

# Educating the Community About Litter

## Changing Knowledge, Attitudes and Behaviour 2000 to 2003

**Don't be a tosser**

**Quando butti via i rifiuti dove capita? Che cosa butti via?**

**Councils join against 'tossers'**

Pick up litter in street 2%

Greater environmental awareness

Don't throw litter from cars

Take disposable items away

**對我們的環境負責**

Put cigarette butts in the bin

Put litter in the bin 13%

Don't Litter 12%

**Don't be a tosser**

**LITTER**  
IT'S IN YOUR HANDS

More than 80% say that littering is a 'very important' or extremely important issue



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ISBN 1 74137 722 6

DEC 2005/608

Published December 2005

# Preface

Littering is one of the most visible and persistent environmental issues facing New South Wales, and costs the community millions of dollars every year to clean up and repair the damage it causes.

Over the past 25 years, State and local governments, together with community organisations, have implemented a range of initiatives to tackle the litter problem.

Early in 2000, the State Government launched a new major integrated program aimed at reducing litter, two major components of which were a three year public education campaign and the introduction of new anti-littering laws.

This publication is part of the Department of Environment and Conservation's (DEC) Social Research Series (formerly published by the EPA). It presents the development and impacts of the NSW Government's 2000 to 2003 litter education program in the context of earlier litter education programs, as well as research into litter and disposal behaviour.

It also provides benchmarks and trends for community litter awareness, attitudes and behaviour, as well as a detailed model of mindsets towards littering which has evolved through the research and evaluation associated with the education campaign. As it provides a guide to the development of similar campaigns – whether at state wide or local level – it is useful for a broad range of stakeholders in both government and non-government organisations who have an interest in waste management and litter prevention.

It can be used to answer questions about the program design or impact, along with the views and behaviour of the community towards litter.

Behind this work sits a considerable body of research conducted by both the DEC and a range of other organisations which is referenced throughout this publication.

# Table of Contents

Preface	i
Acronyms	iv
<b>Executive Summary</b>	<b>v</b>
<b>1 The Context</b>	<b>1</b>
Introduction	1
Definitions	1
Litter prevention and education programs in NSW	3
The 2000 to 2003 NSW Government Litter Prevention Program	7
<b>2 Changes in Knowledge, Attitudes and Behaviours</b>	<b>10</b>
Introduction	10
Changes in knowledge about litter	10
Changes in attitudes to litter and littering	16
Changes in people's littering behaviour	23
<b>3 Responses to Mass Media Advertising</b>	<b>27</b>
Introduction	27
Recall of advertising	27
Responses to the advertising	31
Advertising effectiveness by segment	32
Messages for future mass media and other advertising campaigns	32
<b>4 Conclusions</b>	<b>34</b>
<b>Appendix - Source Documents</b>	<b>37</b>

## List of Figures

<b>Figure 1</b>	Average Annual Litter Index in Sydney from 1979 to 1988	4
<b>Figure 2</b>	Average composition of litter in Sydney from 1979 to 1988	4
<b>Figure 3</b>	The 2000 to 2003 litter education campaign in context	5
<b>Figure 4</b>	Capital City Disposal Behaviour 1997 and 2000	6
<b>Figure 5</b>	Sequence and timing of elements in litter education phases	8
<b>Figure 6</b>	Elements of the NSW Government litter education campaign 2000 to 2003	9
<b>Figure 7</b>	Trends in views on what people can do to reduce litter	14
<b>Figure 8</b>	Trends in awareness of littering fines over three campaign phases	14
<b>Figure 9</b>	Changes in knowledge of the two most commonly recalled litter fines	15
<b>Figure 10</b>	2003 community segments based on attitudes to littering and self-reported littering behaviour	17
<b>Figure 11</b>	Some trends in people's concerns about the effects of litter	20
<b>Figure 12</b>	Shifts in community attitudes fines for littering over the three phases of the campaign	21
<b>Figure 13</b>	Three approaches to measuring littering behaviour	23
<b>Figure 14</b>	Self-reported littering behaviour over the three phases of the campaign	24

<b>Figure 15</b>	Statements about their own littering behavior by people who have just been observed to litter	25
<b>Figure 16</b>	Responses to other's littering	26
<b>Figure 17</b>	Recall of any TV commercials about litter in the last three months	28
<b>Figure 18</b>	Capital City Disposal Behaviour 1997 to 2004	35
<b>Figure 19</b>	Total litter captured at a Gross Pollutant Trap in Waverley LGA 1992–2002	36

## List of Tables

<b>Table 1</b>	Overview of changes in knowledge, attitudes and behaviours around littering 1999 to 2003	11
<b>Table 2</b>	Residents saying litter is a big or very big problem in their area	13
<b>Table 3</b>	Changes in awareness of fines for littering	15
<b>Table 4</b>	Attitudes towards littering of community segments in 2000	16
<b>Table 5</b>	Characteristics of community segments in 2003	18
<b>Table 6</b>	Community segmentation based on Phase 3 quantitative data	19
<b>Table 7</b>	Attitudes to fines for littering at the end of Phase 3	22
<b>Table 8</b>	Making changes to reduce littering	24
<b>Table 9</b>	TV media scenarios used in each phase	27
<b>Table 10</b>	Regional differences in changes in unprompted recall of litter advertising	28
<b>Table 11</b>	Changes in recall of the main message of TV commercials in the two <i>Tosser</i> phases of the campaign	29
<b>Table 12</b>	Advertising encouragement to change littering behaviour	29
<b>Table 13</b>	Recall of the <i>Our environment - it's a living thing</i> slogan or jingle in Phases 2 and 3 <i>Tosser</i> advertisements	30
<b>Table 14</b>	Recall of other litter advertisements in the Phase 3 <i>Tosser</i> campaign	31
<b>Table 15</b>	Advertising effectiveness for different community segments	33

# Acronyms

## ORGANISATIONS

BIEC	Beverage Industry Environment Council (formerly the Litter Research Association)
CUA	Clean Up Australia (Foundation)
DEC	Department of Environment and Conservation (NSW)
EPA	(New South Wales) Environment Protection Authority
KAB	Keep Australia Beautiful
SPCC	(New South Wales) State Pollution Control Commission

## METHODOLOGIES

OA	Observational Approach (developed by BIEC to measure people's actual disposal behaviour in public spaces)
DBI	Disposal Behaviour Index (developed by BIEC in association with the observation approach to indicate people's actual disposal behaviour in public spaces on a semi-quantitative scale)

# Executive summary

Since the initial State Pollution Control Commission's (SPCC) *Do the right thing* campaign introduced in 1979, the NSW Government has been active in litter prevention programs. From the outset, these programs have consisted of media campaigns to educate and change community attitudes and behaviour in the context of a broad range of other activities to prevent littering. Other contributing elements for the 2000 to 2003 program involved enforcement of littering offences by local councils and state agencies, information, training and support for regulatory organisations to promote litter reduction, a grants program for community initiatives, and business and industry litter reduction initiatives.

In the 2000 to 2003 litter education program, the reach of the media campaign exceeded planned goals with 96% of people in NSW having seen the *Tosser* advertisement at least once and 65% indicated that they had seen it four or more times. The *Tosser* concept, used in Phases 2 and 3 of the campaign with the slogan *Don't be a Tosser*, engaged people strongly. The slogan was well received as it was light-hearted and colloquial, yet conveyed a serious message. More than nine out of 10 people who recalled seeing the last *Tosser* commercial understood the following main messages:

- Disposing of litter is everyone's personal responsibility (97%)
- Littering in the streets and other public places is not appropriate (95%)
- The community disapproves of littering (94%)
- Every bit of litter damages the environment (91%).

From 2000 to 2003 there were changes in knowledge, attitudes and behaviours that built on the foundation of the earlier *Do the right thing* campaign that are attributable to the Litter Prevention Program which found:

- A trend to connect litter to wider environmental issues of waste management, illegal dumping and recycling.

- A growth in people's concern that litter is damaging to the environment. Explicit mentions of litter getting into waterways and being hazardous to wildlife increased over the period of the whole campaign.
- An increase in the social unacceptability of littering, even amongst those who continue to litter.
- A growing knowledge that personal actions are needed to reduce littering, rather than dependence on actions by authorities.
- A significant increase in awareness of fines for littering. Seven out of 10 people were still aware of littering fines at the end of the *Tosser* 2, even though the TV commercial in this phase did not mention fines explicitly.
- Strong support for littering fines with three in four people agreeing that people who litter should be fined.
- An increase in the proportion of people in NSW who say they never litter from just over 50% before Phase 1 in 1999 to just over 60% at the end of Phase 3 in 2003. Even moderating this in accordance with research shows that self-reported, non-littering behaviour is not a reliable indicator of people's actual behaviour. This represents a significant shift in behaviour in some segments of the community.
- The number of people who say they have recently made changes to reduce littering rose from 9% to 16% at the end of Phase 2 but fell again to 9% at the end of Phase 3.

In addition, there was a gradual increase in people's consciousness of the overarching brand *Our environment - it's a living thing*.

Research conducted to support and inform the design and implementation of the litter program resulted in the development of a community segmentation into a group of 'littering mindsets'. Although initially a simple four-way segmentation on positive-negative attitudes and positive-negative behaviours towards litter, further research through campaign evaluation

subsequently refined the segmentation to include six separate segments with a deeper understanding of their characteristics.

Other research has demonstrated that there have been significant reductions in litter on the ground and improvements in appropriate litter disposal behaviour that have been sustained beyond the life of the 2000 to 2003 education program.

Key messages for future campaigns are:

- There is a need for formal adoption of a cyclic planning process in an education campaign, including research, evaluation and feedback phases.
- Mass media advertising does change community knowledge, attitudes and behaviours, particularly when integrated with other litter prevention strategies.

# 1. The Context

## Introduction

Littering is one part of a complex network of waste management issues that includes illegal dumping, recycling, packaging of products, and domestic, commercial and industrial waste collection practices.

Social research into people's attitudes, knowledge and behaviours related to litter during the last decade has revealed a number of important trends that can inform litter prevention programs and, in particular, community litter education campaigns.

This document aims to assist those working in litter and waste reduction, including community education, by:

- placing the 2000 to 2003 litter education program in the context of litter education in NSW from *Do the right thing onwards*
- presenting an overview of the specific impacts of the litter education campaign on knowledge, attitudes and behaviours of the people of NSW towards litter
- providing information that contributes to an understanding of people's attitudes, knowledge and behaviours in relation to waste and litter disposal
- distilling the lessons learnt from this campaign to provide a model for the design and implementation of litter campaigns that can be used at any scale and that can be adapted for use in education campaigns in other areas.

This document also provides useful information for waste educators, their managers and key stakeholders, including those in:

- local and State government
- non-government organisations, such as Keep Australia Beautiful and Clean Up Australia
- industry associations, such as the Beverage Industry Environment Council (BIEC), and other key waste management, packaging and fast food companies
- community groups, particularly those who apply for funding in these areas.

It draws on a large body of research and a range of reports produced both by DEC and other organisations. Appendix 1 provides an overview of these data sources.

## Definitions

Definitions of litter and littering used here encompass those items included in the mass media advertisements in the three phases of the 2000 to 2003 litter education campaign or commonly identified by other studies. Excluded are items that are now more usually dealt with under waste education or strategies to address the problems of illegal dumping and careless waste transport practices.

The following incorporates the definition used in the *Littering Behaviour Studies*<sup>1</sup> and the size limitation proposed by *Lessons from the litter-ature*<sup>2</sup>:

### **Litter**

*Any solid waste object (disposable item or resource) that can be held or carried in a person's hand, that is left behind or placed in an inappropriate location. Any such material or item disposed of in an inappropriate manner is to be regarded as litter – the end outcome of an environmentally undesirable disposal action.*

This definition excludes larger items, such as furniture or white goods placed on footpaths or elsewhere, but not part of designated council clean up activities, and commercial or industrial waste that is illegally dumped.

Excluded is the premeditated dumping of smaller items such as kitchen tidy bags containing domestic waste<sup>3</sup>. Also excluded is the inappropriate disposal of garden waste, such as grass clippings, and liquid waste<sup>4</sup> such as detergents and oils. Both are of significant concern in relation to catchment water quality in urban areas and may well sit alongside litter in community stormwater education programs.



Clean Up Australia

This definition of litter is used to define littering behaviour.

**Littering behaviour**

*Discarding or misplacing any object able to be held in the hand, in an inappropriate disposal location*

An inappropriate location in the *Littering behaviour studies* is a location other than a bin or ashtray, in an area within several metres of appropriate disposal locations that were provided<sup>5</sup>. Where a few crumbs were left behind they were not considered litter, but cigarette butts were. Disposal in a location where there are no bins nearby is still inappropriate.

However, for the final phase of advertising in the 2000 to 2003 litter education program, the representation of inappropriate actions was extended beyond littering small hand held objects to include deliberate disposal of household garbage in the street as well.

**The complexity of littering behaviour**

The 2002 National Benchmark Littering Behaviour study<sup>6</sup> makes the following observations:

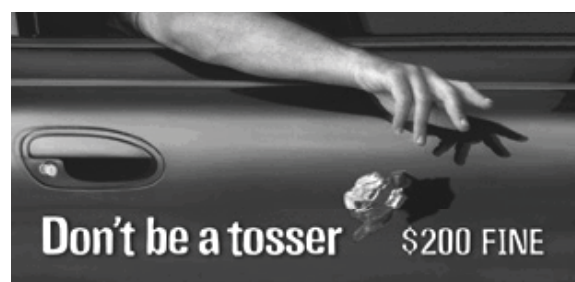
“Littering behaviour is part of a complex phenomenon and people do not simply fall into stereotypical categories of being either litterers or non-litterers.

