

# WHAT A WASTE

*Rubbish in the NSW Environment*

*Dave West, 23/5/13*



**KICKING**  
**THE CAN**  
FOR AUSTRALIA



**BOOMERANG**  
ALLIANCE

**sodastream**  
set the bubbles free



## An acknowledgements

Boomerang Alliance would like to thank the following partners, sponsors and member groups for their support and assistance for our work over the past decade:



- ACT Region Conservation Council • Australian Conservation Foundation • Australian Marine Conservation Society Arid Lands • Environment Centre • Cooks River Alliance • Clean Up 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 Australia • Greenpeace Australia Pacific • Local Government NSW • Mineral Policy Institute • National Toxics Network • NSW Nature Conservation Council • Project AWARE Foundation • Queensland Conservation Council • Responsible Runners • SEA LIFE Conservation Fund • Surfrider Foundation Australia • Take3 • Tangaroa Blue Foundation • Tasmanian Conservation Trust • Total Environment Centre • Two Hands Project

## CONTENTS

<b>1. Introduction</b>	<b>4</b>
<b>2. Summary</b>	<b>6</b>
<b>3. Mountains of Rubbish</b>	<b>12</b>
<b>4. NSW Waterways in Crisis</b>	<b>16</b>
<b>5. Environmental Impacts</b>	<b>18</b>
<b>6. What's Effective?</b>	<b>20</b>
<b>7. Who's Responsible?</b>	<b>22</b>
<b>8. The Challenge for Local Government</b>	<b>24</b>
<b>9. Solutions</b>	<b>25</b>

## 1. Introduction

This short report has been prepared to outline the observations made during Boomerang Alliance's recent 'Kicking the Can' tour across Sydney and regional NSW. Over the course of our journey we visited some 25 sites and surveyed 19, to ascertain the level of rubbish found in our built and natural environments and assess the effectiveness of various strategies to address litter.

It's easy to become 'litter blind', so used to the bottles, cans, bags and butts swirling around the ground as you walk to work or relax at the beach. Equally, the untrained eye misses the piles of trash caught in garden undergrowth, windswept under piers and jetties or lost down the stormwater drain. Even 'so called' detailed studies fail to capture a genuine picture of the problem. The National Litter Index prepared by Keep Australia Beautiful claims to capture a snapshot of litter found across a variety of locations; identifying an average of 59 items of rubbish found in every 1,000 sq metres analysed across NSW. Our studies contrast greatly with this data. In fact we found no single site where there were less than 250 items per 1,000 square metres.

It is important to recognise the tremendous efforts being made by communities and local government organisations across the state. Quite literally thousands of people, many of whom are members of Boomerang Alliance's constituency, are out on our beaches, parklands, river fronts and highways, cleaning up rubbish every week. Over the course of our journey we were staggered by the extent of their efforts and the amount of rubbish they were recovering.

Similarly, we saw huge efforts by local government to capture litter and recycle materials through a variety of public place recycling schemes. As always, local government deserves praise for its efforts in managing Australia's rubbish problem but it is disappointing they do not have a greater voice in shaping public policy on waste and recycling. Local government possesses considerably more experience and expertise than state and federal government agencies and they are also the biggest investor in waste collection and treatment, recycling collection, litter education and abatement.

Unfortunately these efforts are failing. Those committed local heroes cleaning up our environment consistently express frustration that while their efforts certainly reduced rubbish for that moment in time it makes little long term difference... As Will Gold, President of NUSEC said:

***"It's like we are picking up the same piece of garbage again and again; we clean it up one day and the next day it's back – the same bottles, cans and plastics in exactly the same place."***

Commonly, councillors, council workers and volunteers identified that the current 'abatement mentality' (i.e. trying to capture rubbish in our environment via public rubbish bins, community clean ups and litter traps on waterways) could only ever have limited effect without any incentives or a proven systematic approach (like container deposits).

Bondi Beach is lined by 50 or more public place recycling stations involving over 150 individual bins. Justin Bonsey, leader of Responsible Runners Bondi has been cleaning up Bondi Beach and explains that:

***"Bins just don't cut it. They are always overflowing; the wind captures them, people miss the mouth when they dispose of their rubbish. We do a 30 minute clean up every Sunday afternoon. Since last September we have collected over 3.5 tonnes of rubbish, including 35,000 cigarette butts, 8,700 recyclable beverage containers, 6,100 straws, and 6,900 plastic bottle caps."***



Thousands of bottles migrating into our oceans via the Styx Valley Stormwater Canal, Newcastle

## 2. Summary

This outline summarises what the KtC Team observed at the various sites it visited:

Site	Rubbish / 1,000 metres <sup>2</sup>	Abatement Measures Evident	Comment
<b>Tamarama Park and Gully</b>	844	2 public place recycling stations within 50 metres of the clean up site plus a further 2 public rubbish bins.  Storm water drain in the area is litter trapped but was in poor repair.	Rubbish concentrations estimated here are understated as around 50% of the area could not be accessed. Some 4,219 items of rubbish (some old) were recovered from a 100 metre stretch of urban creek. An average of 42 items per metre of creek front. 20.53% were beverage containers. Microplastics were evident.  Much of the litter was able to be dated as over 20 years old, indicating the creek has been capturing rubbish and depositing it into the Sydney seascape for decades.  The site was also instructive regarding the effectiveness of both public place recycling and public garbage bins.  Rubbish bins were effective in their immediate vicinity but as little as 20 metres away, litter became evident.  Public Place Recycling Bins (PPRB) were clearly identified and well positioned, yet on inspection as much of 20% of the material in public place bins were found to be contaminated. Adjacent rubbish bins contained more recyclables than the material found in the recycling bin.
<b>Martin Place Sydney CBD</b>	238 <sup>1</sup>	Well placed garbage bins across the site.  Strong council presence visible maintaining streetscape and bins.	With daily pedestrian traffic estimated at over 80,000 people it would be reasonable to expect that the level of litter in Martin Place would be very high. Yet, surprisingly Martin Place was found to be one of the cleanest sites visited by the KtC team.  Effective (but expensive) cleaning efforts and a thoughtful and uncomplicated public rubbish bin system contained the site's rubbish well and demonstrated an active commitment to ensure that Martin Place remained clean and tidy.
<b>Bondi Beach</b>	1,270	There are a series of Public Place Recycling stations lining Bondi Beach.  212 bins sighted at	Bondi Beach has one of the most comprehensive Public Place Recycling systems in Australia. The program is heavily promoted via council, local signage and a significant media program when introduced.

