,091,000	149,000	64,000	\$283.00	-85,000
C&I: Hospitality - excluding educ'n, promo & staff	-\$2,500,000	127,000	66,500	\$37.59	-60,500
C&I Office Blocks - excluding educ'n, promo & staff	-\$1,997,474	25,000	8,370	\$239.00	7,630
C&I: Event Management - no educ'n & promo	-\$3,701,500	25,000	1,413	\$2,619.00	23,587
Total Operating Cost:	-\$222,401,000	706,000	355,251	\$626.04	-279,315

This calculation clearly demonstrates that not only will the NPC strategy miss the minimum performance targets by an estimated 355,251 tonnes p.a; it will also collect some 275,757 less tonnes of recycling than a National CD System.

Contradicting the beverage industry argument that a Container Deposit System is expensive, the NPC strategy will cost a ridiculous \$222.4million per annum to operate nett of the initial infrastructure investment.

Stakeholders that would bear the brunt of costs to implement the NPC strategy would be (in the main) local government whose annual costs would increase by some \$196.1million p.a. and property owners, the hospitality industry and event managers who annual costs would increase by \$26.3million p.a. with the packaging industry, supermarkets, or food and grocery industry making no contribution at all. Once again this highlights that in reality the food and grocery industry's advocacy is not about the most efficient cost approach but rather how to save themselves money by forcing third parties to pay for their waste.

For the purposes of this analysis, Boomerang Alliance has only included 29.11% of the above costs in our comparison against a national Container Deposit System. This is representative of containers proportion of all packaging material consumed (by weight), which we have identified as the most conservative estimate of beverage industry's most conservative share of the overall cost increase to implement the Covenant strategy. Notwithstanding this calculation, it is the writer's opinion that while containers represent only 29.11% of packaging by weight, their impacts in contaminating the recycle stream and the increasing complexity to manage plastic composite containers represents something like 80% of the overall level of market failure that has caused the economics of recycling to be so fragile.

ii. An Advance Disposal Fee

An alternative market based Instrument that could be adopted would an advance disposal fee on all packaging, but as the assessment above demonstrates without a consumer incentive such as a deposit / refund it would be unlikely to increase recycling rates to any more than an overall 51%. We would also view that the vast majority of packaging using reasonably simple cardboard and paper derivatives is reasonably viable for collection so long as the practice of producing composites such as Liquid paper board and paper/plastic aseptics is controlled.

²⁵ Assessment by Warnken Industrial Social Ecology April'05 to assess best case scenario of recycling rates and costs of NPC

²⁶ Costs are nett of the incomes earned from the sale of recycle

²⁷ NB This strategy has not been implemented

Should governments wish to pursue an ADF, it will need to generate some \$524million p.a.²⁸. This translates to a levy of \$121.55 /tonne of packaging material produced and would cost each Australian household some \$68.63 per annum in increased food and grocery prices.

Summary:

As stated at the start of this report the existing costs of recycling, landfilling and abatement of beverage containers costs the Australian Tax payer a staggering \$257,334, 005 or \$33.70 per household.

While the current National Packaging Covenant strategy continues to bogged down by bureaucratic inaction and industry stall tactics, should it be implemented the costs will skyrocket to over \$303 million (and the annual cost of managing packaging waste will increase to more than half a billion p.a.).

Conversely, the adoption of a National CD system would reduce the overall cost of managing containers by \$84million p.a. while also lifting container recycling rates to over 80%, and eliminate the need for any regulatory action on the remaining 70% of food and grocery companies that mostly use cardboard based products.