People who report littering consistently in every type of public place seem to be relatively rare. Many people litter in some places and not others, while others only litter particular types of used item, e.g. a cigarette butt, chewing gum or bank auto teller receipts, but not beverage containers or paper products.

Furthermore, the same item may be littered by the same person in some situations but not others. For example, a smoker may litter a cigarette butt on a beach but not in a grassy waterfront area near a lake. In a shopping mall, a person may litter a cigarette butt but put their used glass bottle into a recycling bin and used lunch wrapping into a litter bin”.

*The disposal actions of individuals and groups tend to vary with the items people are using and the context in which they use them.*

*The complexity of littering behaviour has significant implications for the effectiveness, or otherwise, of measures aimed at changing peoples’ attitudes and behaviour around littering.*



## Litter prevention and education programs

A range of government and non-government organisations, together with the community and industry, has undertaken litter prevention and education programs in NSW for over 30 years. The three phases of the NSW litter education campaigns over the period from 2000 to 2003 have occurred in the context of people's changing knowledge and understanding, attitudes and behaviour around litter and littering, changing community concerns about wider environmental issues, other changes in community issues, such as increased use of illegal drugs, and statutory changes that have directly or indirectly affected littering behaviour.

### Litter education and research prior to 2000

#### Agencies and organisations

**The NSW Government** has been active in litter prevention programs since the NSW State Pollution Control Commission (SPCC) commenced the *Do the right thing* campaign in 1979, making it a household term. The triennial DEC *Who cares about the environment?* survey also provides some limited information on people's attitudes, concerns and behaviours in regard to littering.

**The Beverage Industry Environment Council (BIEC)**, preceded by the Litter Research Association, has had a long interest in understanding littering behaviour and in encouraging changes in people's behaviour away from littering to appropriate litter disposal, particularly in regard to take away beverage containers. This resulted in funding for the *Do the right thing* campaign and, more recently, a suite of research into littering and littering behaviour. The BIEC *Littering Behaviour Studies* provide nation wide data on community disposal behaviours for litter items, and most significantly, an insight into the relation between people's self-reported and actual disposal behaviour.

The **Keep Australia Beautiful National Association**<sup>7</sup> was established in 1971 and all but one of the State bodies now are independent,

non-government organisations. Their primary role has been to facilitate and manage the Australian Tidy Towns program.

**Clean Up Australia**<sup>8</sup> began in 1989 as the inspiration of Ian Kiernan and has since involved millions of Australians volunteering their time in annual clean up days. The Clean Up Australia Foundation was established in 1996 and has a vision that, beyond 2005, it will have inspired all Australians to clean up, fix up and conserve the environment.

Figure 3 summarises the activities of both NSW Government agencies and non-government bodies in relation to litter and littering behaviour from the 1970s to 2003. This provides the longer term broader context for the 2000 to 2003 litter education program.

#### The *Do the right thing* campaign

The SPCC, with funding from the Litter Research Association<sup>9</sup>, introduced the first three year *Do the right thing* campaign in 1979, and extended it several times into the early 1990s. Education formed one component of this broad litter prevention program with objectives to:

- improve the appearance of the environment
- increase public awareness and encourage better community attitudes and behaviour towards litter
- improve the technology and practice of solid waste management and litter collection, disposal and recycling<sup>10</sup>.

This program focused on issues relating to loss of visual amenity caused by litter rather than, for example, its detrimental effect on the environment or as a danger to people; a strong strand of education to change community attitudes and behaviour; attention to the practicalities of litter collection; and the linking of littering with the more general waste management issues of disposal and recycling.

Research in the period preceding the formal launch of this first campaign had shown that everyone in the community littered to some extent at some time and thus:

*The best strategy for the campaign would be to aim at changing the public's attitude to littering from one of apathy and personal justification of littering habits, to one of positive action not to litter.*

Together with an extensive media campaign to introduce the *Do the right thing* theme (there were an estimated 80 million visual and radio impacts on the community), a suite of supporting activities and research was also put in place.

These included:

- a Litter Index study to quantify the amount of littering at 156 selected sites across the Sydney metropolitan area and one centre in regional NSW – the Litter Index was simply the number of litter items per 100 m<sup>2</sup> per day for the uncleaned site
- continuing research into the community's awareness and stated attitudes
- research on the optimal placement and provision of litter bins
- developing recycling schemes and better techniques for collection of household garbage
- developing school curriculum materials
- researching commercial waste storage requirements
- extensive liaison with and assistance to local government
- collaborating with the Royal Agricultural Society and an exhibit at the Sydney Royal Easter Show.

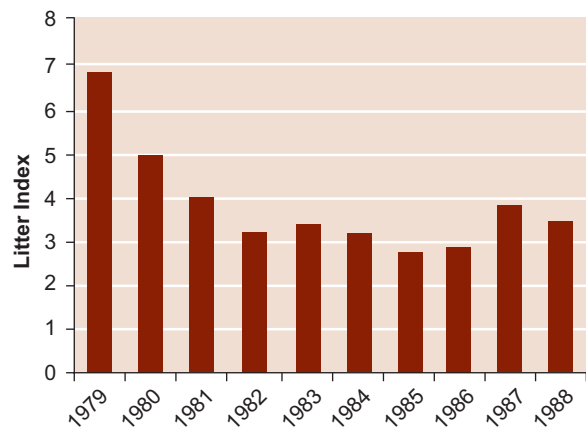
Figure 1 shows the changes in the average Annual Litter Index over the period of the campaign. The rise in 1987 was attributed to community complacency and the campaign was renewed.

Figure 2 shows the changing composition of litter as determined from counts of items at the more than 100 sites surveyed in the decade to 1988. Cigarette butts, now a litter item high in the public consciousness, received no explicit mention in these early data.

By 1990 the slogan *Do the right thing* had become firmly established in the consciousness of the residents of NSW and successfully communicated the Government's determination to reduce littering and encourage recycling<sup>11</sup>.

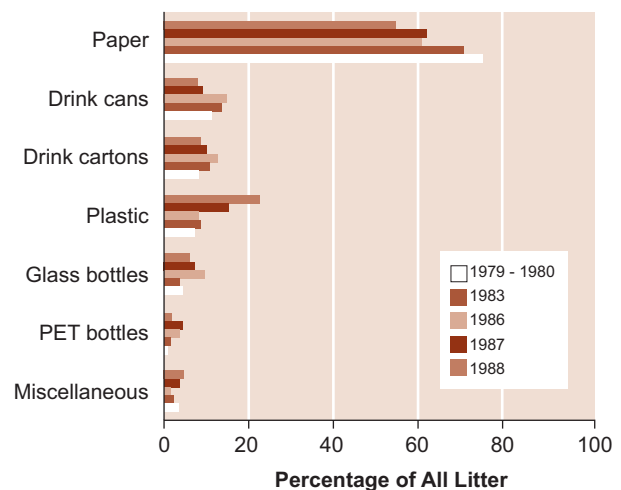
**Figure 1**

Average Annual Litter Index in Sydney 1979 to 1988 (Average number of litter items per 100 m<sup>2</sup> per day in uncleaned sites)



**Figure 2**

Average composition of litter in Sydney 1979 to 1988



**Figure 3**  
The 2000 to 2003 litter education campaign in context

Year	Who Cares about the Environment?	NSW State of the Environment report	Keep Australia Beautiful	Clean Up Australia	BIEC Littering Behaviour Studies	SPCC & EPA stormwater education campaigns	SPCC & EPA litter prevention campaigns
1971			Keep Australia Beautiful National Association established				
1972-1978							
1979							Do the right thing campaign
1980							
1981							
1982							Do the right thing extended
1983							
1984							
1985							Campaign extended - Talking litter bin introduced
1986							
1987							Research shows public complacency about litter
1988							New campaign direction with Every litter-bin counts
1989				Keep Australia Beautiful National Association established			
1990				First Clean Up Australia Day		Plot Waterways program in Cooks River	
1991							
1992							
1993		First NSW State of the Environment report					
1994	First Who Cares about the Environment? survey					Waste and stormwater pollution campaign	
1995		Second NSW State of the Environment report					
1996							
1997	Second Who Cares about the Environment? survey	Third NSW State of the Environment report			Understanding Littering Behaviour in Australia		
1998						It's My Place stormwater issues studies	
1999						The Drain is Just for Rain stormwater education campaign	
2000	Third Who Cares about the Environment? survey	Fourth NSW State of the Environment report			What works? NSW littering behaviour Interventions		Litter prevention campaign What are you really throwing away?
2001			EPA - KAB community litter prevention grants Phase 1	First Leave only footprints campaign	Littering Behaviour Studies - National Benchmark 2001	Urban stormwater community education campaign	
2002			EPA - KAB community litter prevention grants Phase 2		Littering Behaviour Studies - National Benchmark 2002	Local government stormwater grants scheme	Litter prevention campaign Don't be a Tosser (Phase 2)
2003	Fourth Who Cares about the Environment? survey	Fifth NSW State of the Environment report	Resource - KAB community litter grants Phase 3	Second Leave only footprints campaign	Littering Behaviour Studies - National Benchmark 2003		Litter prevention campaign Don't be a Tosser 2 (Phase 3)

### Messages from the *Do the right thing* campaigns

There were some useful messages for later campaigns from the *Do the right thing* campaigns and their impact on the community and people's littering behaviour:

- Community education does change people's attitudes, understanding and behaviour around littering.
- A broad and integrated community education program was effective, consisting of media advertising campaigns, school curriculum materials, and support of local government authorities.
- Collaboration was useful with other organisations in major community events in focused litter prevention initiatives.
- Providing any necessary supporting infrastructure was important, such as appropriately coloured and placed litterbins and services, to complement community litter education programs.
- Research into the amount and type of littering, along with people's attitudes and behaviour around littering, was useful to develop future litter prevention strategies.
- The need to reinforce improved public attitudes and behaviour towards littering so as to avoid people becoming complacent and indifferent, became clear, as was apparent in 1987.

### Research in the 1990s

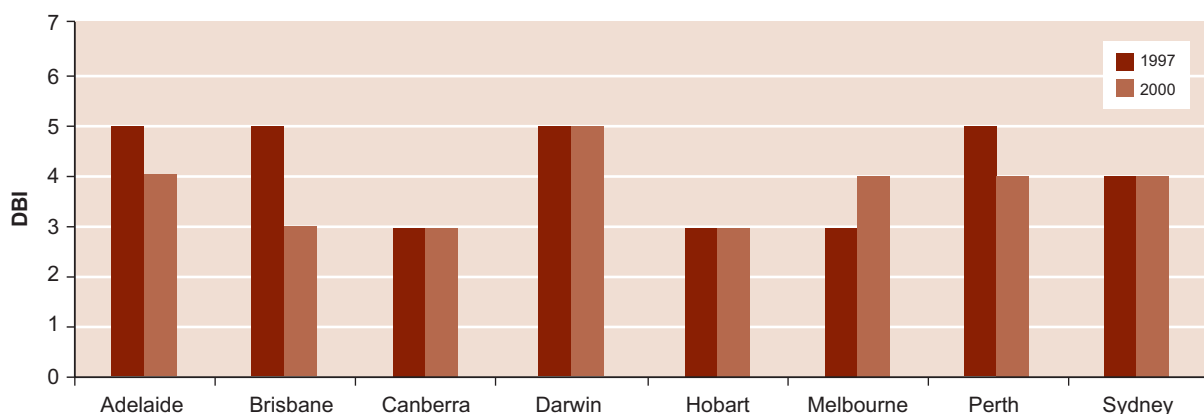
In the first 1994 *Who cares about the environment?* survey, 11.6% of NSW participants strongly considered litter to be one of the two most important environmental issues. However, litter declined markedly as a perceived important issue during the mid-1990s and was mentioned by just 4% in the 1997 survey. It increased again to 7% in 2000 – perhaps a reflection of the increasing attention to litter in the urban stormwater campaign of 1998 to 1999 (Figure 3).

In the mid-1990s the Beverage Industry Environment Council (BIEC) was concerned that, in previous research and strategies for litter prevention, 'almost no checks have been used to ensure that people's behaviour actually matched their reports'. Accordingly, they commissioned and published *Understanding Littering Behaviour in Australia*<sup>12</sup> to investigate links between attitude and behaviour, and found littering behaviour to be more complex than previously understood.

In 1997, BIEC ran the first of its comparative benchmarking studies of littering and disposal behaviour across all Australian state capital cities, with the second study in 2000, and annually thereafter. The resulting Disposal Behaviour Index (measure of appropriate disposal behaviour) for Sydney in 1997 was on the national average, above Canberra, Melbourne and Hobart but below Perth, Adelaide, Darwin and Brisbane. Sydney remained at the same level for 2000 (Figure 4).

**Figure 4**

Capital City Disposal Behaviour 1997 and 2000, from *Measuring Environmentally Desirable Behaviour, Community Change, 2001*



## The 2000 to 2003 NSW Government Litter Prevention Program

The 2000 to 2003 NSW Government Litter Prevention Program began with a package of litter reduction initiatives that included the introduction of expanded and stronger litter laws, broad stakeholder involvement, public education campaigns and the promotion of litter reduction projects with community groups and local councils.

Objectives of the program were to:

- encourage regulatory organisations, in particular local councils, to actively implement the littering provisions of the POEO Act
- increase public and stakeholder knowledge about the litter problem and its impacts
- support community action and public information programs to reduce litter
- develop partnerships with community groups, and local and State Government organisations to address litter problems
- promote litter prevention through an integrated mix of litter education, enforcement and infrastructure provision.