<sup>1</sup> This was a second count. The first was shortly after SCC had swept the area (6.30am) when the count was much lower (56 items / 1,000 M<sup>2</sup>)

		<p>76 Bin Sites.</p> <p>At least 37 of these are permanent Public Place Recycling stations.</p> <p>The beach is swept daily and weekly community litter clean ups are conducted by Responsible Runners (as well as other group community clean ups).</p>	<p>The rate of Public Place Recycling (PPR) bins is estimated to be 1 PPR station for every 50 metre stretch of beachfront – close to saturation levels.</p> <p>The amount of litter recovered by community clean ups remains staggering - at over 1 item (1.27) per square metre. This means there is an item of rubbish found for every step taken along Bondi - after the estimated 4 cubic metres per day is collected by the beach rake. 32.7% of all items recovered are beverage containers.</p> <p>A literature review of the public place recycling program also highlighted that<sup>2</sup>:</p> <ol style="list-style-type: none"> <li>1. 24.7% of materials found in PPRB were non-recyclable contaminants;</li> <li>2. Diversion rates were 42% (and this figure excludes the volumes of rubbish raked or cleaned up by community volunteers);</li> <li>3. The top three unrecovered resources were identified as: <ul style="list-style-type: none"> <li>• Plastics</li> <li>• Glass</li> <li>• Metals.</li> </ul> </li> </ol>
<b>La Perouse (southern end of Frenchmans Bay – beach and parkland)</b>	216	<p>Reasonable distribution of bins.</p> <p>Beach raking and litter collection evident.</p>	<p>Area was reasonably clean; litter concentrations found at the end of the beach, around rubbish stations and in undergrowth.</p>
<b>Botany Bay National Park (Cruwee Cove)</b>	438	<p>Fairly limited as the area is not readily accessible to the public.</p>	<p>Very strong concentrations of rubbish found – nearly all visibly marine debris.</p> <p>Upwards of 40% of items found were plastic bottles.</p>
<b>Cooks River (Mackey Park Marrickville)</b>	626	<p>Litter Trap was in poor repair and largely ineffective at catching litter.</p>	<p>Focus was to look at the effectiveness of litter traps in catching rubbish along the Cooks River; though a litter count of the adjacent park was also undertaken – results were fairly typical of those found in other urban parklands.</p>

<sup>2</sup> REPORT TO WAVERLEY COUNCIL FINANCE, ETHICS & STRATEGIC PLANNING COMMITTEE: Waste Management at Bondi Beach (A07/0604) Oct 2010 [http://www.waverley.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0006/19374/Committee\\_Report\\_-\\_Waste\\_Management\\_Program.pdf](http://www.waverley.nsw.gov.au/__data/assets/pdf_file/0006/19374/Committee_Report_-_Waste_Management_Program.pdf)

<b>Cooks River Foreshore</b>	1,990	Heavily fitted out with Gross Pollutant and Floating Boom Traps	The foreshore was inspected for any visible improvements from detailed studies in 2005 where the average level of debris found along the Cooks River foreshore was measured. While there has been sporadic improvement as a result of significant local government investment in litter traps, education and community clean up efforts, it is disappointing to report that the shoreline debris has shown little overall improvement.
<b>North Sydney (Cnr Miller St and Pacific Hwy)</b>	232	Good bin placement and maintenance efforts. Bin servicing and sweeping evident.	Site was relatively clean but still had significant levels of litter. In particular plastic water bottles, cigarette butts and cups were the most prevalent items.
<b>Bankstown (Retail Precinct)</b>	384	Regular bins near pedestrian areas.	Main pedestrian areas were very clean but car parks and gardens were amongst the most littered places we saw.  "Bin Bounce" was also highly evident – i.e. where there are strong concentrations of litter adjacent to the bin. This is believed to be the result of missed efforts to dispose of rubbish and items caught in the wind and blown out of its mouth.
<b>Church St Mall Parramatta</b>	126 (within Mall) 840 (outside Mall)	Very strong litter patrolling; strong concentrations of public bins.	Parramatta Mall was the cleanest location we inspected and reflects Parramatta Councils strong commitment to rubbish management.  Unfortunately within 50 metres of the mall boundaries we found 4 separate litter hot spots (and 2 illegal dumping spots) where rubbish concentrations were 6 times that of the mall.  This highlights the impossible task any council has in trying to manage rubbish without some form of regulatory support to tackle the problem.
<b>The F3 Mooney Mooney</b>	2,860	Nil	This was the most littered location we found – with 2.86 litter items per sq. metre.  The entire road side along the F3 is clogged with rubbish; much of which will obviously end up in the Hawkesbury River.  There was a strong mix of materials including confectionery wrappers, coffee cups etc. Our count showed that over 40% of all rubbish was beverage containers that would be covered by a national CDS.



<b>New England Highway Maitland</b>	847	Nil	<p>The park area running alongside the new England Highway. The vast majority of rubbish had clearly been tossed by passing traffic.</p> <p>The site was heavily littered and beverage containers in particular were strongly evident (42% of all items found).</p> <p>The site highlighted the difficulty in managing rubbish via abatement strategies (like rubbish bins) with KtC members observing that 'you'd have to fit some sort of pig trough along the entire highway' to make any difference.</p>
<b>Throsby Creek Newcastle</b>	825	Nil	<p>This small stretch of waterway is a mangrove lined walkway approx. 150 metres in length and also forms part of the storm water system. Approx 40% of the rubbish is believed to be sourced from the storm water and 40% from nearby arterial roads.</p> <p>29.8% of all items collected were beverage containers.</p>
<b>Cockle Bay (SHFA)</b>	2,456	Lots of PPRB (generally empty) and rubbish bins (generally overflowing)	<p>Along with Circular Quay, Cockle Bay is one of the dirtiest places in Sydney. None of the stormwater drains are trapped, the cleaning takes place in the morning allowing the rubbish to be blown into the Harbour overnight, the cleaning efforts are inadequate and the bins are often overflowing.</p>
<b>Circular Quay (SHFA)</b>	2,630	See above.	<p>See above. SHFA's performance on the waste and recycling front have significant gaps.</p>
<b>King St, Newtown</b>	408	Garbage bins regularly spaced and well serviced.	<p>Considering the amount of pedestrian and vehicular traffic, the area is fairly clean. Councils (one side of King St is Marrickville Council, the other is Sydney City Council) obviously make a significant investment into rubbish removal. Disappointing to see local businesses along King St littering (cigarette butts) and using public street bins to deal with their shop's rubbish.</p>
<b>Brighton Le Sands (Park &amp; Promenade)</b>	562	Inadequate bins and little effort to maintain the area.	<p>There is an obvious management failure evident along Brighton Le Sands which Rockdale Council needs to urgently investigate.</p> <p>Rubbish raked from the beach had been buried rather than removed. The bin placement is poor and the local picknickers looked like they were sitting in the middle of a rubbish tip.</p>

<b>Stockton Beach</b>	4,650	None	<p>This is a part of the beach that represents a known hot spot where estuarine and stormwater outfall collects. It should not be interpreted as a 'typical' count for Stockton Beach.</p> <p>It is worth noting that 20.7% of material is beverage container related – approx 50% of the total by volume.</p>
<b>The Hawkesbury River and Brisbane Waters</b>	1,845	Not reviewed	<p>This data represents a clean up of 12.2 kilometres of foreshore on the Hawkesbury River and Brisbane Waters over a 6 month period.</p> <p>It has been included as it provides more comprehensive data than single inspections, but has been excluded from assessments regarding the composition of rubbish as it is a different type of study.</p>

### Key Themes

A number of recurring themes regarding the nature of the rubbish problem and potential solutions became clear during the KtC program:

1. It is evident that there is substantially more rubbish (particularly bottles and cans) entering our natural environment (perhaps as much as 10 times more) than previously thought. The number of sites recording huge volumes of rubbish was shocking.
2. While both the community and local government are making major efforts to clean up rubbish - without far greater government support and effective policy - these efforts are largely futile.
3. The type and volume of material entering our waterways is a primary threat to marine and estuarine ecology. Some of these threats represent long term human health risks.
4. Abatement Strategies including Public Rubbish Bins and Litter Traps can only have a limited impact on managing rubbish; Public Place recycling Stations are ineffective and money would be better spent on other services.
5. Consecutive NSW Governments are responsible for this problem and their approach reflects common themes:
  - a. NSW Government 'buck passing' its rubbish responsibilities to both local and federal government.
  - b. NSW Government agency reporting (both their own and funded research) is overly optimistic and has been found (on a number of occasions) to be manipulated or exaggerated.
  - c. State Government agencies (e.g. State Rail, RMS, Sydney Harbour Foreshore Authority, Sydney Water and Hunter Water) are consistently failing to effectively control and recover rubbish generated via their assets.
  - d. State Government environmental agencies are failing to deal with waste and actively stalling the development of effective policy to solve the problem.
  - e. There is excessive reliance on the Keep Australia Beautiful (KAB) National Litter Index (NLI).