The comparable costs are as follows:

Table 14: Annual Cost of Various Systems	Recycling Costs	Landfill Costs	Litter Costs	Gov't & Ind Funding	Total Cost
Option A – The Status Quo: The current cost to manage containers	\$154,613,873	\$37,960,132	\$58,760,000	\$6,000,000	\$257,334,005
Option B: The current cost + 29.11% of the operational cost of the NPC Strategy	\$219,364,830	\$19,810,766	\$58,760,000	\$6,000,000	\$303,935,596
Option C: Cost of Combined CDS & Kerbside	\$202,231,614	\$11,328,170	\$34,760,000	-\$75,929,946	\$172,389,838

Conclusion:

The debate is over - the status quo is causing a financial and environmental disaster with kerbside recycling in regional Australia already in crisis. After 8 years the National Packaging Covenant continues to be unable to provide any tangible effort that it has made any contribution to improving packaging recycling rates, if anything they have gotten worse and the tonnes to landfill are already above the agreed maximum projected by the end of 2010.

Further, far from improving the status quo it is now apparent that the NPC strategy will actually make the existing crisis worse. It is time for Government and Industry to recognise (like responsible packagers such as Diageo and Coopers Brewing) that these failures are, in the main, the responsibility of a small number of beverage companies lead by Coca Cola, Fosters, Lion Nathan and Cadbury Schweppes under the banner of the Packaging Stewardship Forum, whose deceptive conduct threatens local government finances and risks regulatory intervention to the vast majority of food and grocery companies.

Surely, after 30 years of proven success, its time to follow South Australia’s lead and introduce a National Container Deposit System. It will:

- Dramatically increase recycling rates;
- Save Australian households money;
- Provide significant environmental benefits;
- Protect the vast majority of food and grocery companies from regulatory intervention

²⁸ Based on the estimated \$257million to pay for the current system + \$222million to implement the NPC plan + \$4million administration + \$59million in landfill costs - \$18 million in landfill savings.

13. Identified benefits of a National CD System

While the exact outcomes Australia can expect from a CDS will vary depending on the design and features that jurisdictions choose to adopt, this section of the analysis seeks to establish the broad benefits that Australians will enjoy when a container deposit system is introduced.

While Boomerang Alliance supports extending a container deposit system beyond these more common materials (e.g. consideration should be given to including polystyrene cups, PVC cordial bottles and paper based flavoured milk containers for instance); for the sake of this exercise glass, PET & HDPE, aluminium and steel are the only materials have been selected as those most commonly used packaging.

By comparing the current recycling performance with projected increased levels of recycling in the model used earlier we can get a view of what outcomes could be reasonably expected. This suggests that the nation could expect to increase overall recovery for recycling of packaging by approx. 605,565tonnes p.a. (528,367 tonnes of additional containers plus another 77,198 tonnes of paper previously lost to glass contamination).

The projected increase in recovery rates if a container deposit system was adopted would reduce raw material resource depletion by approximately 97,689 tonnes p.a. Over and above direct reductions in virgin materials consumed, there are significant savings in terms of air quality, water and greenhouse gas reductions. Below is a table sourced from “The Victorian Life Cycle Study²⁹” showing savings per tonne of material collected via kerbside recovery.

Table 15:
Lifecycle benefits of kerbside recycling

	Smog Precursors (gC2H4-e)	Water Usage (L)	Solid Waste (Kg-residual)
Newsprint	35	20,752	812
Paper & Board	33	22,483	736
LPB	-600	2,425	575
Glass	-97	2,038	984
Aluminium	267	1,716,667	5,433
Steel Cans	859	882	1,153
PET	2,627	-52,818	609
HDPE	9,570	-76,900	700
PVC	-250	48,500	750

Further leading environmental Consultant Matthew Warnken principal of WISE recently undertook a study of the *Potential Abatement of Greenhouse Gases* if a Container Deposit System was adopted³⁰. The benefits for every tonne of material collected are as follows:

Table 16: Total Greenhouse Gas Abatement per tonne of recyclate collected via CDS

Material Type	Glass	Steel	Aluminium	PET	HDPE
Net Abatement from Recycling (tCO ₂ e)	1.25	2.7	18.8	6.0	5.85