### Program components

To meet these objectives, the program consisted of a number of complementary components:

1. Enforcement of littering offences by local councils and state agencies.
2. Public education through mass media advertising campaigns.
3. Information, training and support for regulatory organisations to promote litter reduction initiatives.
4. Community education to foster local litter reduction projects with the assistance of community groups. Keep Australia Beautiful administered three rounds of community litter prevention grants in 2000 to 2001, 2002 and 2003. Clean Up Australia undertook the beach litter prevention project, *Leave only footprints*, in the summer of 2000 to 2001 and 2002 to 2003.

5. Business and industry litter reduction initiatives.
6. Stakeholder involvement.

This report focuses on the second area, but draws on other areas as they provide information on the effectiveness of the mass media advertising campaigns.

The education program had a specific role to support the new littering laws that commenced in July 2000 and April 2001 under the *Protection of the Environment Operations Amendment (Littering) Act 2000*. It was also designed to support an earlier POEO littering provision that began in July 1999 to target drivers and owners of motor vehicles who littered.

### Public education through mass media advertising campaigns

The Litter Prevention Program included three phases in the public education campaign (Figure 6) that were designed to maximise the effectiveness of the littering laws and influence the community's attitudes and behaviour in relation to littering:

**Phase 1 Litter – What are you really throwing away?** from June to August 2000, took place in two stages using television, radio and outdoor advertising. It also introduced the slogan, *Litter – it's in your hands*. The first stage focused on raising awareness of the litter problem by depicting people littering in everyday situations – at the bus stop and on a lunch break – and focused on the most common types of litter, such as cigarette butts and take away food containers. The second stage of advertisements focused on the new fines for different types of litter and coincided with the start of the new littering laws.

**Phase 2** from January to February 2002, introduced *Don't be a Tosser*, which maintained the theme of personal responsibility and kept the slogan from the first phase of the campaign *Litter – it's in your hands*. It was also branded with the Government's overarching environmental brand *Our environment - it's a living thing*. This second phase focused on littering from vehicles – a common littering behaviour in NSW – and used in television, radio and outdoor advertising.

**Phase 3** from June to July 2003, maintained the *Don't be a tosser* theme, hoping to establish it as a norm. This phase extended this message from littering from vehicles to other everyday situations, and to smaller scale illegal dumping. The tone of the message was deliberately colloquial and light-hearted to further reinforce both personal responsibility for, and the social unacceptability of littering.

Each phase consisted of a sequence of elements:

- **Identification of an issue** – in this case to continue to change people's attitudes and behaviours towards the reduction of litter.
- **Preliminary qualitative research**, undertaken by external consultants. Prior to the Phase 1 campaign, it consisted of a literature review of NSW and overseas litter research, and qualitative research with focus groups to determine the parameters for a strategic response to community littering behaviour. Before the last two stages, the preliminary

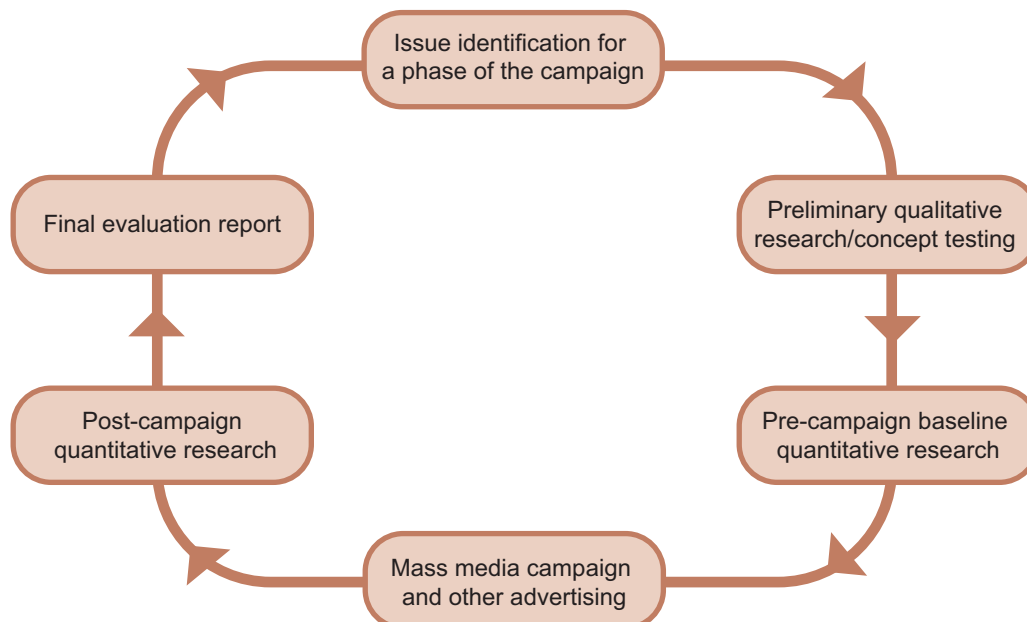
research tested the effectiveness of the proposed advertising concepts through focus group research.

- **A media campaign** which took place over a two or three week period in one or two stages or 'waves'. Television and radio advertisements were used, including non English speaking background (NESB) stations. Outdoor advertising included billboards, the backs of taxis, sides of buses and banners at sporting venues.
- **Campaign evaluation**, based on quantitative research just before and just after the campaign, evaluated its effectiveness in changing people's knowledge, attitudes and behaviour in relation to litter, which is described in this report as pre- and post-surveys.

The evaluation from each phase then informed subsequent phases (Figure 5).

**Figure 5**

Sequence and timing of elements in litter education program phases



**Figure 6**

Elements of the NSW Government litter education campaign 2000 to 2003

February 2000	NSW EPA has full responsibility for Litter Prevention in NSW (under POEOA and supplementary legislation)	<i>Lessons from the Litter-ature: A review of NSW and overseas litter research (RDC, UNE)</i>		
		<i>Fast Life, Fast Litter: The parameters for a strategic response (Taylor Nelson Sofres)</i>		
March 2000				
April 2000				
May 2000				
June 2000		<b>Phase 1 campaign: Litter, what are you really throwing away? Slogan Litter, it's in your hands</b>		
July 2000		Television,	<b>Phase 1: Awareness raising – showed people littering in everyday situations</b>	
August 2000		Radio, Outdoor	<b>Phase 2: Concentrated on the cost of new fines for littering</b>	
September 2000				
October 2000		<i>Litter Prevention Program Evaluation – Final report (A C Nielsen)</i>		
November 2000				
December 2000				
January 2001				
February 2001				
March 2001				
April 2001				
May 2001				
June 2001				
July 2001				
August 2001				
September 2001				
October 2001				
November 2001	<i>Concept testing of littering from vehicles advertising campaign (Taylor, Nelson, Sofres)</i>			
December 2001				
January 2002	<b>Phase 2 campaign: Don't be a Tosser Slogan Don't be a Tosser</b>			
February 2002	Television,	Also branded with <i>Our environment - it's a living thing</i> Focused on littering from vehicles		
	Radio, Outdoor			
March 2002	<i>Litter Education Campaign Evaluation – final report (Taverner Research)</i>			
April 2002				
May 2002				
June 2002				
July 2002	Transition of responsibility from NSW EPA to Resource NSW	Report on 2000-2002 Litter Prevention Program (NSW EPA internal report)		
August 2002				
September 2002				
October 2002				
November 2002				
December 2002				
January 2003				
February 2003				
March 2003		<i>Optimising the Tosser 2 Campaign: Market and consumer insights (instinct and reason)</i>		
April 2003				
May 2003				
June 2003	<b>Phase 3 campaign: Don't be a Tosser (2) Slogan Don't be a Tosser</b>			
July 2003	Television,	Also branded with <i>Our environment - it's a living thing</i>		
	Radio, Outdoor			
August 2003	<i>Litter Education Campaign Evaluation - Final Report (instinct and reason)</i>			
September 2003	Resource NSW			

Prior research
  Littering campaigns
  Evaluation

## 2. Changes in knowledge, attitudes and behaviours

### Introduction

Prior to the 2000 to 2003 litter education campaign, a broad spectrum of knowledge and a diversity of attitudes and behaviours around litter and littering could be found across the community. During the course of the three phases of the campaign, changes occurred in each of these areas that were identified by qualitative and quantitative research undertaken before and after each phase.

This report focuses on findings of the campaign research along with insights from other research by the Beverage Industry Environmental Council (BIEC) and the Clean Up Australia Foundation (CUA)<sup>13</sup>. The major changes are summarised in Table 1.

While the campaign research assessed knowledge, attitudes and self-reported behaviour around littering, BIEC research investigates actual disposal behaviours and relates these to self-reported behaviour<sup>14</sup>.

### Changes in KNOWLEDGE about litter

The dimension of knowledge about litter is not easy to delineate. People's perceptions of a situation, what they might describe as knowing about it, may not represent a true knowledge of it. Perceptions are coloured by beliefs that fit more easily within the category of attitudes. The difficulty is evident even in knowing or defining what litter is.

Nevertheless, this section will consider knowledge about litter under three headings:

- Ideas on what constitutes litter and its importance
- Knowledge of what people can do to reduce litter
- Knowledge of the fines for littering

### What constitutes litter

At the start of the *Do the right thing* campaign, perceptions of litter were essentially that it was unpleasant and not aesthetically pleasing, or

that it was harmful, particularly due to broken bottles. The SPCC litter counts showed that paper constituted the most common litter item with beverage containers (cans, containers, glass and PET bottles) contributing significantly. Plastic was the only other separately identified item. At the same time people thought that littering was done by lazy people, as a result of poor upbringing, or that it occurred without any particular regard to where people were.

By the beginning of the 2000 to 2003 litter education campaign, the idea of littering had changed substantially so that it was seen as wrong and bad for the environment, and it was linked to the positive alternative of recycling. Still seen as harmful, littering was also seen to cause disease through contact with used syringes and condoms. These changes coincided with a growing awareness of general environmental issues and a concern with the amount of packaging of consumer goods that ended up as litter.

Other social changes, such as busier lifestyles, increasing consumption of fast foods, more snacking and increased use of illegal drugs, probably also contributed to changing perceptions of what constitutes litter.

In addition to items defined as litter in this report, the *Fast Life Fast Litter* Research<sup>15</sup>, which took place before the Phase 1 media campaign, identified some items as litter that now would be categorised as illegal dumping or simply as pollution. For example, batteries, toxic materials such as asbestos, animal droppings, sewage and dumped cars, were all included as litter in the focus group discussions. None of these are litter within the definition of this report<sup>16</sup>.

Paper and used beverage containers were, and continue to be, commonly regarded as litter. Cigarette butts are now recognised as litter and dangerous to animals<sup>17</sup>, whereas throughout the *Do the right thing* campaign, they received no mention at all. Plastic bags, also not mentioned explicitly then, are now recognised as a significant litter item and are receiving considerable attention as strategies to reduce their extensive use in the retail sector are explored.

**Table 1**

Overview of changes in knowledge, attitudes and behaviours around littering 1999 to 2003

<b>Knowledge</b>	
<b>mid 2000</b>	<b>mid 2003</b>
Litter wrong and bad for the environment. (Before 1999, it was essentially regarded as unpleasant and harmful to humans).	Litter connected to the wider issues of waste management, illegal dumping and recycling.
Litter includes dangerous and harmful items, such as syringes, condoms, batteries and toxic waste material. (Before 1999, paper and used food and beverage containers were the counted as the main constituents of litter).	Beverage containers, cigarette butts, plastic bags and takeaway food packaging regarded as the most problematic litter items.
Moderate knowledge of appropriate personal actions and attitudes to reduce litter.	Increased knowledge of appropriate personal actions and attitudes to reduce litter.
Awareness of the existence littering fines increased during the first two phases but decreased between phases and during the last phase.	
Knowledge of the amount of the \$200 fine increased during all three phases, less so in the third, but decreased between phases.	
<b>Attitudes</b>	
<b>mid 2000</b>	<b>mid 2003</b>
Five mindsets in relation to attitudes to litter identified: non-litterers/ collectors, inconvenients, ignorants, wilful arrogants and anti-establishments. (Before 1999 people tended to stereotype litterers as disgusting, disrespectful, lazy, ignorant, careless, dirty and unclean).	The mindsets modified into six segments: collectors (who take action) 17%, silents (who are angry but do not take action) 15%, half-converted 39%, inconvenients 7% and unawares 6%.
54% thought litter was unsightly.	37% thought litter was unsightly.
39% think that litter ruins the environment.	43% think that litter ruins the environment.
26% think that litter is dirty and unhygienic.	35% think that litter is dirty and unhygienic.
17% had the perception of litterers as lazy, not caring and lacking respect.	35% had the perception of litterers as lazy, not caring and lacking respect.
The percentage of those agreeing or strongly agreeing that people should be fined for littering was 75% before Phase 1, rose to 85% at the end of Phase 2 but fell back to 75% at the end of Phase 3.	
3% neither agreed nor disagreed with fines for littering.	11% neither agreed nor disagreed with fines for littering.
17% said that fines should depend on the circumstance.	10% said that fines should depend on the circumstance.