From Top Left (Clockwise): Pacific Highway Maitland, Parramatta CBD, Tamarama Gully, Illegal Dumping, Brighton Le Sands, Botany Bay Foreshore, Cooks River Marrickville, Darling Harbour and Styx Creek Canal Newcastle

### 3. Mountains of Rubbish

Our three week tour saw us visit some 25 locations between Maitland and Wollongong and highlighted the fact that the amount of rubbish in our natural environment, waterways and public places is staggering. At the 19 places we surveyed the amount of rubbish on average was 1,694 items in each 1,000 square metres – this is 22 times higher than the average 59 items / 1,000 square metres the government adopts (which is sourced from a study by Keep Australia Beautiful) in its reporting and analysis.

The reality is we have a far bigger problem than reported – in fact we found **no site** to be as clean as the supposed state average. We would challenge any reader to inspect an established urban area or public space precinct and assess the accuracy of KAB claims of 1 item of litter in any area of 16 square metres (4 metres X 4 metres) - our research indicates that in a similar sized metropolitan area you would be more likely find around 22 items.

Interestingly our finding that the KAB survey dramatically understated is also identified in a review of the Sustainability Victoria Annual Litter Reports. They identified (in a survey across 216 Victorian Sites) Rates of litter of some 729 per 1,000 square metres – some 20 times higher than the rate of 36 items per 1,000 square metres reported by KAB

It is difficult to reach any conclusion other than that there are quantum more rubbish in our environment than previously thought - between 5 – 22 times more than previously reported.

The major rubbish items consistently found were beverage containers; with plastic films prominent around foreshores and beaches; and cigarette butts also prominent in high streets and shopping areas.

The 2011 Victorian Litter Report also identifies beverage litter as rising from an estimated 16% of all rubbish in 2005 to 29% in 2011 (an 81% increase in 6 years – an average 13.5% increase p.a.

The bottom line is that the unsightly, unhygienic and at times dangerous rubbish is unacceptable and the simple litter enforcement and abatement strategies (rubbish bins and litter traps etc.) have done little to bring the problem under satisfactory control - and this situation has prevailed for some time.

While government appears to rely on more of the same - it is clear that only individual regulatory interventions to systematically address **each** of the major issues: drink containers; plastic bags; cigarette butts; and dumping – are necessary.

#### The Data

Comparing our experience with that recorded by KAB has increased our concerns regarding the validity of the NLI as a basis for the development of government policy. The state of rubbish is significantly understated due to methodological issues.

KAB reports that there is an average of 59 items found in each 1,000 square metres they survey. To achieve consistency KAB measures sampled areas in a location – not the entire site; meaning the mini hot spots found in any environment (e.g. the bushes on the edge of car parks; the corner of a commercial property where wind blows the rubbish; the mangroves along a foreshore or the southern point in any beach) are often excluded from studies. Consequently while it is a useful measure to see any changes in the level or composition of rubbish it does not reflect the sheer volumes of rubbish littering our environment; nor actual sites in need of significant action. This has the potential to greatly reduce the case for intervention.

Both the NSW and Commonwealth Governments develop their policy responses and base analyses for studies such as the Packaging Impacts Consultation Regulatory Impact Statement (CRIS) on the National Litter Index (NLI) produced biannually by Keep Australia Beautiful (KAB). Boomerang Alliance has had concerns about this research as a genuinely independent source of information for a number of years – and the potential influence of major sponsors Coca Cola Amatil; and the Australian Food and Grocery Council's Packaging Stewardship Forum (PSF). This is compounded by the fact that KAB is actually a partner in one of the proposed solutions – the

PSF's National Bin Network (NBN) and will receive funding if the NBN is adopted. Together this makes it difficult to have confidence their analysis is without at least an unconscious bias.

To demonstrate how (in our view) the research creates a bias, we assessed each report that KAB produces including a summary of 'the dirty dozen' most littered products (see right).

On face value, their results may seem reasonable; yet why would the report separate glass drink containers into 14 different categories of bottle yet group all other glass (food jars, other glass packaging, window glass etc.) into a single line item?

The simple reality is that, when combined, beverage containers represent 5,365 items and related materials a further 4,245 items – making it the second most littered item found and at 3,271.31 litres of volume - the largest amount of rubbish items (44% of all litter<sup>3</sup>). This a significant difference from the picture painted by KAB.

Similarly, soft paper and plastic wrappers (ice cream, confectionery, and stretch wraps) are found across literally thousands of product lines but are only grouped into just 2 categories (paper and plastic) when beverage containers are broken into 37 separate categories (categorised by packaging material type, then type of beverage and finally the size of container) plus another 7 categories for other beverage related rubbish (metal lids, plastic lids, straws, cups etc.).

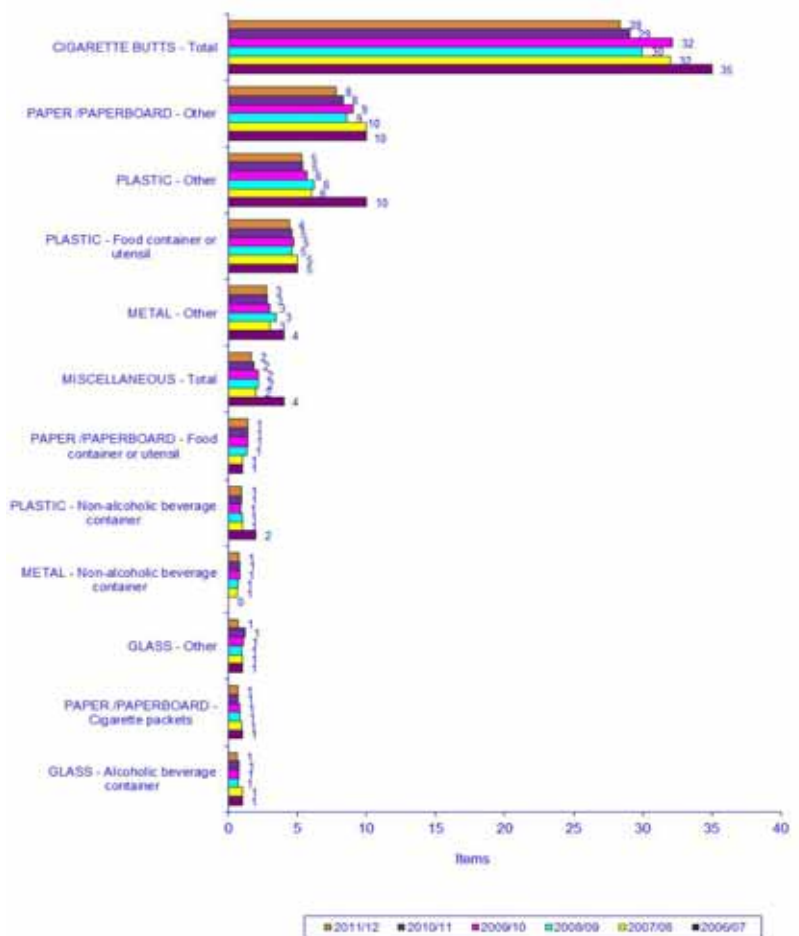
It is important to note we are not claiming our analysis is either definitive or gives an accurate picture of the overall level of rubbish found in the environment. However averages are next to useless in identifying where and on what to act as the environmental and public use context is crucial. We chose sites that were likely to produce rubbish and expected to have a higher number than KAB claims because they are where action is a priority - but we did not expect that our average to be 22 times higher than KAB reports. The understated picture should not be the basis of policy decisions.