Based on these estimates the environmental benefits are substantial:

²⁹ RMIT

³⁰ See Carbon Abatement Proposition for Container Deposit Recycling by WISE For Ecos Corporation April 2007

Table 17:
Resource Conservation
Benefits from CDS

	Materials Savings (Tonnes)	GHG Reductions (Tonnes Co2-e)	Water Conserved (Litres)	Smog Precursors (gC2H4-e)
Glass	371,063	463,828	756,225,799	-35,993,083
Aluminium	6,458	121,410	11,086,227,246	1,724,285
Steel Cans	48,659	131,379	42,917,100	41,797,947
PET	44,301	265,803	-2,339,864,717	116,377,459
HDPE	50,795	297,153	-3,906,163,813	486,111,673
Paper (from lower contamination)	109,733	102,161	2,467,119,844	3,621,178
Min. Savings P.A.:	631,008	1,381,735	8,106,461,459	610,018,281

In Summary the environmental benefits from the adoption of a National Container Deposit System are as follows:

Environmental Consideration	Level of Benefit	Point of Comparison
Litter Reduction	12-15% reduction in litter	It would take around 6 X Clean up Australia Days each year – i.e. around 375,000 days of labour to collect an equivalent amount of litter.
Reductions in Waste to Landfill	631,008 tonnes less landfill	A reduction of approx. 6% of all MSW Waste to landfill
Greenhouse Gas Abatement	1.38million tonnes of Co2 equivalent	Switching 197,000+ homes to 100% renewable energy
Drinking Water Savings	8.1 giga litres of water saved	Enough water Savings to permanently supply 24,128 homes with all their water consumption
Air Quality	Removal of 610million gC2H4-e	The same improvements in air quality as removing 144,711 cars permanently off the road

It is clear that the adoption of a National Container Deposit system represents major environmental gains for little economic impact when compared to the status quo of simply renewing the patently ineffective National Packaging Covenant.

Container Deposits have been a cornerstone of South Australia's success as the leading Australian jurisdiction in tackling waste, litter, and resource recovery.

We urge all governments to take immediate steps to bring this outstanding policy approach to the vast majority of Australians who support this popular initiative.

Appendix 1: Financial Costs & Impacts of a National CDS System on existing MSW Recycling:

Base Data						
Materials Covered by Deposit	Aluminium	Glass	PET	HPDE	Steel	TOTAL
National: Tonnes of container consumed	50,210	893,031	106,628	112,840	92,399	1,255,108
National: # containers consumed	3,355,082,410	4,272,260,304	3,114,070,740	2,257,698,798	1,282,036,125	14,281,148,377
National Kerbside Material Sales Value	\$2,000.00	\$72.00	\$450.00	\$350.00	\$120.00	
Value of National CD Material	\$2,500.00	\$90.00	\$750.00	\$500.00	\$150.00	
Overview of Current National container recycling						
Kerbside Recovery Rate for Containers %	35.85%	16.80%	39.06%	32.19%	37.62%	22.37%
Kerbside Recovery of Containers (tonnes)	18,000	150,000	41,646	36,327	34,760	280,733
Kerbside Recovery of Containers (containers)	1,202,778,000	717,600,000	1,216,271,430	726,834,618	482,295,000	4,345,779,048
Value of kerbside material sales	\$36,000,000	\$10,800,000	\$18,740,700	\$12,714,520	\$4,171,200	\$82,426,420
C&I Recovery for Containers %	35.45%	21.28%	7.49%	6.50%	0.00%	17.78%
C&I Recovery of Containers (tonnes)	17,800	190,000	7,984	7,338	0	223,122
Projected Recycling Performance of municipal (within CD) & Direct Financial Impact						
Materials Covered by Deposit	Aluminium	Glass	PET	HPDE	Steel	TOTAL
Remnant Recovery in kerbside	4,444	36,735	8,138	7,021	5,416	61,753
Revised Kerbside recovery rate	8.85%	4.11%	7.63%	6.22%	5.86%	4.92%
Containers redeemed via kerbside	296,941,833	175,740,240	237,659,437	140,476,249	75,141,561	925,959,320
Material tonnes lost to CD	-13,556	-113,265	-33,508	-29,306	-29,344	-218,980
Reduced material sales income	-\$36,000,000	-\$10,800,000	-\$18,740,700	-\$12,714,520	-\$4,171,200	-\$82,426,420
New incomes by redeeming containers	\$29,694,183	\$17,574,024	\$23,765,944	\$14,047,625	\$7,514,156	\$92,595,932
Income from Increased sales of paper due to lower contamination (est. 109,733 tonnes p.a.)						\$14,265,248
Reductions in Landfill costs (inc' levy) (nett tonnes diverted X av. \$51.09/tonne)	\$329,939	\$18,957,594	\$2,263,313	\$2,595,135	\$2,485,980	\$26,631,962
Reduced Gate Fee Costs @ \$40 / tonne	\$542,246	\$4,530,600	\$1,340,335	\$1,172,248	\$1,173,776	\$8,759,205
Net Financial gain / loss	-\$5,433,631	\$30,262,218	\$8,628,892	\$5,100,488	\$7,002,712	\$59,825,927
Uncosted Benefit	Increased efficiency - longer runs & 100% increased compaction					