<b>Behaviour</b>	
<b>mid 2000</b>	<b>mid 2003</b>
52% state that they never litter.	61% state that they never litter.
38% state that they litter hardly at all.	28% state that they litter hardly at all.
Only 2% admit to frequently littering.	Only 1% admit to frequently littering.
40% of females and 66% of males report littering at any frequency.	25% females and 75% of males report littering at any frequency.
33% of 60-70 year olds and 65% of 18-19 year olds report littering at any frequency.	5% of 60-70 year olds and 45% of 18-19 year olds report littering at any frequency.
42% of non-smokers and 65% of smokers report littering at any frequency.	10% of non-smokers and 90% of smokers report littering at any frequency.
90% state that they always or mostly put take-away food wrappers in the bin.	88% state that they always or mostly put take-away food wrappers in the bin.
85% of people state that they always or mostly carry rubbish until they find a bin.	89% state that they always or mostly carry rubbish until they find a bin.
50% of smokers state that they put cigarette butts in the car ashtray or bin.	69% of smokers state that they put cigarette butts in the car ashtray or bin.
The percentages of people across the whole of NSW reporting changed behaviour to reduce littering increased during Phases 1 and 2 and from Phase 1 to Phase 2 of the campaign, but falls to the original level of 9% before Phase 3 and remains at this level during this phase.	
Larger than average percentages of smokers and people under the age of 40 report changed behaviour to reduce littering while these groups still exhibit the same fluctuations as the whole population of NSW.	
Independent research done for the Beverage Industry Environment Council from 2000 to 2003 <sup>1</sup> found that self-reported littering behaviour is not a true indication of actual behaviour. Approximately 60% of people who had just been observed littering, state a few minutes later that they do not litter at all or have not littered on that day.	

<sup>1</sup> Community Change (2003) *Littering Behaviour Studies, National Benchmark 2002*, Beverage Industry Environment Council. The relation between self-reported and actual littering behaviour is important and these findings must temper all of the self-reported behaviour in other studies of littering behaviour.

The NSW Environmental Protection Authority (EPA) consultation paper on the litter survey program<sup>18</sup> lists the following as typical examples of litter which probably indicates what is commonly understood in the community as litter in 2003: cigarette butts, small pieces of paper, chip and plastic confectionary wrappers, fast food packaging, bottle caps, glass pieces, glass bottles, plastic straws and soft drink containers – both plastic and metal.

### The importance of litter

The reported importance of litter remained relatively stable across all phases of the 2000 to 2003 campaign with four in five NSW residents saying it is either very or extremely important to them. After the Phase 3 campaign, the percentage of Wollongong and Newcastle residents who ascribed these levels of importance to litter dropped to 76% compared to 83% before the campaign.

In response to the question, 'How big a problem do you think littering is in your area?', the proportion of all NSW residents who perceived litter as a local problem steadily increased over the last two phases of the campaign (Table 2).

### Litter items causing the greatest problem

Responses to what litter items cause the greatest concern (with multiple answers accepted) revealed an extensive knowledge in the community of litter items of concern. In the Phase 3 post-campaign survey for *Tosser 2* the most frequently identified items were<sup>20</sup>:

- Beverage containers (glass and plastic bottles, cans) (55%)
- Cigarette butts (48%)
- Plastic bags (41%)
- Take away food packaging (39%)
- Plastic in general (27%)
- Snack food wrappers and paper packaging (27%)

Other items to receive significant mention were:

- Garbage and household waste (16%)
- Syringes (14%)
- Non-biodegradable items (13%)
- Liquid waste (11%)

Cigarette butts, takeaway food packaging and household waste all increased in their frequency of mention over the campaign – an indication of its success in raising community awareness of these particular items.

### What people can do to reduce litter

When asked (unprompted) what people could do to reduce litter, they responded with options that related either to personal behaviour or what authorities could do.

#### Relating to personal behaviours and attitudes:

- Appropriate disposal behaviours – putting litter in the bin, not littering, recycling or reusing containers, and taking disposable items away with you.
- Appropriate attitudes that will lead to such disposal behaviours – being aware of what you are doing, exercising more care and thoughtfulness and being personally responsible and committed to look after one's own litter.

**Table 2**

Residents saying litter is a big or very big problem in their area<sup>19</sup>

	Pre-phase 2 (%)	Post-phase 2 (%)	Pre-phase 3 (%)	Post-phase 3 (%)
<b>All NSW residents</b>	<b>29</b>	<b>32</b>	<b>33</b>	<b>37</b>
Sydney metropolitan	31	31	33	39
Wollongong	26	35	26	39
Newcastle	35	41	34	37
Other NSW	24	30	35	31

- Preventative behaviours that will reduce the opportunity for littering – avoiding products with excess packaging and avoiding or not using disposable items.

**Relating to what authorities can do:**

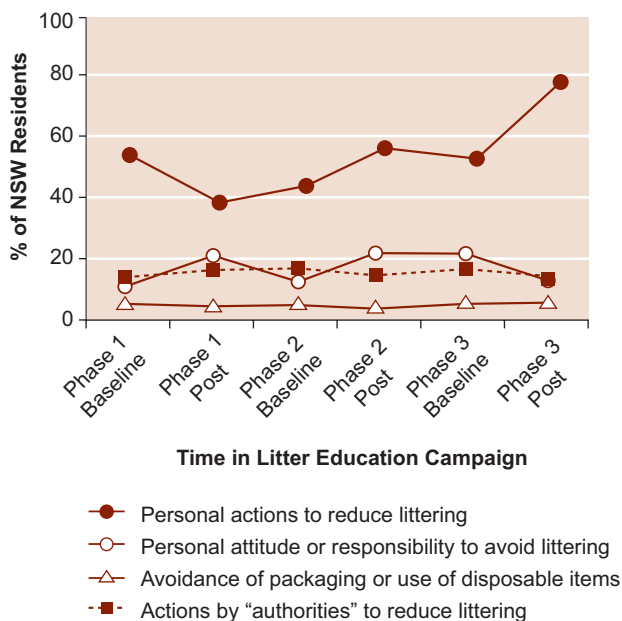
- Public education through teaching children and advertising
- Making more bins available

Most of these varied considerably through the various phases of the campaign, but there were several clear trends:

- Following no awareness in Phase 1, those mentioning ‘put cigarette butts in bin’ rose steadily through the *Don’t be a Tosser* phases (from 1% before Phase 2 to 14% after Phase 3).
- After an initial drop from 20% to 14% in Phase 1, those mentioning ‘take disposable items away with you’ also increased steadily (from 15% before Phase 2 to 26% after Phase 3)
- After an initial drop from 66% to 46% in Phase 1, the combined mentions of ‘don’t litter’ and ‘put litter in bin’ rose from 50% before Phase 2 to 71% after Phase 3.
- After an initial rise in Phase 1 from 12% to 19%, mentions of education and advertising declined in Phase 2 (13% to 12%) and Phase 3 (13% to 8%).

**Figure 7**

Trends in views on what people can do to reduce litter



These trends (Figure 7) demonstrate an increased knowledge that personal actions are required to reduce litter, as well as a diminishing belief in the need for the authorities to do more, despite some variability through the phases<sup>21</sup>.

**Public place recycling and resource recovery**

The 2002 BIEC National Benchmark report identified bin placement in public places for recycling and resource recovery as a strategy strongly supported in the community across all capital cities in Australia<sup>22</sup>. In Sydney a little over 90% of interviewees expressed support for recycling and resource recovery facilities in their current locations, 83% wanted them everywhere and 76% wanted them placed next to litter bins.

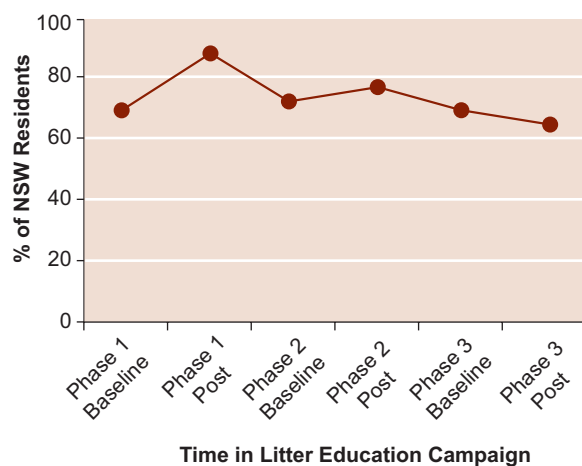
**Fines for littering**

The advertising in Phase 1 focused on the introduction of new litter fines. Awareness of littering fines increased markedly during this phase, followed by a significant decline between the end of this phase and the beginning of the next. The Phase 2 advertising focused on littering from vehicles and there was also a significant increase in awareness of fines.

Fines were not a key part of the Phase 3 advertising with a decline in awareness of fines during this phase, as well as between campaign phases (Figure 8).

**Figure 8**

Trends in awareness of littering fines over three campaign phases



Changes in awareness for demographic groups across NSW within and between the Phase 2 and Phase 3 advertising campaigns are summarised in Table 3.

Whatever the implications of the differences amongst the different groups, three things are clear:

- Advertising that focuses on, or reinforces, fines raises their awareness across the community.
- There is a decline in awareness during the absence of reinforcing advertising.
- Advertising focused on aspects other than fines results in a diminished awareness of fines, presumably because the other aspects become top of people's minds.

**Table 3**

Changes in awareness of fines for littering<sup>23</sup>

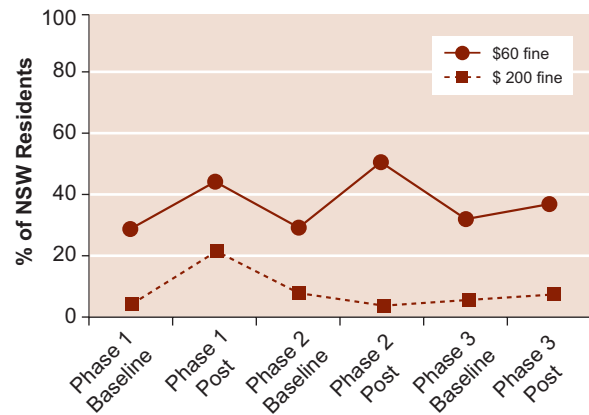
	During Phase 2 %	Between Phases 2 & 3 %	During Phase 3 %
All NSW residents	+ 7	- 8	- 3
Males	+ 9	- 9	- 4
Females	+ 6	- 7	- 1
Under 40	+ 8	- 7	- 3
Over 40	+ 6	- 9	- 3
Non-smokers	+ 7	- 8	- 1
Smokers	+ 8	- 8	- 6

Knowledge of the amounts of the littering fines also showed marked increases during Phases 1 and 2 with a significant decline between phases. There was an increase in recall of the amounts during Phase 3 and a corresponding decrease in those who did not know correct fine amounts.

The \$200 fine was the most highly recalled amount during all phases with the \$60 fine being well recalled at the end of Phase 1. Figure 9 shows the changing recall of these two fine amounts over all testing waves of the campaign<sup>24</sup>.

**Figure 9**

Changes in knowledge of the two most commonly recalled litter fines.



### Messages for building people's knowledge of litter and littering

There are some clear messages from the 1999 to 2003 litter education campaign that provide signposts for building community knowledge in the future about litter and littering.

Mass media advertising:

- does increase, or at least confirm, people's knowledge of what constitutes litter and inappropriate littering behaviour
- results in people's knowledge of appropriate litter disposal or reduction behaviours and attitudes being improved and reinforced
- raises community awareness of the problem of litter in their area
- maintains a high level of knowledge that litter is in fact an extremely or very important public issue
- increases public awareness and knowledge of the amounts of fines for littering, with these declining in periods where there is no advertising
- may replace 'top of the mind' awareness of one issue as it increases this for another issue.

Qualitative research also indicated that:

- there is now widespread acceptance that littering at beaches, along roadsides and in national parks, harms the natural environment, but
- this view is not transferred to the built environment where private ownership or cleaning up seems to give some level of permission to litter.

## Changes in ATTITUDES to litter and littering

There are many facets to people's attitudes to litter and littering, while evolving social and moral pressures have influenced changes in attitudes to their own and other's littering behaviour. Beliefs, often not based on real knowledge about who litters and why, has led to often negative stereotyping of others, while the research has revealed a range of mindsets held about one's own littering behaviour.

### Who litters and why

Prior to the Phase 1 campaign the *Fast Life Fast Litter* study found that people tended to stereotype litterers as young people, poor, poorly educated, males, singles, those having a poor self image, migrants or the image conscious and superficial. At the same time, there was a social image of litterers as disgusting, disrespectful, lazy, ignorant, careless, dirty and unclean.

This research also produced descriptions of five mindsets related to littering (Table 4). The differences between mindsets implied that different messages would be appropriate for each group in any litter education strategy and thus influenced the style and content of the material used in all phases of the campaign.

*Clearly littering was seen as socially unacceptable behaviour in the wider community – even by those who may deliberately litter so as to be anti-social.*

The pre-Phase 3 research<sup>25</sup> indicated some changes within these mindsets from 2000 to 2003:

- **Collectors** now felt more empowered, particularly with friends and family, to speak to others. However, they were somewhat disillusioned with progress on litter prevention and still felt that too few are fined for littering.
- **Unawares** had a stronger sense that littering the natural environment is harmful than at the start of Phase 1.
- **Inconvenients** still complained about the lack of bins and still did not believe that they are personally responsible for taking away and disposing of leftover packaging.
- **Wilful arrogants** and **anti-establishments** for the most part wanted the environment protected and were against litter in natural places but regarded cities as open slather. They were determined they will not be told what to do.