For example the CRIS arrived at a figure of 40,000 tonnes of litter entering our environment each year by extrapolating from the NLI. Even discounting our research by 50% and extrapolating the data in a similar manner you arrive at the conclusion that there is some 440,000 tonnes of rubbish across our landscapes.

### Our Frustrated Heroes

Every weekend across Australia there are literally thousands of people cleaning up our waterways, bushland and parks. Some run regular programs with community service clubs or people working with disadvantaged kids or people with disabilities; others are just a group of

Dirty Dozen - Items per 1000 Square Metres - Object Sub-Categories - NATIONAL - 06/07 to 11/12



<sup>3</sup> Total excludes illegal dumping

friends who want to make a difference when they get together socially. Many are simply individuals who hate seeing piles of rubbish across their local area.

Its hard work; its dirty; but they take great pride in their efforts.

We met hundreds of these people across the three week tour. Wonderful people who do a fantastic service to their communities, **but** they are almost universally frustrated by the futility of their efforts – recognising that they can't actually solve the problem. This is a very short snapshot of what the people cleaning up, had to say:

***"Its like we are picking up the same piece of garbage again and again; we clean it up one day and the next day its back – the same bottles, cans and plastics in exactly the same way."*** Will Gold, President of NUSEC.



Throsby Creek Mangrove Walk and NUSEC sorting rubbish after cleaning up

Gradually they have become politically active; staggered by the length that the likes of Coca Cola have gone to try and stop a simple initiative like contrainer deposits and propose ineffective or problematic alternatives:

***More bins would only raise waste management costs for local councils, as it is clear that the current bin system is already failing to achieve its intended purpose. Plus, how do you educate in a place such as Bondi Beach, which has a diverse demographic of young and old, local and foreign, all with different practises and levels of awareness? Local council has been banging its head against the wall for years without success trying to hit upon a way to educate people on recycling but so far nothing has worked.*** Justin Bonsey, Coordinator Responsible Runners Bondi.



Responsible Runners Bondi Beach & Tamara Gully Clean Up

**Public Place recycling? The recyclables end up in the garbage bins. Well, actually I think it's more a case of other stuff ending up in the recycling. Particularly with Hornsby, there were heaps of the recycling bins that had food in them...almost every bin. You've got things like chip containers with tomato sauce all over them, there's pieces of fruit that people throw in there.** Charlotte Rogers, Newcastle volunteer.

They can't believe that government has been procrastinating for 10 years on how to fix packaging waste:

**"It's simple isn't it? Put a deposit on bottles and cans and either people return their containers or pay someone else to do it? Why the concern about what it costs – it's just the same as being fined for littering; you only pay if you pollute"** Lisa Wriley, Central Coast mother and waste activist.

**"The number of people who said 'I remember when I was a kid, and we used to collect cans for money'. It means that a lot of people still remember that behaviour, it is already embedded, and they already thought it was a good idea. People seem to think that it is such a ridiculous thing to have to fight so hard for, they say 'this is a no brainer, why hasn't this happened years ago'."** Liana De Stefano Gladesville community volunteer.



Left Top: Diving for Debris @ Darling Harbour. Top Right: KtC Clean up @ La Perouse  
Bottom left: Street clean up around Premier O'Farrell's Office. Bottom Right: Cockle Bay Clean Up

## 4. NSW Waterways in Crisis

One of the most shocking discoveries during our tour wasn't how polluted our waterways are - we've all come across big piles of rubbish on the tide line along a beach. What was shocking was realising that these piles aren't a gradual build up - they are what has been dumped in just a few short weeks. Throsby Creek was a classic example – the folks at NUSEC clean out huge piles of rubbish and when they come back a few weeks later the pile is as big as before. Yet even after multiple clean ups NUSEC continues to collect thousands of items each time.

Responsible Runners at Bondi report similar experiences. They've been cleaning up the same place every week for 6 months - yet week in and week out the amount of rubbish collected remains the same.

The other startling fact is how much of our local rubbish is dumped into our waterways via the stormwater system. Litter traps were thought to capture most of the rubbish before it reached our seas – sadly this is wrong. Observationally less than 25% of stormwater outlets we inspected (over 100) appeared to be trapped; and often where drains were trapped they were either poorly designed or in a poor state of repair – rendering them largely ineffective.

All the waterways we inspected were in a disturbing state – we started out on the Cooks River a major waterway entering Botany Bay. Cooks River is infamous; carrying the unenviable label of Australia's dirtiest waterway.



Circular Quay

Throsby Creek

Certainly Cooks River and Botany Bay are bad; with concentrations of litter along the foreshore ranging between 216 items per 1,000 square metres up to 1,990 – the average over 4 sites was 817 items per 1,000 square metres of foreshore. But our experience was that every major waterway between Wollongong and Newcastle can be just as polluted. Here is a snap shot of what we saw (bear in mind that according to the KAB National Litter Index there is an average of just 59 rubbish items found in every 1,000 sq metres):

- 🚩 Botany Bay –327 bits of rubbish per 1,000 sq metres – 5 1/2 times the state average.
- 🚩 Cooks River –1,308 bits of rubbish per 1,000 sq metres – 22 times the state average.
- 🚩 Hunter River and tributaries –2,107 items – 35 times the claimed state average.
- 🚩 Sydney Harbour – 2,543 items – 43 times the state average.
- 🚩 The Hawkesbury and Brisbane Waters – 1,845 items - 31 times the state average.

The concentrations of rubbish we found across our foreshores averaged some 1,626 individual pieces of rubbish in every 1,000 square metres of foreshore – and that's just the material that floats. Experts cite that less than 20% of litter is transported as floating material and the remainder is either entrained in the flow or sinks to the creek bed<sup>4</sup>. This means the amount of material entering our waterways could be as much as 5 times higher than suggested above.

<sup>4</sup> Melbourne Water [http://wsud.melbournewater.com.au/content/treatment\\_measures/litter\\_traps/overview.asp](http://wsud.melbournewater.com.au/content/treatment_measures/litter_traps/overview.asp)