In summary these tables show that while the existing MSW kerbside recycling network will collect some 227,000 less tonnes of material they will actually improve their earnings by some \$41million p.a. with substantial savings by decreased tonnages to landfill, reduced gate fees at MRFs, reduced contamination of paper and improved value of materials recovered (the deposit being worth more than the materials).

Operation of the Collection Network

The following table outlines the payments and recovery via the network of collection centres across Australia. All infrastructure costs to establish this network would be met by recyclers wishing to collect materials and receiving an average 3.4¢ per container for collection. This is substantially less than the handling fees paid in South Australia, largely because of the intended use of technology such as reverse vending machines to reduce costs. It is expected that large metropolitan centres would be largely automotive and earn a fee of around 2.8¢ per container, with regional collectors paid at a higher rate of around 4¢ per container. Remote locations will earn additional annual fees to compensate for lower volumes.

Hubs will administer the system and act as the collection point for large wholesale operations and MSW collections

Projected Recycling Performance of convenience collectors & Direct Financial Impact (75% of CD collection network)						TOTAL
Materials Covered by Deposit	Aluminium	Glass	PET	HPDE	Steel	
Projected Recovery of consumption via this method	56.48%	56.63%	60.35%	58.12%	63.32%	57.57%
Containers redeemed via conv. ctrs.	1,895,084,748	2,419,487,817	1,879,185,988	1,312,118,099	811,721,173	8,317,597,825
Tonnes of material collected	28,361	505,746	64,345	65,580	58,502	722,533
Handling Fee @ 3.7¢ container	\$70,118,136	\$89,521,049	\$69,529,882	\$48,548,370	\$30,033,683	\$307,751,120
Income from adverts (1,200 collection points)						\$7,200,000
Total Earnings	\$70,118,136	\$89,521,049	\$69,529,882	\$48,548,370	\$30,033,683	\$314,951,120

Projected Recycling Performance of Hubs and direct Financial Impact (25% of CD collection network)						
Materials Covered by Deposit	Aluminium	Glass	PET	HPDE	Steel	TOTAL
Projected Recovery Rate	18.83%	18.88%	20.12%	19.37%	21.11%	19.19%
Containers redeemed via comm. ctrs.	631,694,916	806,495,939	626,395,329	437,372,700	270,573,724	2,772,532,608
Tonnes of material collected	9,454	168,582	21,448	21,860	19,501	240,844
Handling Fee @ 3¢ container	\$18,950,847	\$24,194,878	\$18,791,860	\$13,121,181	\$8,117,212	\$83,175,978
Income from system - recycling adverts						\$2,400,000
Hub Materials processing fee@ 0.5¢ per container (baling, compaction, and weighing)	\$14,118,607	\$17,008,620	\$13,716,204	\$9,449,835	\$5,787,182	\$60,080,449
Total Earnings	\$33,069,455	\$41,203,498	\$32,508,064	\$22,571,016	\$13,904,394	\$145,656,427