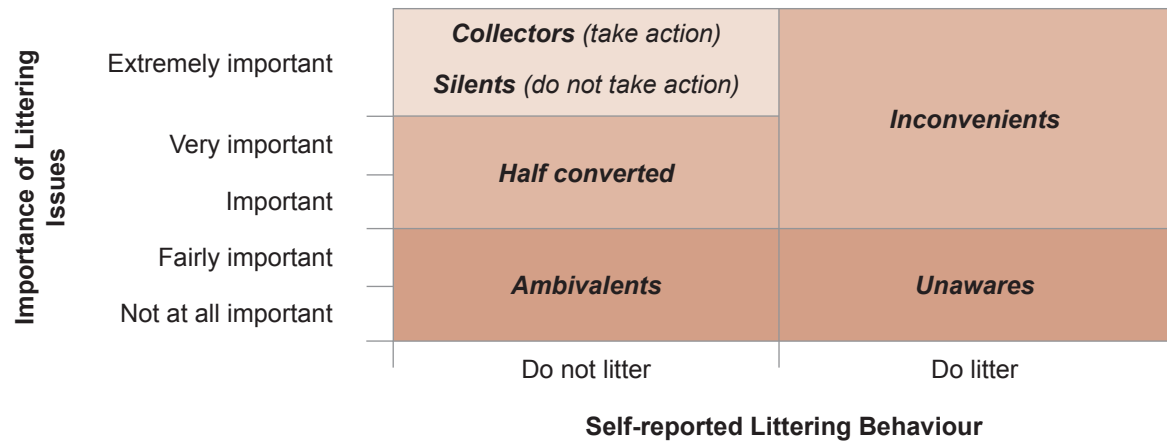
**Table 4**

Attitudes towards littering of community segments in 2000

Mindset	Attitudes to litter and littering
Non-litterers and collectors	<ul style="list-style-type: none"> <li>• Believe they can make a difference to the problem of litter.</li> <li>• Have a sense of community and empathy with needs of others.</li> <li>• Have a positive self image and are generally contented.</li> </ul>
Inconvenients	<p>Tend to blame others and other things for their littering, saying:</p> <ul style="list-style-type: none"> <li>• provision of bins and/or rubbish collection is inadequate</li> <li>• there is too much packaging</li> <li>• government is not doing enough.</li> </ul>
Unawares	<ul style="list-style-type: none"> <li>• Think that their little bit of litter does not matter.</li> <li>• Regard littering as just a habit.</li> <li>• Nevertheless feel guilty about littering.</li> </ul>
Wilful arrogants	<ul style="list-style-type: none"> <li>• Litter to impress peers with cool behaviour.</li> <li>• Are concerned about their image as being a bit antisocial.</li> </ul>
Anti-establishments	<ul style="list-style-type: none"> <li>• Are generally angry, unhappy or discontented.</li> <li>• Have no desire to change their littering behaviour.</li> <li>• Litter openly and like it this way.</li> </ul>

**Figure 10**

2003 post-Phase 3 community segments based on attitudes to litter and self-reported littering behaviour



The categorisation of people into groups with different attitudes and behaviours was also re-examined in the post-Phase 3 quantitative evaluation. Six segments were initially identified on the basis of two questions, one that asked for a personal rating of the importance of litter as an environmental concern, the other for self-reported littering behaviour (Figure 10).

Of the approximately 800 people surveyed at the end of Phase 3, only half a dozen could be identified as being in the previously identified mindsets designated as wilful arrogants or anti-establishments<sup>26</sup>. There are probably two reasons for this: this group comprises a small percentage of the population (If they are 1.5% of the population, only a dozen in could be expected in a sample of 800) and, perhaps more importantly, people in these groups may be more likely than average to be unwilling to take part in a telephone survey. Thus they may have been poorly represented in the sample.

Analysis of the post-Phase 3 survey responses indicated some of the attitudes within these segments and identified some demographic groups more or less likely to be found in each segment. Table 5 shows the six segments, the proportion of respondents that fell within each, their characteristic attitudes to littering and demographic composition.

As these segments had been originally developed from small scale qualitative research prior to

Phase 1, a cluster analysis across seven of the survey questions with 1600 people in the Phase 3 evaluation (including pre- and post-measures) was undertaken to independently and quantitatively establish a segmentation of the population on littering<sup>27</sup>. This revealed three broad groupings with characteristic attitudes and behaviours as well as differing demography (Table 6). In this analysis, about 5% of the sample could not be grouped.

This new segmentation can be used in targeting future litter education programs.

### Why littering is of concern to people

Concern with littering prior to the 1980s centred on its unsightliness. Over the next 15 to 20 years, concern shifted towards litter being dangerous to humans and wildlife, as well as offensive and unhygienic due to the inclusion of new items such as syringes and the increasing awareness and prevalence of cigarette butts in outdoor areas.

People who indicated that they thought littering was a problem in their area were asked why they thought litter was a problem in all of the surveys over the three phases of the 2000 to 2003 campaigns. The most common responses<sup>28</sup> reveal attitudes about the effects of litter and attitudes to those who litter, as well as beliefs about structural causes for there being a problem of litter.

**Table 5**

Characteristics of community segments in 2003

Segment	Attitudes to litter and littering	Demographic composition
Collectors (17% of the respondents)	<ul style="list-style-type: none"> <li>• Prepared to take action if they see someone littering.</li> <li>• Find it hard to understand why other people litter.</li> <li>• More likely to think people should take their rubbish with them.</li> <li>• Less likely to think more bins is answer to littering.</li> </ul>	<ul style="list-style-type: none"> <li>• More likely to be female</li> <li>• More likely to be aged 60 to 70 or 30 to 39 years.</li> <li>• Less likely to be 18 to 29 years.</li> </ul>
Silents (15%)	<ul style="list-style-type: none"> <li>• Get angry with others littering but do nothing.</li> <li>• Also find it hard to understand why others litter.</li> </ul>	<ul style="list-style-type: none"> <li>• More likely to be female</li> <li>• More likely to be aged 30 to 39.</li> <li>• More likely to speak only English at home.</li> </ul>
Half converted (39%)	<ul style="list-style-type: none"> <li>• Believe littering should be reduced by people taking responsibility and taking disposable items away.</li> <li>• Believe in greater public education.</li> </ul>	<ul style="list-style-type: none"> <li>• Reflect the average person.</li> </ul>
Ambivalents (14%)	<ul style="list-style-type: none"> <li>• Believe that the way to reduce litter is to avoid disposable items.</li> <li>• Most likely to know what a solution for littering might be.</li> </ul>	<ul style="list-style-type: none"> <li>• Significantly more likely to be males.</li> <li>• More likely to be aged 40 to 49 years.</li> </ul>
Inconvenients (7%)	<ul style="list-style-type: none"> <li>• Know littering is wrong.</li> <li>• Have a lot of ideas about how to reduce littering.</li> <li>• Not fully engaged because not littering is too hard.</li> </ul>	<ul style="list-style-type: none"> <li>• Equally likely to be males or females.</li> </ul>
Unawares (6%)	<ul style="list-style-type: none"> <li>• Believe there is a need to be more aware of littering to make more bins available and to recycle containers.</li> </ul>	

**Table 6**

Community segmentation based on all Phase 3 quantitative data

Segment	Demographic characteristics	Attitudes and behaviour	Equivalent mindsets
<b>Passionates</b> 50% of population	<ul style="list-style-type: none"> <li>• Heavily weighted towards women and the 60 to 70 years age range.</li> <li>• Unlikely to smoke.</li> <li>• Moderately aware of <i>Tosser</i> advertisement – more than sit on the fence but not as aware as discreets.</li> <li>• Found advertisement convincing and fairly relevant with high emotional impact.</li> </ul>	<ul style="list-style-type: none"> <li>• Think litter issue is extremely important.</li> <li>• Have never littered.</li> <li>• More likely to report a litterer to council or the EPA/DEC pollution line.</li> <li>• Not as convinced as other segments that risk of being fined is increasing.</li> </ul>	Collectors Silents
<b>Discreets</b> 26% of population	<ul style="list-style-type: none"> <li>• Equally male or female.</li> <li>• Across all age ranges.</li> <li>• Most likely to be rural.</li> <li>• Most likely to have seen the <i>Tosser</i> advertisement and talked about it, but claim it of little relevance.</li> </ul>	<ul style="list-style-type: none"> <li>• Average in their view of importance of littering issue.</li> <li>• Not overt litterers (from cars etc.).</li> <li>• Discreet litterers – leave rubbish behind in places where no one is around – probably feel some guilt about their behaviour, or at least are fearful of public shaming.</li> <li>• Most likely to have tried to change their littering behaviour in last three months.</li> </ul>	Inconvenients Ambivalents
<b>Sit on the fence</b> 19% of population	<ul style="list-style-type: none"> <li>• Male dominated group with skew to being younger – 48% of people aged 18-29.</li> <li>• Most likely group to smoke.</li> <li>• Least likely to have seen the <i>Tosser</i> advertisement but those who did thought it relevant and strongly recall the slogan.</li> </ul>	<ul style="list-style-type: none"> <li>• Do not have extreme opinions on any of attitudinal measures.</li> <li>• Consider littering is not so important compared to average.</li> <li>• Think fining litterers should depend on situation.</li> <li>• Engage in small littering e.g. occasional cigarette butt tossed from car but no discrepancy between attitudes and behaviour.</li> </ul>	Unawares

### Concerns relating to the effects of littering

Over the three phases of the campaign there were some trends in attitudes to litter as a problem, the most significant are summarised in Figure 11.

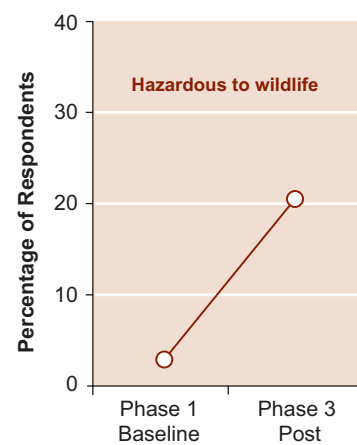
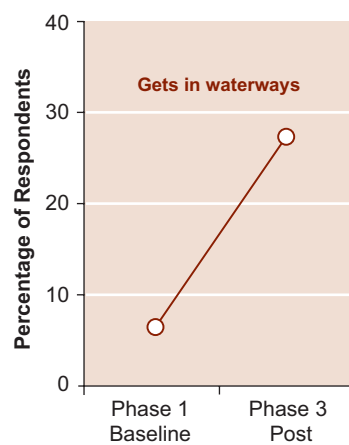
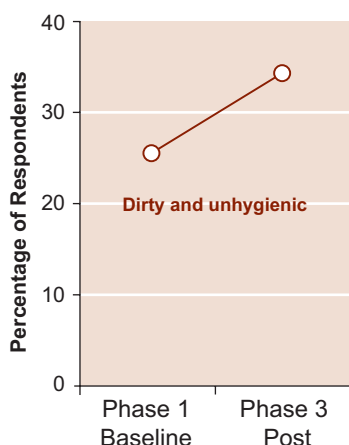
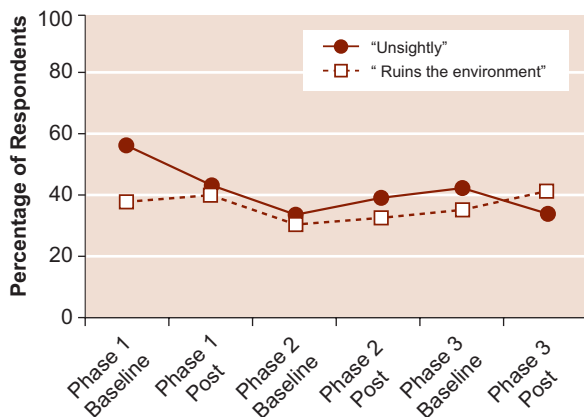
In addition to the changes shown in Figure 11, the view that litter creates waste decreased from 9% to 3% in Phase 2 and then increased to 21% at the end of Phase 3.

Concern that cigarette butts might cause fires rose from zero in the middle of Phase 2 to a 9% response rate after Phase 3. This may be attributable to the devastating bushfires across NSW in January 2003 just before the Phase 3 advertisements.

There is some indication in the Clean Up Australia 2003 beach litter survey<sup>29</sup> that there may be a generational change in attitudes. In this survey young people tended to be much more concerned with danger to wildlife, middle aged more with danger to humans and pollution in general, and older people more with the ugliness of litter.

**Figure 11**

Some trends in people's concerns about the effects of litter



### Attitudes relating to the structural causes of littering

Over the three phases of the campaign, the most common structural cause of litter was believed to be that there were not enough bins or the bins were not big enough. The frequency of this response increased from 4% to 24% over the whole campaign.

The cost of resources to manage litter and insufficient fines were concerns of small proportions of respondents over all phases.

### Personal responsibility for littering

From the start of the *Do the right thing* campaign in 1980 there has been an emphasis on moving the community's attitude from apathy and personal justification for littering, and towards taking personal responsibility for appropriate disposal behaviours.

A key message in the *Tosser 2* campaign was that it's your personal responsibility not to litter. Responses to the question on what people can do to reduce litter<sup>30</sup> are overwhelmingly in a category of what individuals can do, whether in terms of awareness and thoughtfulness, good disposal behaviours or preventative actions. This would seem to indicate a tacit recognition that individuals rather than the authorities are the ones who can, and should take responsibility for littering. Nevertheless there remains a tendency for people to rationalise their own littering behaviour and so avoid personal responsibility<sup>31</sup>.

At the end of Phase 3 of the campaign, 97% of people surveyed felt that the new *Tosser* TV commercial got the message across that disposing of litter is everyone's personal responsibility.