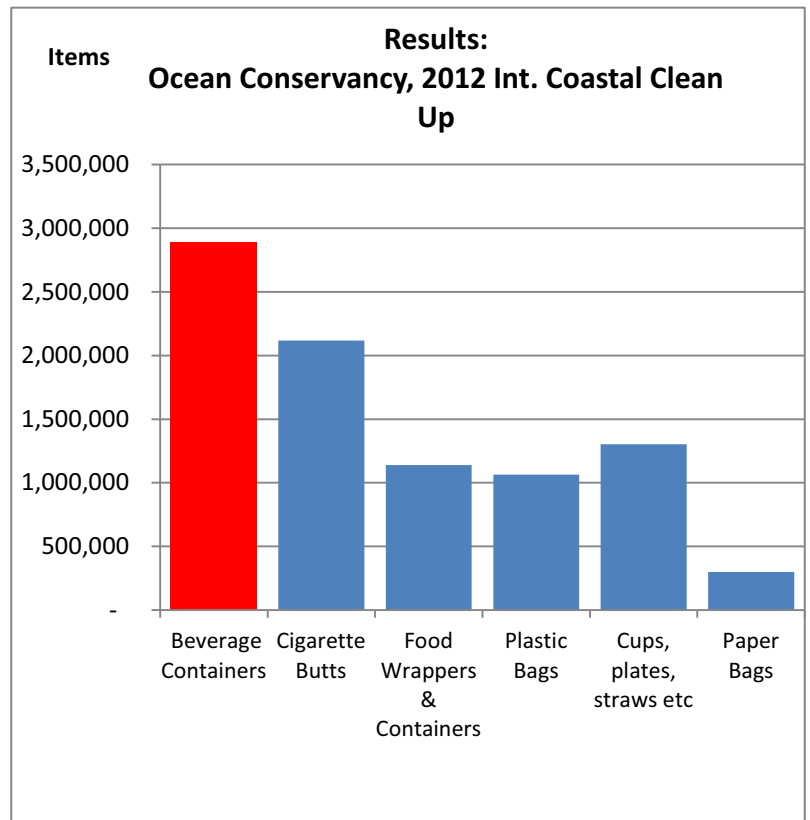


Similar results were found on our beaches and boardwalks. Brighton Le Sands (562 items); Bondi (1,270 items), Tamarama (844 items) and Stockton Beach (4,550 items), recorded an average 1.8 items for every square metre of beach – and that’s after beach sweeping; extensive public education; banning of key litter items (cigarette butts); and a large number of public place recycling bins.

Unlike the experience in our terrestrial environment, cigarette butts are not the dominant item found along our foreshores. The NLI shows the average litter items found in terrestrial environments measures 0.11m<sup>3</sup>; whereas the average items found in our investigation of marine foreshores measures 0.21m<sup>3</sup>. This indicates there are some 362 cubic metres of rubbish found in each 1,000 square metre of foreshore (beaches, bays, rivers).

Of particular note is the volume of beverage rubbish (containers and lids) found. The CRIS into packaging impacts based its assessment of the litter problem on KAB’s National Litter Index – which found that beverage containers represent 10.8% of all items found; yet along our foreshores we are seeing 25.8% (39.1% if Brisbane Waters is included which produced significantly higher amounts of beverage containers than typical). Consequently the volume of beverage container rubbish is around 56% of all material entering our marine environment.

These results are borne out by the Ocean Conservancy Report in their 2012 International Coastal Clean Up. This report collates the efforts of over 550,000 individual efforts to clean up some 20,000 miles of coastline around the world. Not only was the combined beverage rubbish the single largest group of products found it represented 25.8% of all rubbish items collected.



**Conclusion: Marine Rubbish Data**

Our waterways and foreshores are much more polluted than our terrestrial environment:

- There are an average 1.8 items (0.36M<sup>3</sup>) of rubbish found in every square metre of foreshore
- Overall rubbish entering our marine environment (including materials that sink to the bottom of the waterway) could be as much as 10 times higher than previously thought
- 56% of all rubbish entering our marine ecosystems is bottles, cans or lids.

## 5. Environmental Impacts

The hazards of plastics are well documented – with ingestion and entanglement deemed responsible for the deaths of some 1 million seabirds and 100,000 marine mammals each year. UNEP (Laist 1997) has identified the following species are threatened by marine debris (table right).

	<b>Total Species Worldwide</b>	<b>Species with Entanglement Records</b>	<b>Species with Ingestion Records</b>
<i>sea turtles</i>	7	6 (86%)	6 (86%)
<i>seabirds</i>	312	51 (16%)	111 (36%)
<i>marine mammals</i>	115	32 (28%)	26 (23%)
<i>fish</i>	-	34	33
<i>crustaceans</i>	-	8	0
<i>squid</i>	-	0	1
<b>TOTAL</b>	<b>434</b>	<b>131</b>	<b>177</b>

The Commonwealth Department of Sustainability, Environment, Water, Population and Communities identifies that available information indicates that, “at least 77 species of marine wildlife found in Australian waters have been impacted by

entanglement in, or ingestion of, plastic debris during the last three and a half decades (1974-2008). The affected species include six species of marine turtles, 12 species of cetaceans, at least 34 species of seabirds, six species of pinnipeds, at least 10 species of sharks and rays, and at least eight other species groups including dugongs”.

Ingested plastics are also present and toxic hazards that can pass through the food chain, bioaccumulates in the bellies of our biodiversity, potentially entering our own bodies (e.g. fish; oysters, molluscs). When exposed to sea water, plastics tend to concentrate toxic and non-toxic organic compounds present in the sea water at low concentrations. In particular Andrady (2011) notes that PCBs, DDT, and nonylphenols, have very high partition-coefficients and are very efficiently concentrated in plastic material.<sup>5</sup>

Microplastics (small pieces of plastic generated as products break down) and Nurdles (the pellets used to manufacture plastic finished goods) raise particular concerns as a threat to zooplankton and other filter feeders. In turn they transfer contaminants absorbed by plastic into body tissue; and then pass concentrations of toxins along the food chain.

There is increasing concern that drift plastics are colonised by motile, encrusting and fouling organisms (e.g. bacteria, diatoms, algae, barnacles, hydroids and tunicates) and act as vectors for ‘hitchhiking’ non-indigenous and/or pest species.



Left: Micro Plastics recovered from foreshore Right: Bottled Octopus.

<sup>5</sup> Marine Pollution Bulletin, 62,2011

Glass rubbish attracts far less attention but is equally dangerous; we found significant quantities of glass in our travels. KtC community worker Anthony Lazzaro summarised his experience:

**“The biggest safety, health issue I saw was broken glass and glass bottles that get smashed and left in the environment; it’s just waiting for some kid to step on it. There is nothing other than CDL in my mind that will take glass out of the equation... It gets smashed, it doesn’t get picked up – every park and foreshore we visited had broken glass issues. A plastic bottle can be there for a long time before it gets collected without breaking down, but glass ...”**

It’s a common concern and many children who grew up in rural Australia or on family bush picnics have ended up in hospital or visiting the GP from stepping on broken glass hidden by long grass or water. The CRIS identifies that in 2008 there were an estimated 39,485 injuries each year as a result of littered glass packaging (nearly all bottles) with 5,365 items requiring medical treatment..

While no measure has been made of the impact of glass (and metal) on wildlife there are a wealth of reports to indicate broken glass has an impact on our aquatic biodiversity. Particular species like Dugong and Platypus which feed on the bottom of our rivers and harbours and can be exposed to laceration injuries from sunken litter. The Australian Platypus Conservancy notes that “research has shown an average of 10% of Platypus living in suburban waterways have something caught around their body, the entanglement rate being as high as 60% in some areas. In addition, many platypuses have scars on their bills and bodies which may have been caused by encounters with sharp objects in the water, such as broken glass, sharp pieces of metal or discarded wire”.

Commonwealth and state governments largely ignored the potential impact of plastics and litter on our biodiversity in the recent CRIS and other packaging related studies, despite identifying that marine debris (in particular plastics) are a key threatening process to marine biodiversity under the Commonwealth EPBC Act.



Left: Platypus rubbish injury



Right: Pelican confuses rubbish for food

## 6. What's Effective?

### *Litter Traps:*

Based on our inspections, perhaps 25% of stormwater outlets are trapped and many were ineffective. Trying to contain all rubbish from entering our waterways with abatement strategies (traps, bins etc.) would be an expensive exercise – significantly more than has been spent over the last 10 years. Litter Traps also have a limited impact – experts (Fletcher et al 2003) report that the performance of litter and sediment management systems can be expected (depending on design etc.) to capture up to 30% of all litter.

These figures indicate that we are only catching around 7.5% of all rubbish entering our marine environment via the stormwater system.