Uncosted Benefit

Operation of other recycling collections, operation of reuse centres

Remote Locations:

Additional fees will need to be paid to both collectors and recycling Hubs in remote locations in Australia, particularly in WA, NT, Northern Qld and parts of Tasmania, rather than the allocation of a higher fee Boomerang Alliance has modelled an annual base payment of \$10,000 p.a. to a remote collection centre and \$20,000 p.a. to a collection centre that also acts as a regional hub. An additional payment to transport materials back to reprocessing centres at \$80 a pallet has also been allowed for:

Base Fees For Collection in Remote Sites	Aluminium	Glass	PET	HPDE	Steel	TOTAL
Payment for remote collection sites (580 collectors X \$10000 pa)						\$5,800,000
Payment for remote collectors that are also 'hubs'(120 remote Collection Hubs X \$20,000 pa)						\$2,400,000
Transport of materials from remote centre (30,000 pallets at \$80 / pallet - back loaded tpt rate)						\$2,400,000
Total Earnings						\$8,200,000

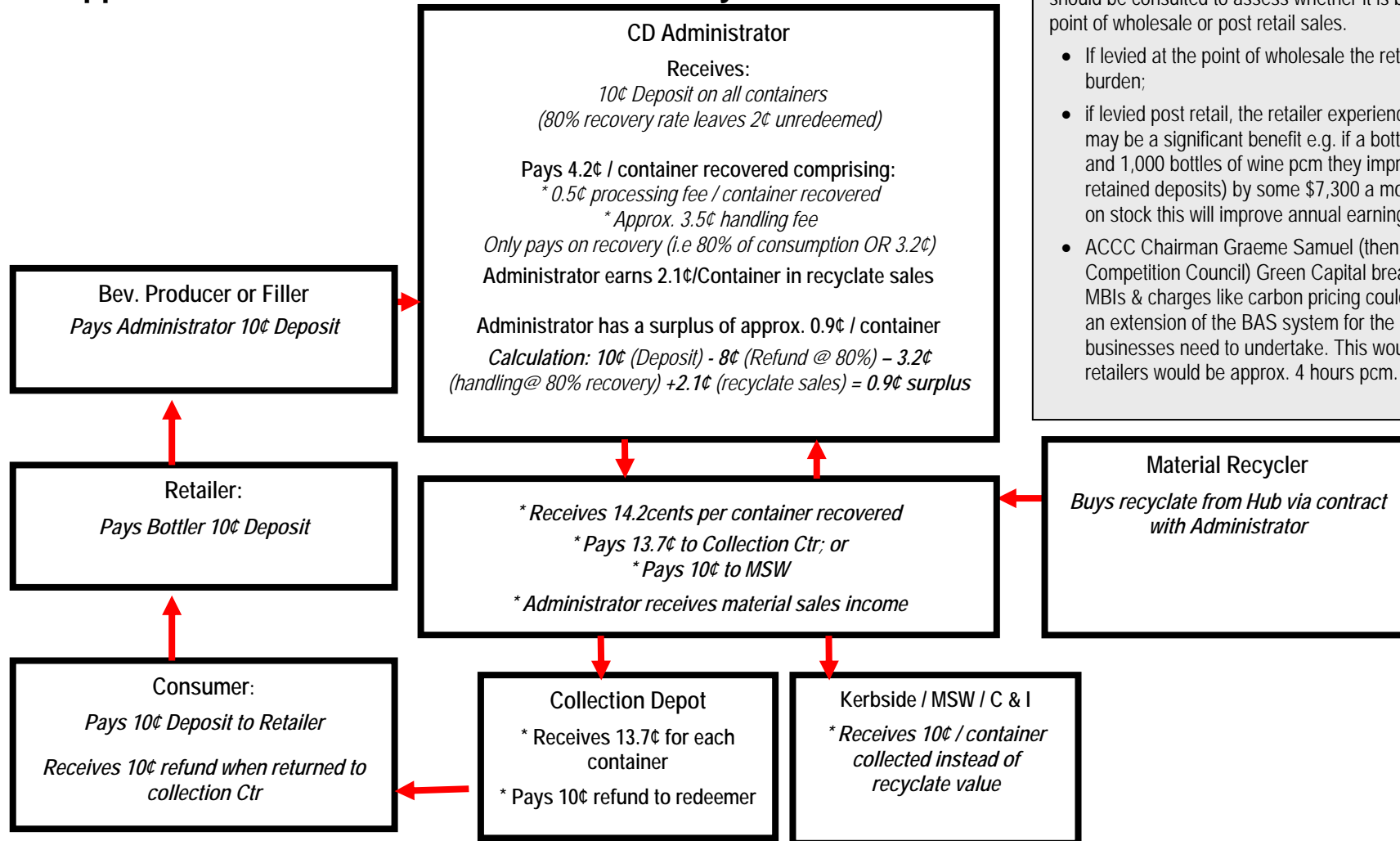
Remote Collectors and hubs will also earn handling fees and incomes from material sales as per other collections centres and hubs.