### Attitudes to other people who litter

Responses to the question why is litter a problem evoked a significant number of responses to the effect that people are lazy, don't care or have no respect – increasing from 17% to 38% over the three phases of the campaign<sup>32</sup>. This suggests a growing disapproval of others who litter which matches the findings in the focus group research before the *Tosser 2* campaign which showed that the majority of people have negative views of those who litter, sometimes very strongly expressed.

Ignorance and lack of education (perhaps not wholly blaming litterers) was the second most common perception of the cause of littering and this too increased, from 5% before Phase 2 to 13% at the end of Phase 3.

### Social and moral dimensions of littering

An explicit strategy of the *Tosser 2* campaign was to reinforce the social unacceptability of littering through a message that other people are likely to think you are a *Tosser* for littering.

By the end of Phase 3 of the campaign, 95% of people surveyed felt that the new *Tosser* TV commercial got the message across that littering in public places is not acceptable although only 76% of self-confessed heavy litterers thought so. Similarly, 94% of people thought that it got the message across that the community disapproves of littering but only 76% of self-confessed heavy litterers thought so.

This indicates that the deliberately light-hearted tone of the commercial succeeded in communicating that littering behaviour is not socially acceptable behaviour. How this might have translated into changes in littering behaviour is considered in the next section.

The literature review, *Lessons from the Litterature*,<sup>33</sup> identified a marked decline in standards of cleanliness in public spaces in the 1950s in line with the increased marketing of personal hygiene and household cleaning products. A continued

focus on private cleanliness puts public space at risk of being seen as dirty and so more likely to be littered. The *Tosser* concept that links personal approval with not littering public spaces may be breaking down this division between "self" and "other" that led to the increase in littering in public spaces up to the *Do the right thing* campaigns.

There is also the suggestion that littering and responses to it have some of the features of moral panics that occur in times of social ambiguity<sup>34</sup>. The implications for the timing of litter campaigns in relation to periods of social uncertainty are not clear. Launching a campaign 'on the crest of a moral panic', about litter and waste issues or some other social issue, may increase the effectiveness of media advertising in the short term but result in a relapse when this subsides.

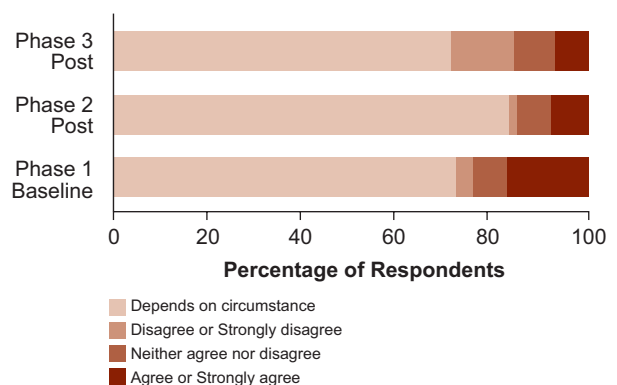
Whatever the social and moral dimensions of community concern about litter, it is an ongoing environmental issue that requires regular attention. Clearly the decision to conduct litter education should be grounded in objective measures of litter incidence.

### Attitudes to littering fines

There was strong community support for littering fines throughout all phases of the campaign with three in four or more people agreeing or strongly agreeing that people who litter should be fined<sup>35</sup>. This attitude reached a maximum of 85% of respondents at the end of Phase 2, during which the fines were a major component of the media advertisements. However, by the end of Phase 3, the level had decreased to 75%, the same as

**Figure 12**

Shifts in community attitudes to littering fines over the three phases of the campaign



before Phase 1. Those people saying that fines should depend on the circumstances fell from 17% before Phase 1 to 10% at the end of Phase 2 and remained at this reduced level throughout Phase 3. Those indicating that they neither agreed nor disagreed with fines jumped from 4% before to 11% after Phase 3.

It appears that there may have been a shift from 'depends on the circumstance' to agreement with fines over the first two phases followed by a shift from agreement to neutrality during Phase 3 (Figure 12). Perhaps the light heartedness of the *Tosser* advertisements has softened the attitudes of a portion of the community. However, there were variations in these attitudes in different groups in the community (Table 7).

### Messages for changing attitudes to littering and littering behaviour

It is apparent that members of the community can still be segmented into different mindsets and that:

- people in each segment have quite different attitudes to litter and littering
- media campaigns messages have different impacts on attitudes in different segments.

Notwithstanding these differences, the majority of people in the community believe that:

- littering is socially unacceptable
- ways to reduce littering involve personal responsibility and actions even when they do not exhibit these themselves.

The *Don't be a Tosser* message has been effective and:

- reinforced the social unacceptability of littering through a light hearted but still not-to-be-dismissed message
- given some segments of the community permission to speak to others about appropriate disposal behaviour.

In addition there is some evidence that:

- there may be a generational shift in why litter is a concern – from ugliness for older people, through dangerous and unhealthy for middle age people to harmful to wildlife for younger people.

Concerning people's attitude to fines for littering, there:

- remains strong community support for people being fined for littering
- may be some softening in attitudes to fines if the image of littering is too light hearted
- has been a decline in those who say it depends on the circumstance.

**Table 7**

Attitudes to fines for littering at the end of Phase 3

Groups lower than the state average	Attitude to littering fines across all residents of NSW	Groups higher than the state average
Wollongong residents (66%) Males (66%) Non-smokers (61%)	75% agree or strongly agree with fines	Other NSW residents (82%) Females (84%) Smokers (80%)
Other NSW residents (8%) Females (7%) Smokers (8%)	11% neither agree nor disagree with fines	Wollongong residents (17%) Males (14%) Non-smokers (16%)
Other NSW residents (3%) Females (2%) Smokers (3%)	5% disagree or strongly disagree with fines	Wollongong residents (10%) Males (7%) Non-smokers (8%)
Wollongong residents (7%) Other NSW residents (6%) Females (7%) Smokers (8%)	10% say fines for littering depend on the circumstances	Sydney residents (12%) Male (13%) Non-smokers (14%)

## Changes in people's littering BEHAVIOUR

The aim of all litter reduction or prevention strategies is to reduce the actual incidence of litter by increasing knowledge and changing attitudes so as to change what people do in relation to the disposal of unwanted material.

There have been three basic approaches to finding out about community behaviour with regard to littering which involve:

- measuring the amount and types of litter in different public spaces (e.g. SPCC litter counts, BIEC benchmark studies, CUA gross estimates)
- asking people about their own littering behaviour and other disposal practices (e.g. campaign evaluations)
- observing people's actual disposal behaviour, and relating this to their self-reported behaviour (e.g. BIEC studies).

A conceptualisation of these three approaches and their relation to litter in public places is shown in Figure 13.

### Litter counts

In 1979 the State Pollution Control Commission initiated a Litter Index study at over 150 selected sites in the Sydney metropolitan area, with one area in regional NSW. The Litter Index was simply the total number of litter items accumulated per day in a 100 square metre area of an uncleaned site. Through the *Do the right thing* campaigns of the 1980s, this measure provided evidence of the impact in reducing litter, the apparent effect

of public complacency by 1987, as well as the composition of the litter items counted and how this changed over the period (see Figures 1 and 2, Section 1).

The Litter Index research was useful in gaining some measure of the extent of litter and its composition, but there are inherent difficulties in linking littering behaviour to the index. Meteorological factors, such as strong winds and heavy rainfall, move litter in and out of any open space in unquantifiable ways. Sources other than people being a *Tosser* may also be contributing to the accumulation of litter, for example, rubbish from uncovered vehicle loads.

A new NSW litter survey program<sup>36</sup> was proposed in 2003 to systematically collect information on litter across the State, however, it was not implemented.

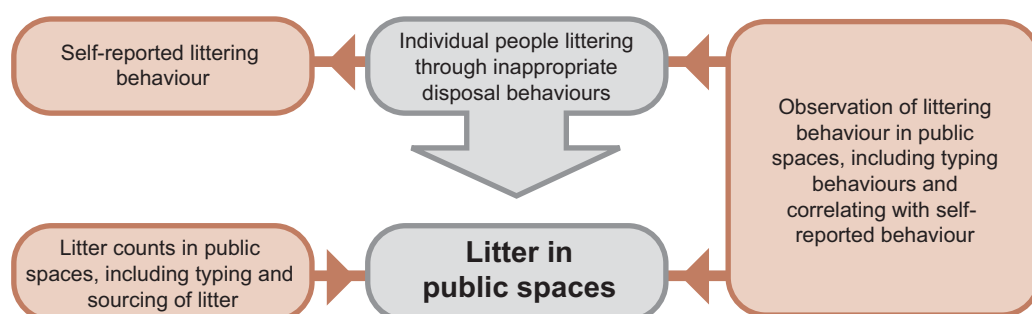
### Self-reported littering behaviour

In the quantitative research done before and after each phase of the campaign, people were asked a number of questions relating to their personal littering behaviour and any changes they had made to this behaviour.

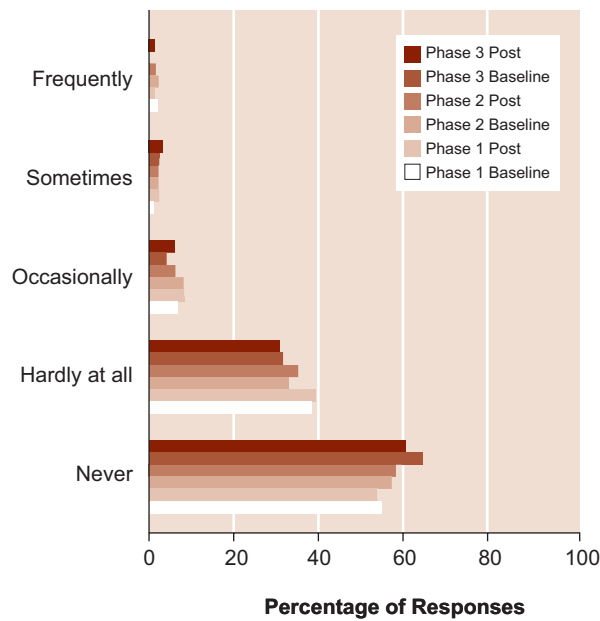
There are frequently discrepancies between self-reported and actual or observed behaviour. If we accept that the frequencies of responses are at least indicative of actual behaviour, there is a slight shift from occasionally and hardly at all to never litter. Alternatively, this data may only confirm the social unacceptability of littering with the slight shift merely revealing that people continue not to want to be seen as litterers<sup>37</sup>.

Throughout the campaign, but most strongly in Phase 3, the groups most likely to report they litter

**Figure 13**  
Three approaches to measuring littering behaviour



**Figure 14**  
Self-reported littering behaviour over the three phases of the campaign



were males (in Phase 3, 75% compared to 25% females), younger people (45% of 18 to 29 year olds compared to 5% of 60 to 70 year olds) and smokers (90% compared to 10% non-smokers).

In the last two phases a number of *litter-related behaviours* were read out and people asked how often had they done each in the last four weeks. Positive behaviours of binning take away food wrappers, cigarette butts and carrying rubbish until a bin is found increased during Phase 2 and between this and Phase 3, but decreased after Phase 3.<sup>38</sup> At the same time, there was an increase in Phase 3 in those admitting to sometimes or occasionally throwing some sort of rubbish from the car. These data may only indicate a growing awareness of littering and recognition of its social unacceptability rather than real trends in actual litter disposal behaviours.

Those who report *changing their littering behaviour* over the last three months (Table 8) increased most strongly during Phase 1<sup>39</sup>. Phase 1 had the greatest apparent impact in persuading litterers to change their behaviour but for each phase, these figures relate to those who admitted they litter and are likely to include a cumulative factor.

Figure 14 indicates people were littering less frequently through the campaigns, so that the lower number making changes before and after Phase 3 may indicate a continuing, if diminished, adoption of appropriate disposal behaviours.

**Table 8**  
Making changes to reduce littering\*

	Before Phase 1	During Phase 1	Before Phase 2	During Phase 2	Before Phase 3	During Phase 3
All NSW residents	9	17	13	16	9	9
Sydney Metro			13	18	9	9
Regional NSW			16	14	12	11
Male			13	19	6	8
Female			14	14	12	10
Under 40 years old			18	23	12	12
Over 40 years old			10	10	6	7
Non-smokers			10	12	7	7
Smokers			25	30	15	15

\* In the last three months, have you changed your behaviour in any way to reduce littering?

In addition, there were better than average changes in behaviour during the last two phases for smokers and people less than 40 years old, major target groups for the campaign. Responses to an open-ended question on how behaviour was changed included relatively high proportions who reported putting cigarette butts in the bin, recycling or reusing containers and taking disposable items away with them.

### Actual disposal behaviour and self-reporting of littering

The BIEC *Littering Behaviour Studies* aim to measure people's actual littering behaviour and then relate this to their self-reported behaviour, using an Observational Approach methodology. BIEC also developed a Disposal Behaviour Index that measures positive disposal practices as well as negative littering behaviour<sup>40</sup>. The findings for most sites in Sydney over several years indicate that about 70% of people dispose of litter appropriately in areas where there is a nearby bin.

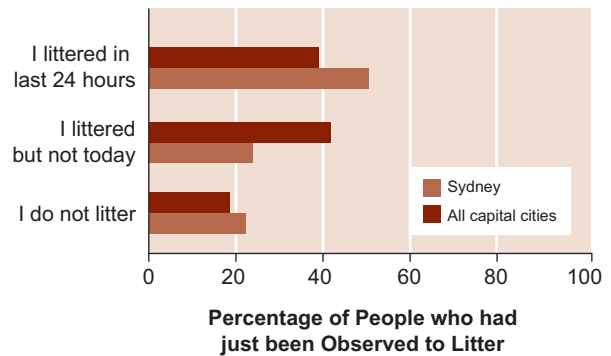
A key finding of these studies, however, is that people's self-reporting of littering behaviour does not correlate with observed littering behaviour. Over several years, these studies have found approximately 60% of people who had minutes before been observed to litter were unable to remember if they had littered in the previous 24 hours or were unwilling to admit it (Figure 15)<sup>41</sup>.