As a point of comparison the CRIS quantified litter capture via traps in Melbourne in 2008/09 to be 2,774 tonnes; yet the CRC for Catchment Hydrology estimates that approximately 60,000 tonnes or 230,000 cubic metres of gross pollutants (about 120 olympic-sized swimming pools) and about 2 billion items of litter annually (about one item per person per day) enter Port Phillip each year<sup>6</sup>. This represents an effective capture rate of just 4.6%

From a local community perspective this would mean that from the Cooks River alone more than 1,200 cubic metres of rubbish is washed into the marine environment each year<sup>7</sup>. With Port Jackson, The Hawkesbury and Hunter Rivers all recording substantially higher levels of rubbish than the Cooks River, it is clear that government policy to restrict rubbish entering our marine environment has been a significant failure.

### *Bins:*

The notion of lining our public recreation areas with bins is equally flawed. While providing waste receptacles for individual and community clean ups and from foreshore recreation is important, bins need to be placed well back from the waterway, and a reliable system must be in place to empty them in all instances before becoming full (a significant labour expense).

The reliance on bins is surprising given the findings of the report, 'Understanding Littering Behaviour in Australia' (June 1997), which stated: "A lack of bins was not a major factor in littering; most littering occurred within five metres of a bin. This was particularly the case for cigarettes."<sup>8</sup>

By comparison, since the Northern Territory introduced its CDS in January 2012 it has experienced a 29% reduction in bottle and can rubbish and a 52% reduction in beverage related litter<sup>9</sup> after just 5 months of operation, despite some now well publicised interference by Cocal Cola Amatil, Lion and Schweppes.

It would be reasonable to expect similar results in NSW. This would see a 29% overall reduction of rubbish entering our waterways in less than 6 months and at **no cost** to state or local government.

---

<sup>6</sup> <http://www.clearwater.asn.au/sites/clearwater.asn.au/files/resources/CRC%20Gross%20Pollutants%20Industry%20Report%202001.pdf>

<sup>7</sup> Cooks River Stormwater Management plan 1999 estimated that 1,300 cubic metres of rubbish is washed from the catchment each year – at a 7.5% rate of capture this equates to 1202 tonnes of rubbish unabated.

<sup>8</sup> <https://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CC4QFjAA&url=http%3A%2F%2Fwww.afgc.org.au%2Fdoc-library%2Fcategory%2F9-packaging-recycling.html%3Fdownload%3D62%253Aunderstanding-littering-behaviour-1&ei=sB2bUbibNqW5iQet6YDwBQ&usg=AFQjCNFS8TGNVDsIO61D3BGgtsTnMqyVng&bvm=bv.46751780,d.aGc>

<sup>9</sup> Based on the KAB National Litter Index reports between November 2011 (pre CDS) and May 2012 (post)



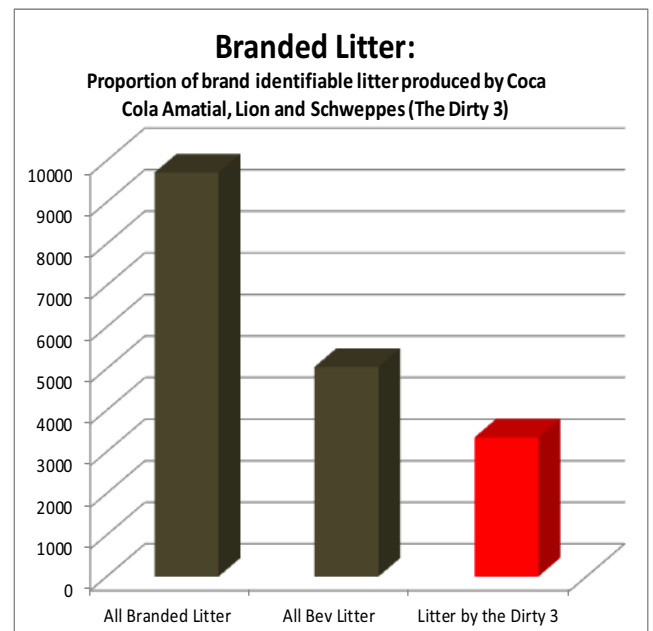
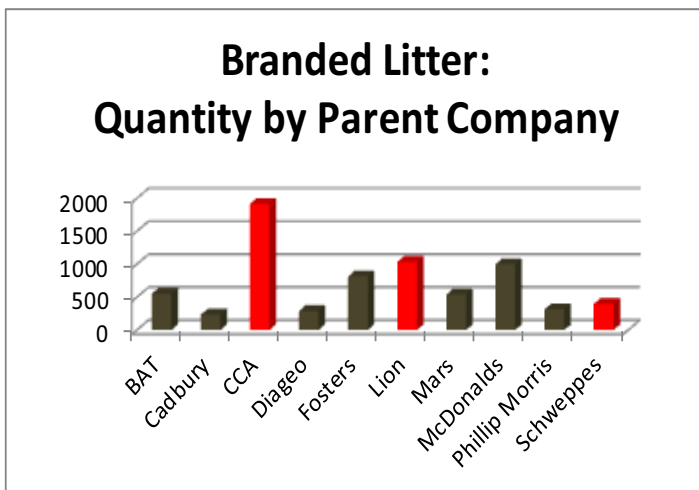
Top Left: Circular Quay Public Place Recycling; Top Right: Newtown Recycling; Middle Left: Cooks River Litter Trap; Bottom Left: Gross Pollutant Trap Centennial Park Bottom Right: Mackey Park Litter Trap

## 7. Who's Responsible?

The beverage industry and big retailers are often blamed for stopping a container deposit system ... and in turn causing the mountains of rubbish found in our environment. But this isn't the truth. Most industry players haven't campaigned against CDS; many are quite sympathetic or, while agnostic towards the issue, have provided positive input into the design of our scheme.

Coles, Woolworths, Fosters Group, Diageo, Visy, and Alcoa ARP are just a handful of the many major industry players who have provided us with constructive and balanced feedback regarding the adoption and implementation of a national CDS.

The 'industry opposition' comes from just 3 major bottlers (The Dirty 3) along with a single industry body within the Australian food and Grocery Council – The Packaging Stewardship Forum (which has just 5 members and contributes over half the AFGC's annual revenues). The bottlers are - Coca Cola Amatil; Lion and Schweppes. Ironically their brands proliferate in our landscapes as some of the most littered products and packaging across the country. As the graphic below shows these 3 companies represent almost 2/3rds of all beverage litter (and a third of all rubbish) found in our environment. Of course when it comes to trashing Australia there is one player who stands out above all else – Coca Cola Amatil.



We were also surprised to learn the extent to which state government agencies management of rubbish is consistently well below that of local government. While we often saw councils making massive efforts to tackle rubbish; the same could not be said for the government agencies. For example:

- *State Rail*: Train stations entrances and property assets were consistent hot spots. In Newtown, Bankstown and Parramatta the rubbish around the train station was generally 300% higher than that in the nearby shopping precinct (which council manages).

- *Sydney Water*: Sydney Water spruques its environmental credentials but there are major problems with stormwater as a primary conduit for land based rubbish entering our waterways. Only a small proportion of stormwater drains are trapped; and we saw a number of major stormwater outlets which actively spew out huge quantities of rubbish on a daily basis.
- *RMS*: Relatively new major arterial roads (like the Western Distributor) appear to have stormwater drains linked directly into our local waterways; similarly the most polluted spots are consistently our freeways. Further, a visit to the RMS website showed that rubbish is barely on the RMS' agenda. The focus on waste was about the management of internal waste with no mention of their responsibilities for rubbish along our freeways.
- *Sydney Harbour Foreshore Authority (SHFA)*: Frankly this organisation (which is responsible for managing the commercial activity and environment along our world renowned foreshores) are poor operators. Inadequate management of stormwater outflows along their properties; poor cleaning strategies; bad bin management; zero litter education for visitors or tenants; and little to no investment in traps or gutters to limit the volume of rubbish entering the Harbour.