Summary: Total Systems Incomes and Costs:

The table below outlines the overall financial flows and recovery of materials:

Whole of System Recycling Performance & Net Incomes to fund system						
Materials Covered by Deposit	Aluminium	Glass	PET	HPDE	Steel	TOTAL
Total Projected System Recovery Rate	84.16%	79.62%	88.09%	83.71%	90.28%	81.68%
Total Tonnes Recovered	42,258	711,063	93,931	94,461	83,419	1,025,131
Less: Existing Recycling	35,800	340,000	49,630	43,665	34,760	503,855
Additional Tonnes recovered	6,458	371,063	44,301	50,795	48,659	631,008
Total Income from unredeemed deposits	\$53,136,091	\$87,053,631	\$37,082,999	\$36,773,175	\$12,459,967	\$226,505,862
Materials Sales Value	\$105,644,988	\$63,995,644	\$70,447,888	\$47,230,284	\$12,512,827	\$299,831,630
Less: Total Handling Fees Paid (incl remote network)						-\$440,407,547
System Administration Staff, etc.)						-\$4,000,000
Net Funds in system						\$81,929,946

Appendix 2: Financial Flows of National CD System



NOTE: Boomerang Alliance recommends that the small business sector should be consulted to assess whether it is best to first levy the deposit at the point of wholesale or post retail sales.

- If levied at the point of wholesale the retailer experiences no regulatory burden;
- if levied post retail, the retailer experiences improved cash flows which may be a significant benefit e.g. if a bottle shop sells 3,000 cases of beer and 1,000 bottles of wine pcm they improve their monthly cash flow (via retained deposits) by some \$7,300 a month. On a commercial overdraft on stock this will improve annual earnings by some \$5,840 p.a.
- ACCC Chairman Graeme Samuel (then President of the National Competition Council) Green Capital breakfast on April 3, 2003 said that MBIs & charges like carbon pricing could be efficiently managed through an extension of the BAS system for the GST - an existing remittance all businesses need to undertake. This would mean 'green tape' to small retailers would be approx. 4 hours pcm.

Figure 9: Financial Flowchart of Modelled National CDS System:

Payment of Deposit can be levied:

* On Bottler @ wholesaling (less administration for small business); or

* Post retail sale (improves cash flows for small business).