One implication of these findings is that the very high self-reported behaviour of never and hardly at all littering represented in Figure 14 must be reduced significantly if they are to be interpreted as indicative of actual behaviour.

Whether the discrepancy is because people are simply unaware of their littering behaviour – particularly in regard to small, easily overlooked items – or there is deliberate misrepresentation, these findings do point to the need to heighten people's awareness of their own actions.

**Figure 15**

Statements about their own littering behaviour by people who have just been observed to litter (data from Community Change *Littering Behaviour Studies National Benchmark 2002*, p.27)



### People who litter in public spaces

*The clear message of the BIEC studies is that self-reporting of littering behaviour is not a reliable indication of actual littering behaviour.*

The *Littering Behaviour Studies* also provide helpful data on the demographic profiles of those who are observed to litter in public spaces<sup>42</sup>. The findings can be summarised below:

- In Sydney higher proportions of men than women (55% to 45%) were observed to litter.
- Young people litter more than other age groups – 47% for the under 18 year group and 40% for the 18 to 24 year group, compared to 36 to 38% for the older groups. This may partly account for the perception that young people are major litterers but they also found that young people comprise a high proportion of people in public spaces – one-third are under 25 and two-thirds under 35 years old.
- The proportion of young people littering changed significantly, depending on the size of the group in which they were observed. For those under 18 years, only 30% were observed to litter when alone and this increased to over 60% when they were in groups of six or more.

- Those in paid work, homemakers and retirees were less likely to litter, and more likely to use bins, than either students or those not in paid work.
- Interstate and overseas visitors were less likely to litter, and more likely to use bins, than either local or out of town people.

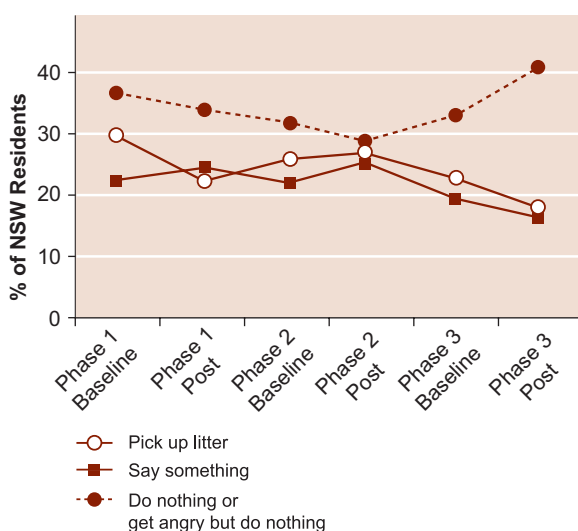
### Self-reported reactions to others littering

In all pre- and post surveys, people were asked from a series of given options what they would do if they saw someone else littering. The most common responses were to say 'pick up the litter', 'say something to them', 'get angry but do nothing' and 'do nothing', but these have varied significantly through the campaign (Figure 16)<sup>43</sup>.

The increase in the do nothing option in Phase 3 was accompanied by equally significant declines in the stated reactions of do something, whether that would be to pick up the litter or say something to the litterer. These two trends over the latter phases of the campaign may reflect an increasing attitude of the other person's personal responsibility, but changing concerns over personal safety during 2002 and 2003 may also be contributing significantly to these reactions.

**Figure 16**

Responses to other's littering



### Messages for determining and changing people's littering behaviour

Considering the findings of the DEC social research during the three phases of the 2000 to 2003 litter education campaign, the BIEC *Littering Behaviour Studies* and the proposed NSW litter survey program, several cautionary messages emerge in relation to determining and changing people's littering behaviour:

- People's littering behaviour is complex and dependent on the context, for example, at an event where people are paid to clean up compared to a park or the roadside.
- Self-reported littering behaviour cannot be taken at face value as an accurate indication of actual littering behaviour.
- Some demographic groups, as well as mindsets across these groups, do appear to show differences in disposal behaviour.
- Different age groups exhibit different disposal behaviours with the presence or absence of peers significantly influencing littering.
- There is more recently an apparent increase in unwillingness to do something about other people littering, whether that means picking up the litter or saying something to the person.

The following issues pertain to design of components of a litter strategy:

- Litter surveys and counts should endeavour to identify people's total disposal behaviour in all its complexity, and across the spectrum from appropriate behaviours, such as binning, taking home the rubbish and recycling, to inappropriate behaviours, such as littering and illegal dumping.
- Litter surveys and counts should be closely integrated with social surveys of community knowledge, attitudes and self-reported behaviour around littering.
- Identifying the contribution to actual littering of different community segments with different mindsets will assist in refining strategies for targeting these different groups. Specific strategies are needed to ensure the views and reactions of the wilful arrogants and anti-establishments are captured if they do in fact make a substantial contribution to the total amount of litter in public places.

## 3. Responses to mass media advertising

### Introduction

The campaign phases were described at the end of Section 1 but are summarised again here to assist in the more detailed discussion of the advertising. Table 9 describes the TV scenarios used in each phase.

Phase 1 took place in two stages: the first stage focused on raising awareness of the litter problem by depicting people littering in everyday situations – at the bus stop and on a lunch break – creating common types of litter such as cigarette butts and take away food containers. While coinciding with the start of the new littering laws, the second stage focused on the new fines for different types of litter.

Phase 2 maintained the theme of personal responsibility. Using television, radio and outdoor advertising, the campaign focused on littering from vehicles, a common littering behaviour in NSW.

Phase 3 extended the *Don't be a Tosser* message from everyday situations to smaller scale illegal dumping. The tone of the message was

deliberately colloquial and light hearted to further reinforce personal responsibility for, and the social unacceptability of littering.

In Phase 1, there were three separate advertisements, each showing a different situation. In Phases 2 and 3 there was one advertisement, each with three different scenarios. The first two phases also had specially designed campaigns to reach people from non-English speaking backgrounds that included radio and press advertisements in six community languages.

### Recall of advertising

#### Unprompted

##### Awareness of any TV commercial about littering

Before each advertising phase, significant numbers of people recalled a TV commercial about littering in the last three months<sup>44</sup> but there were quite dramatic increases in recall at the end of each phase (Figure 17)<sup>45</sup>.

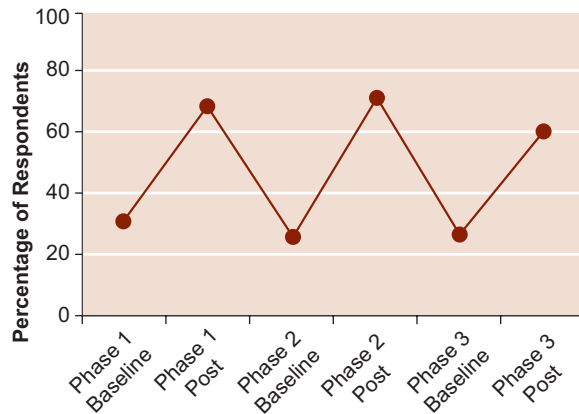
**Table 9**

TV media scenarios used in each phase

<p><b>Phase 1</b></p> <p><i>Litter – what are you really throwing away?</i></p> <p>Litter – it's in your hands</p>	<p><b>Three advertisements:</b></p> <ul style="list-style-type: none"> <li>• Woman eating chips on park bench leaves chip cup behind</li> <li>• Man and woman smoking who drop butts on path</li> <li>• Man getting on bus throws drink container in gutter first</li> </ul>
<p><b>Phase 2</b></p> <p><i>Don't be a Tosser</i></p> <p>Litter – it's in your hands</p> <p>Our environment – it's a living thing</p>	<p><b>One advertisement with three short scenarios:</b></p> <ul style="list-style-type: none"> <li>• Woman in car at beach putting lunch wrappers on road</li> <li>• Man in car in traffic drops cigarette butt from window</li> <li>• Man driving along a country road throws can from car</li> </ul>
<p><b>Phase 3</b></p> <p><i>Don't be a Tosser</i></p> <p>Our environment - it's a living thing</p>	<p><b>One advertisement with three short scenarios:</b></p> <ul style="list-style-type: none"> <li>• Three guys in footy gear at bus stop – one drops a cigarette butt</li> <li>• Man surreptitiously leaves a bag of household rubbish by a fence in a lane, seen by neighbour</li> <li>• Woman drops a wrapper that is picked up and put in her bag by a young passer by</li> </ul>

**Figure 17**

Recall of any TV commercials about litter in the last three months (*Have you seen any TV commercials about litter in the last three months?*)



The groups most likely to be aware of TV commercials at the end of Phase 3 were females (60% compared to males at 55%) and residents between 30 to 39 years (72% compared to all other age groups 55% or lower). Residents of Sydney or Newcastle had lower Phase 3 baseline recall than residents of Wollongong or regional NSW but higher levels of recall after this phase of the campaign (Table 10).

**Table 10**

Regional differences in changes in unprompted recall of litter advertising

Region	Percentage of residents recalling	
	Phase 3 baseline	Phase 3 post
All NSW	25	58
Sydney metropolitan	17	59
Newcastle	28	61
Wollongong	37	56
Regional NSW	39	53

**Recall of the content of TV commercials about littering**

When those who recalled seeing any TV commercial about littering were asked to state, unprompted, what was its content, over half remembered *Don't be a Tosser* after both Phase 2 (57%) and Phase 3 (66%). There was also strong recall of the man tossing a cigarette butt (by 25%) or a drink can (by 22%) from a car after Phase 2 when these images were used.

**Recall of the main message of TV commercials about littering**

During the last two *Tosser* phases there were some significant changes in unaided recall of the main message, by those who remembered having seen any of the recent TV commercials (Table 11).

There was quite substantial and accurate recall of the main messages from each phase, although people continued to attribute messages from more than a year earlier to the more recent past. A small number at the end of *Tosser 2* continued to recall the stormwater campaign advertisements (of several years earlier) as being in the last three months.

**Prompted recall of specific TV advertisements**

When read a brief description of the Phase 3 TV commercial more than half (54%) of respondents recalled the actual *Tosser* advertisement across all demographic groups. The rate of recall was higher amongst Sydney residents (60%) than for Newcastle and Wollongong (46%) or regional NSW residents (42%). Recall for smokers was slightly higher than for non-smokers, 97% of whom claimed they had seen the advertisement at least once and 65% had seen it four or more times. In Phase 2, 65% saw it six or more times.

**How convincing was the TV advertisement?**

On being read a description, 81% of those respondents recalled seeing the specific *Tosser* campaign advertisement, and rated it as either very or fairly convincing. Females and older age groups were more likely to find it convincing.

**Table 11**

Changes in recall of the main message of TV commercials in the two *Tosser* phases of the campaign

Main message recalled	Phase 2 Baseline to post percentage	Phase 3 Baseline to post percentage
Dispose of rubbish appropriately	20 ↑ 24	8 ↑ 25
Rubbish, drains and waterways	31 ↓ 5	28 ↓ 17
Do not litter from vehicles	6 ↑ 24	12 ↓ 9
Littering throws away the environment	2 ↑ 3	6 ↑ 13
Littering is socially unacceptable	2 ↑ 15	11 ↑ 34

### Relevance of the TV commercials about littering

For those who recalled seeing the specific *Tosser* campaign advertisements, the Phase 3 commercial was seen as more relevant to them or their household than the Phase 2 commercial – 57% compared to 36% described it as very or fairly relevant. People in the metropolitan centres of Sydney, Wollongong and Newcastle felt it more relevant than did those in regional NSW. The commercials appear to be more relevant to males and smokers.

### Encouragement to change behaviour

At the end of each phase, people who recalled the TV commercial when it was described to them were asked whether the advertisement

encouraged them to act in ways to avoid or help to reduce littering. It appears that the triple scenario advertisements in the last two *Tosser* phases were more effective than any of the single scenario advertisements in Phase 1 (Table 12).

### Who is responsible for the advertisement?

The vast majority of people who recalled the TV advertisement did not know or could not remember the promoting organisation: 76% to 80% for the three Phase 1 advertisements, 70% for the Phase 2 advertisement, and 63% for the Phase 3 advertisement. The EPA, NSW Government or local government were most frequently identified, with small numbers identifying non-government organisations, such as Keep Australia Beautiful and Clean Up Australia.

**Table 12**

Advertising encouragement to change littering behaviour \*

Phase and TV advertisement	Very much/ Quite a bit	Maybe	Not really/ Not at all
<b>Phase 1:</b> Woman eating chips	35	25	39
Man at bus stop	37	16	45
Man and woman smoking	34	18	47
<b>Phase 2:</b> Three scenes	49	20	31
<b>Phase 3:</b> Three scenes	44	27	28

\* Did you find that advertisement encouraged you to act in ways that avoid or help to reduce littering?

### The Our environment – it’s a living thing slogan

The Government’s overarching environment campaign, *Our environment - it’s a living thing*, was introduced between Phases 1 and 2 of the litter education campaign with a series of general environmental messages in commercials and other advertising. The *Our environment - it’s a living thing*, logo was shown at the end of the *Tosser* TV commercial and the slogan sung at the end of the *Tosser* radio commercial.