The Office of Environment and Heritage is also a cause for concern. While the NSW representatives on the Packaging Decision RIS committee have been making some effort to finally complete the analysis on packaging impacts and resolve the debate on CDS – key executives appear to have been 'partisan' in their advocacy and have delivered expensive and ineffective strategies to manage waste and litter.

The most recent example is the 'Tackling Litter' section in 'Waste Less, Recycle More' (2013) with a \$20m fund over 5 years to "revitalise anti-littering efforts across NSW in collaboration with local communities and councils." The various strategies are more of the same largely inadequate measures in an effort to achieve the State Plan target of NSW having the lowest per capita litter in Australia. Notably until exposed by Total Environment Centre, the department was promoting an erroneous measure of litter per 1,000 people with a "convenient" statistical mistake that led to NSW being lauded as far tidier than less populous states such as South Australia, Western Australia and Queensland. The national data was arrived at by counting the amount of litter recorded at various sites such as parks and shopping centres by the NLI, with the results being divided by a state's population. However NSW and South Australia have the same number of sites with a population variation by a factor of 4.5; and unsurprisingly, the analysis showed South Australia to be almost four times as dirty as NSW.

Subsequently OEH withdrew the data – but the question remains about how it will measure progress against the State Plan target and in view of the findings of this report.

Another key theme we experienced was the level of confusion the public felt over who (at the governmental level) is responsible for the problem?

Constitutionally, waste is a matter for individual states and territories who have the responsibility for waste and environment; yet consecutive governments, who appear to fear a backlash from the likes of Coca Cola and Lion push the issue back to the Commonwealth citing 'legal hurdles' as a barrier for states to act in their own right. There is a legal issue certainly; the Commonwealth Mutual Recognition Act is an important piece of legislation which prohibits individual states from passing legislation that creates trade impositions between state based business and its interstate competitors. But, using the Mutual Recognition Act, as an excuse for inaction is also somewhat deceptive. The Mutual Recognition Act allows individual governments to take action to protect their communities and environment – they simply need to apply for an exemption under the Act. The Commonwealth and States have acted to grant exemptions before – in fact they have granted Mutual Recognition Act exemptions for a CDS in both South Australia and the Northern Territory.

Every State and Territory has the right to make up its own mind on container deposits and other regulatory pathways to tackle waste and litter – but using legal barriers as an excuse for inaction is just rubbish!

## 8. The Challenge for Local Government

Waste and litter are one of the greatest challenges facing the local government sector. It is the largest provider of waste and recycling services in Australia. The Australian Bureau of Statistics estimates that in 2009/10, ratepayers contributed \$2.005 billion towards the delivery of 'Municipal Waste and Recycling Services'. <http://www.abs.gov.au/ausstats/abs@.nsf/Products/8698.0~2009-10~Main+Features~Waste+management+services>

Additionally, the Victorian Local Government Annual Survey 2009/10 (Sustainability Victoria) indicates that public cleaning and litter management (street sweeping, servicing public rubbish bins and litter trapping) costs an estimated \$14.11 per capita. Based on this assessment litter adds another \$324.5 million to the national cost.

All up this represents a \$2.3 billion (\$920 million in NSW) annual investment by local government in managing our rubbish. Comparatively the NSW Government invests just \$93.1 million p.a. on rubbish management<sup>10</sup>; despite earning an estimated average of \$460 million p.a. in revenues from the NSW Waste Levy<sup>11</sup> and originally promising to provide substantial funds to local government

Yet despite being both the largest investor in waste and recycling and the largest service provider of waste and litter services, local government has no substantial voice in the policy debate and little choice but to continue to do what they can with limited resources and piecemeal state policies to address our growing mountains of rubbish. The result is that they are forced into investments that are sub-optimal – for example expanding already over worked kerbside recycling programs into recovering new (unviable) materials such as composite plastics; or expensive rubbish abatement strategies such as litter traps that will only have a limited affect.

Make no mistake; while often criticised by media, local government is both the 'expert' and the community champion on all things waste and recycling. NSW local government was amongst the first champions for the adoption of a Container Deposit Scheme (starting their advocacy at least 10 years before the Boomerang Alliance was formed) and they are the most reliable of supporters for community rubbish clean ups like Clean Up Australia Day.

To this end it is important we highlight that while we witnessed failings to adequately contain rubbish in locations (including Brighton Le Sands – illegal dumping; and ineffective litter trapping (Newcastle and Cooks River) it is unreasonable to blame them for this. Considering they have little input into policy or the products being manufactured and disposed - local government does an outstanding job in impossible circumstances. Like our community champions cleaning up public places they cannot fix our rubbish problems with bandaid schemes that have time-limited funding as has so far characterised the approach of the O'Farrell Government.

---

<sup>10</sup> <http://www.environment.nsw.gov.au/waste/levyreview.htm> Waste Less, Recycle More: A five-year \$465.7 million Waste and Resource Recovery Initiative

<sup>11</sup> KPMG: 'Review of the NSW Waste and Environment Levy' P16



## 9. Solutions

It's clear we will only be able to tackle our growing rubbish problem through a series of regulatory actions. While all litter is a significant problem there are four major product groupings which are the most prolific rubbish and also pose the greatest threats. They are:

**PRIORITY NUMBER 1:** Beverage Containers. The biggest volume of rubbish and the largest components of the litter stream (plastic bottles and glass) also pose a substantial environmental threat. The solution (Container Deposit System) creates the necessary funding base and infrastructure to be able to effectively deal with our rubbish and boost our recycling rates. Additionally it reduces the volume in the bins so they are less prone to overflow. Mandating CDS is the first concrete step to tackling rubbish.

**PRIORITY NUMBER 2:** Plastic Bags. There is no evidence that the problem of plastic bags has improved despite 10 years worth of government trying to manage the issue via voluntary agreements. Both South Australia and the Northern Territory have banned the free supermarket bag and the world hasn't come to an end – NSW should follow suit.

**PRIORITY NUMBER 3:** Cigarette Butts. A major problem that while much smaller presents a toxic injection into our biodiversity. As a smoker, the author is ashamed of how his peers continue to just dump their butts, and has always been willing to accept a regulatory path (and pay the cost of same) to address this blight on our environment – it is up to government to develop a scheme that will work.

**PRIORITY NUMBER 4:** Dumping. A small group of businesses and individuals create a substantial rubbish problem. Tyres; construction materials; business wastes are too often found in huge concentrations – creating big risks to human health and significant environmental harm. Policing will never be effective (it's too expensive) and fines are not enough to stop the behaviour. The 'Combatting illegal dumping' section to the recent NSW Waste Strategy has some improved approaches and a \$58m fund over five years. However it needs further critical review.

### Secondary Public Space Solutions

**Foreshore Gutters:** the area of Circular Quay surrounding the Opera House produces far less rubbish entering our waterways than Darling Harbour or the Quay proper. This is because this area has a low wall running right around its perimeter that temporarily traps significant amounts of the rubbish created by visitors. The design and erection of a 'vertical gutter' along high traffic CBD waterways would significantly reduce the rate at which rubbish is transferred from our recreational destinations into our waterways.

**Bins:** Well placed rubbish bins capable of receiving high volumes of rubbish (from clean ups and visitors) are an essential part of our urban environment but bins need to be placed in locations where 'overflow' does not enter our environment and it is pointless if they can't be serviced when there is significant activity (e.g. weekends).

Public place recycling bins also seem to be largely a waste of space and money. We observed very high levels of contamination in the recycling bins and often saw empty recycling bins placed next to rubbish bins overflowing (with recyclables). The space taken up by 3 bin recycling stations would be more effectively used to increase the overall rubbish capacity and the expense of lifting 3 separate bins each time they are emptied would be better used on street cleaning and litter patrols.



Littered & on the way to landfill

## Case Study: Darling Harbour

Of the over 25 sites the Boomerang Alliance's Kicking the Can team visited - the Cockle Bay area of Darling Harbour is one of the most littered sites we visited and also the most poorly managed.

Not including the debris that had already found its way into the Harbour, KtC Leader and Boomerang Alliance National Policy Director Dave West identified some 2,456/1,000 sq. metre of separate pieces of rubbish along the narrow strip of waterfront.

By comparison, the Keep Australia Beautiful National litter Index identifies the average amount of rubbish they find per 1,000 square metres to be just 59 items.

Far worse, when compared to the much busier Martin Place (where over 80,000 people pass through every day) we found a much lower rate of litter per 1,000 square metres at 238 – just 10% of that at Darling Harbour.

The state of the waterways around the precinct are equally appalling, with divers describing the plastic bottles and other debris under the piers across Cockle Bay as “disgusting”, “a cesspit” and “Sydney’s own great pacific garbage patch.”

Sydneysiders were embarrassed by footage showing the underwater state of Sydney Harbour which went worldwide last June (Channel 7 news footage was broadcast by both the BBC and CNN). Unfortunately Boomerang Alliance showed the rubbish continues to grow and the O’Farrell Government has taken no action to resolve this blight on one of the state’s most recognised tourist assets.

The Sydney Harbour Foreshore Authority seems to be in love with the garbage bins; with the retail precinct ringed by them. Yet these were seen to be overflowing and significant amounts of rubbish were escaping the bin into the Harbour and foreshore. A number of bins were on fire as there is a lack of cigarette butt disposal points and so they often enter bins without being fully extinguished.

Some tenants clearly take little pride in their districts. BA staff witnessed staff cleaning the Pontoon Bar, actually sweep rubbish off their seating area onto the forecourt and leave bottles lying strewn across their stairs. Rangers passing by shortly afterwards seemed blind to the fact that a major tenant was actually littering the area.

There are no barriers to prevent rubbish blowing off the forecourt into the Harbour; the pier edges are infested with cigarette butts and little effort had been made to clean the piers up. In 5 visits to the area BA staff did not witness a single SHFA staff member cleaning the area up at any time – a stark contrast to the highly visible maintenance staff whenever you visit Martin Place.

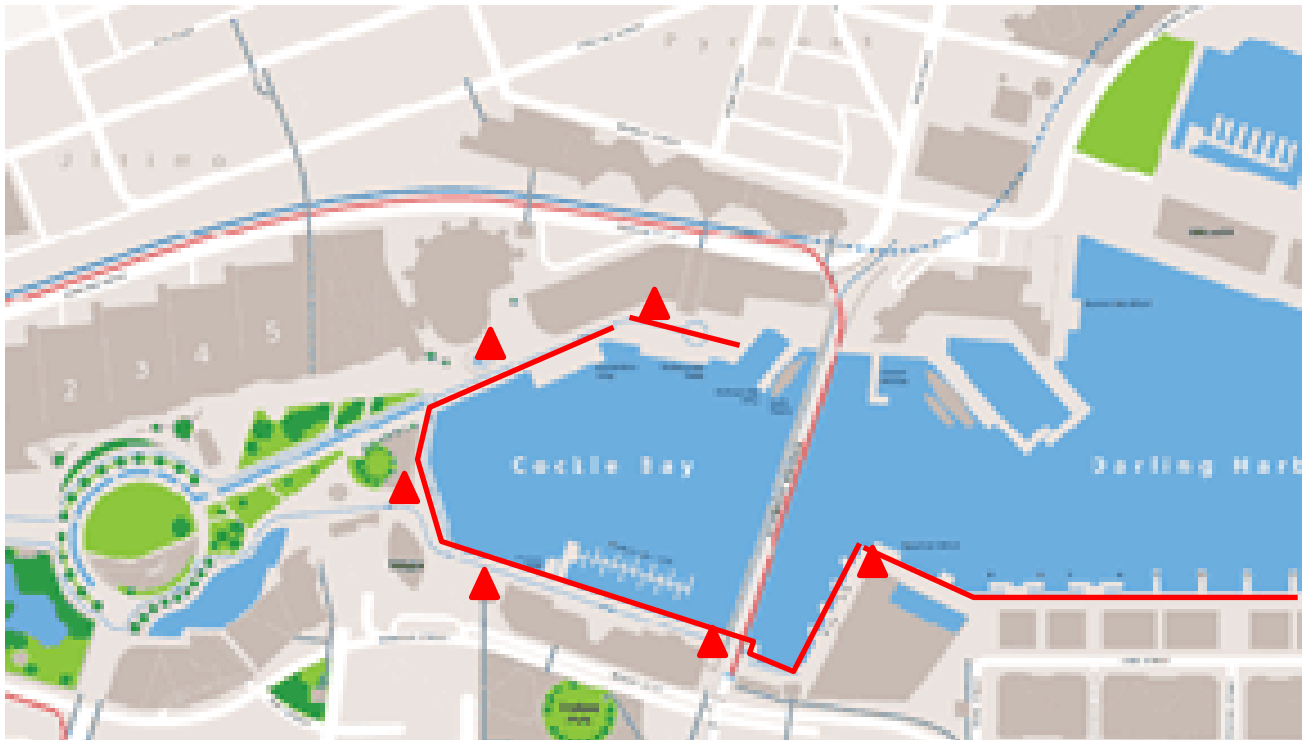
Additionally there are stormwater drains (believed to be sourced from both the Western Distributor (RMS responsibility) and Sydney Water. None had grates or litter traps fitted and were significantly adding to the amount of pollution found in the waterway



The Solution:

SeaLIFE Aquarium, operated by the Merlin Entertainment Group has been making huge efforts to contain the rubbish around their premises and have been successfully trialing Reverse Vending Machine (RVM) technologies (generally used in conjunction with deposit / refund schemes) to great effect. Offering discounts and give-aways this approach has proven popular with kids, who often collect litter and then return the bottles and cans to the Reverse Vending Machine.

1. SHFA should install at least 6 Reverse Vending Machines (at its expense) along the foreshore of Cockle Bay and encourage the tenants to provide prizes and discounts to reward responsible visitors.
2. A 'vertical gutter' should be erected across the entire waterfront to catch bottles, cans, butts and other lightweight plastics. The gutter would only have to be around 500mm high to catch the majority of the pollution entering the Harbour.
3. Half the garbage bins should be removed. Bins should be emptied regularly throughout the day and staff should patrol and sweep the area throughout the day.
4. Public Place Recycling Bins which do little more than confuse visitors should be removed (the RVMs will collect far more material and the recycle won't be contaminated by general rubbish). Signage (in a number of languages should be erected directing visitors to bins)
5. Outdoor commercial ash trays with sand linings should be placed around the walkways.
6. Grates should be fitted to storm outlets and litter traps on major outflows.

**Suggested Litter Fencing and RVM Stations – Cockle Bay**



	Suggested area for 'vertical gutter to be fitted (with gaps to waters entry)
	Suggested Reverse Vending recycling Stations

**Evidence:**



On the Harbour



On the Foreshore