Residents who recalled seeing any TV advertising were asked, at first without prompting, if they could remember any slogans or jingles from it. The unaided recall of *Our environment - it’s a living thing* increased from Phase 2 to Phase 3 and prompted recall in Phase 3 was significantly greater than the unaided recall (Table 13).

When asked to what extent the *Our environment - it’s a living thing* slogan encouraged them to do more things to care for the environment just under half (47%) of the respondents indicated ‘very much’ or ‘quite a bit’ at the end of Phase 3, down from 59% at the end of Phase 2. The fall may be due to the longer time gap between the *Our environment - it’s a living thing* advertisements and Phase 3, compared with Phase 2.

### Other litter advertisements

In addition to the TV commercial, the Phase 3 *Tosser* campaign included other advertising media with varying degrees of recall by the community (Table 14).

**Table 13**

Recall of the *Our environment - it’s a living thing* slogan or jingle in Phases 2 and 3 *Tosser* advertisements

Only 2% recalled unaided the <i>It’s a living thing</i> slogan or jingle at the end of Phase 2		
<p>Groups that recalled unaided the <i>ILT</i> slogan or jingle at the end of Phase 3 <b>less than average</b>:</p> <ul style="list-style-type: none"> <li>• Wollongong – 2%</li> <li>• Newcastle – 9%</li> <li>• Regional NSW – 14%</li> <li>• Females – 11%</li> <li>• 18 to 29 years – 5%</li> <li>• 50 to 59 years – 6%</li> </ul>	<p>18% recalled unaided the <i>It’s a living thing</i> slogan or jingle at the end of Phase 3</p>	<p>Groups that recalled unaided the <i>ILT</i> slogan or jingle at the end of Phase 3 <b>more than average</b>:</p> <ul style="list-style-type: none"> <li>• Sydney residents – 21%</li> <li>• Males – 25%</li> <li>• Middle-age – 26%</li> </ul>
Prompted, 43% recalled the <i>Our environment - it’s a living thing</i> slogan at the end of Phase 3		

**Table 14**Recall of other litter advertisements in the Phase 3 *Tosser* campaign

Groups recalling less than average	Specific location results for whole sample	Groups recalling more than average
16% outside Sydney 19% of females	<b>On the sides of buses</b> 22% of all NSW residents	25% in Sydney 25% of males
10% in Wollongong 13% of over 40 years	<b>Radio commercials</b> 17% of all NSW residents	19% in Newcastle and Regional NSW 21% of under 40 years
0% in Wollongong 3% of females 3% of over 40 years	<b>At Rugby League game</b> 4% of all NSW residents	6% in Newcastle 6% of males 5% of under 40 years
7% in Wollongong 8% in Newcastle 15% of males	<b>News items on litter</b> 17% of all NSW residents	19% in Sydney 18% of females
9% in Sydney 6% in Newcastle 11% of females 11% over 40 years	<b>On trains or stations</b> 14% of all NSW residents	17% in Wollongong 11% in Regional NSW 17% of males 17% under 40 years

## Responses to the advertising

There was a more detailed exploration of people's responses to the *Tosser* advertisement used in Phase 3.

### Reactions to the new *Tosser* advertisement

Prompted responses of those who recalled seeing the described scenarios were essentially positive. They said:

They talked about it with family or friends	43%
It had a strong emotional impact	37%
It told them something they didn't know	19%
They paid little attention to it	35%

More females paid attention to the TV advertisement than males (42% of males said they paid little attention, compared to 29% of females) yet more males claim it told them something they didn't know (29% of males versus 11% of females).

Furthermore, those who recalled the described advertisement engaged strongly with the three depicted scenarios:

- 97% agreed it showed how inappropriate it is to litter in public places
- 89% said the advertisement showed realistic situations
- 77% said they were able to imagine how the people felt

### Messages of the new Tosser advertisement

The messages of the advertisement were clear to those who recalled it, with strong agreement that it said:

Disposing of litter is everyone's personal responsibility	97%
Littering in the streets and other public places is not appropriate	95%
The community disapproves of littering	94%
Every bit of litter damages the environment	91%
You should say something to someone who litters	78%
The likelihood of being fined for littering and dumping is increasing	73%
You could call someone a <i>Tosser</i>	66%

### Advertising effectiveness by segment

Research associated with the litter prevention program placed people into the six segments, shown earlier in Figure 10. An analysis of the effectiveness of the advertising for each of the segments (Table 15) showed:

- collectors and silents were much more aware of TV commercials
- the unawares were more likely to think them relevant
- the ambivalents were less likely to find them convincing
- the ambivalents, half-converted and unawares were less likely to have their actions influenced by the TV commercials.

### Messages for future mass media and other advertising campaigns

Messages from the earlier *Do the right thing* media campaign were confirmed by the evaluation of the *Tosser* campaigns. In addition, there are indications of a gradually growing background awareness of many of the important messages that successive litter education campaigns have presented to the community.

- TV commercials achieve very substantial reach into most sections of the NSW community, particularly in metropolitan areas.
- There are significant differences in the main message heard by, and the effectiveness of, the TV commercials for different littering mindset segments in the community.
- Other means of advertising, such as on buses, trains, stations and sporting venues – have less reach and are more suited to reaching particular places in the State and/or groups within the community.
- There is a reasonable background memory of TV advertising about litter and this seems greater in areas of NSW outside Sydney and Newcastle.
- Recall of advertising increases significantly during mass media campaigns but tends to decline to the relatively stable background memory.
- Original and well-researched campaign concepts like *Don't be a Tosser* TV commercials capture the public imagination, are well remembered by a majority of the community and move people further along the path towards accepting personal responsibility for their disposal behaviour.
- The light-hearted and colloquial approach used in the *Tosser 2* advertisements has significantly engaged people and its messages were clear to a large majority of people in NSW.
- Nevertheless only a small portion of the community was sufficiently motivated to change their littering behaviour, although this may indicate relatively small numbers who actually litter and had not changed their behaviour as a result of previous campaigns.
- The overarching environmental brand *Our environment - it's a living thing* is increasingly in the background memory of the community.

**Table 15**Advertising effectiveness for different community segments<sup>46</sup>

	Main message received	Insights
<b>Collectors</b>	<ul style="list-style-type: none"> <li>• Cigarette butts are a salient issue, as is the term <i>Don't be a Tosser</i>.</li> <li>• Concerned about bottles being smashed and environment angles in general work well.</li> </ul>	<ul style="list-style-type: none"> <li>• The commercial works best with the collectors.</li> <li>• They are tuned into the issue and prepared to take action themselves.</li> </ul>
<b>Silents</b>	<ul style="list-style-type: none"> <li>• Environmental angles are salient.</li> </ul>	<ul style="list-style-type: none"> <li>• While the commercial is the most relevant, convincing and able to influence actions of the silents, it lacks ability to emotively engage them.</li> <li>• Still not prepared to say or do anything when they see someone litter. Next campaign needs to encourage them to act.</li> </ul>
<b>Half Converted</b>	<ul style="list-style-type: none"> <li>• Littering should be reduced by people taking disposable items with them and being responsible, and through greater public education.</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial was not seen as relevant as for others.</li> <li>• They don't litter and so they don't immediately see the point of the <i>Tosser</i> TV commercial. More tuned into environment as reason to not litter.</li> </ul>
<b>Ambivalents</b>	<ul style="list-style-type: none"> <li>• Fines for littering and don't litter from car.</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial was less convincing to ambivalents because they are less interested in environment as an issue, e.g. with litter getting into waterways, but more aware of <i>Don't be a Tosser</i>. They are concerned about social disapproval.</li> </ul>
<b>Inconvenients</b>	<ul style="list-style-type: none"> <li>• <i>Don't be a Tosser</i>.</li> <li>• What goes in drain ends up in river.</li> </ul>	<ul style="list-style-type: none"> <li>• The commercial works with this group. Highly convincing and influences their actions. However, they find it less relevant because they only litter when they have to.</li> <li>• Would never consider saying anything to a litterer.</li> <li>• The <i>Tosser</i> sanction is of concern and environmental angles make sense to them.</li> </ul>
<b>Unawares</b>	<ul style="list-style-type: none"> <li>• There are fines for littering.</li> <li>• Bottles being smashed.</li> <li>• <i>Don't be a Tosser</i>.</li> </ul>	<ul style="list-style-type: none"> <li>• The commercial worked well for this segment because they do litter and they are aware that others may say something to them.</li> <li>• Fines are an important message.</li> </ul>

## 4. Conclusions

### Research before, during and after campaigns

The 2000 to 2003 litter education campaign provides an effective model for a cyclic and progressive planning strategy where the final evaluation of one phase informs the issue identification for the next. This principle is shared by good business plans, action research and adaptive environmental management, and allows for both incorporation of learning from earlier campaigns and for learning early in a campaign to inform later stages.

### Changing knowledge, attitudes and behaviour

- An integrated program of mass media advertising combined with localised education initiatives has proved effective in educating the community about litter and its impacts. It has moved people towards adopting appropriate disposal behaviour, and developed and maintained societal attitudes disapproving of litter and reinforcing individual responsibility for disposing of rubbish appropriately.
- The slogan *Don't be a Tosser* has become part of Australian slang relating to litter, at least in NSW and serves as a simple positive reminder for people to be thoughtful in their disposal of rubbish.
- Attitudes and behaviour towards littering is complex and varies across the community. Understanding the different littering mindsets and targeting messages specifically for those mindsets is crucial to a successful education program.

### Integrating education campaigns with other litter prevention strategies

The effectiveness of successive litter education campaigns in changing community attitudes and disposal behaviour was a result of mass media advertisements that introduced and reinforced messages as an integral part of wider litter prevention programs. These wider programs included complementary strategies such as:

- introduction of littering fines
- involvement of local government in implementing regulatory activities
- establishing partnerships with community groups, non-government organisations, business and industry groups and other State Government organisations to address local, regional and State litter problems
- provision of appropriate infrastructure to foster good disposal behaviour amongst the community
- school education programs
- provision of training and advertising material for local government and others to keep the messages *Don't be a Tosser* and *Do the right thing before the public*.

Integration of better resource management, packaging policies and recycling facilities with specifically end-of-use litter prevention strategies offers potential for new program development.

## Integrating prevention with measurements of litter and littering

Program effectiveness is ideally evaluated through several lines of research, such as:

- qualitative and quantitative social research into community knowledge, attitudes and self-reported behaviour around litter and littering
- observationally based research of actual disposal behaviour in key public spaces with correlation of this with people's self-reporting of their disposal behaviour
- assessment of ultimate outcomes – for a litter prevention program these are related to measurements of litter disposed of inappropriately and found in public places, drains, waterways or oceans. Measurements may be by:
  - litter counts or surveys of amounts and types of litter found in key public spaces and in locations of environmental significance such as waterways, national parks and beaches.
  - measurement of weight or volume of litter captured in gross pollutant traps in drains.

## Ultimate outcomes

In the case of litter in NSW, several measurements of ultimate outcomes<sup>47</sup> are available which are:

- the annual BIEC Disposal Behaviour Index which provides an indicator of appropriate disposal behaviour in the major metropolitan areas
- a long term study of litter caught in selected gross pollutant traps in inner Sydney suburban areas across a range of LGAs, including Randwick, Marrickville, Waverley and Hurstville, which provides a measure of litter in streets and public places that may be carried into stormwater drains.<sup>48</sup>

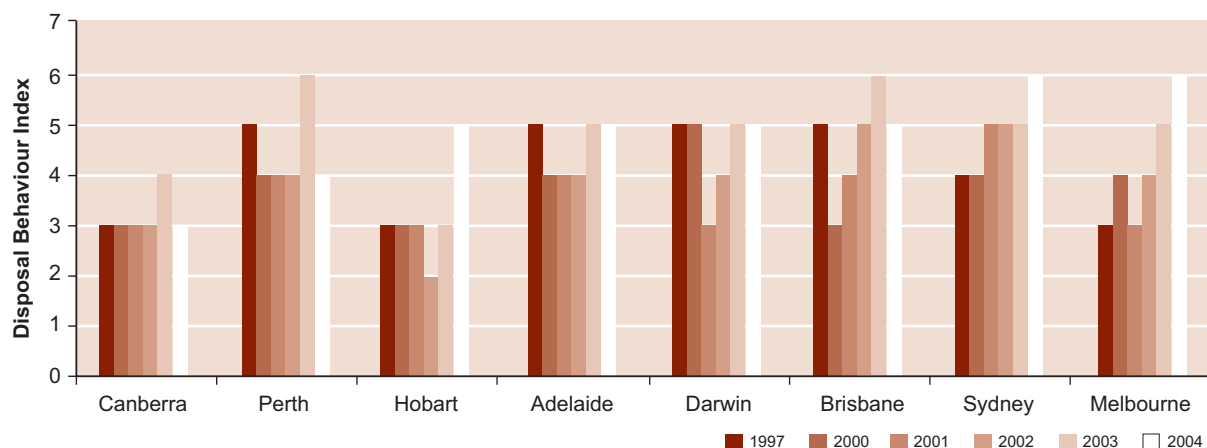
These measurements indicate that:

- appropriate disposal behaviour as measured in Sydney rose from pre-campaign levels in 1997 and 2000 and continued to increase over the year following the conclusion of the Litter Prevention and Education Program (Figure 18).
- the volume of litter in the gross pollutant traps studied fell dramatically in 2000 and remained low through 2001 and 2002. Figure 19 presents the data for the period 1992 to 2002 at one of these sites but it is typical of the pattern found at all eight study locations.

**Figure 18**

Capital City Disposal Behaviour 1997-2004

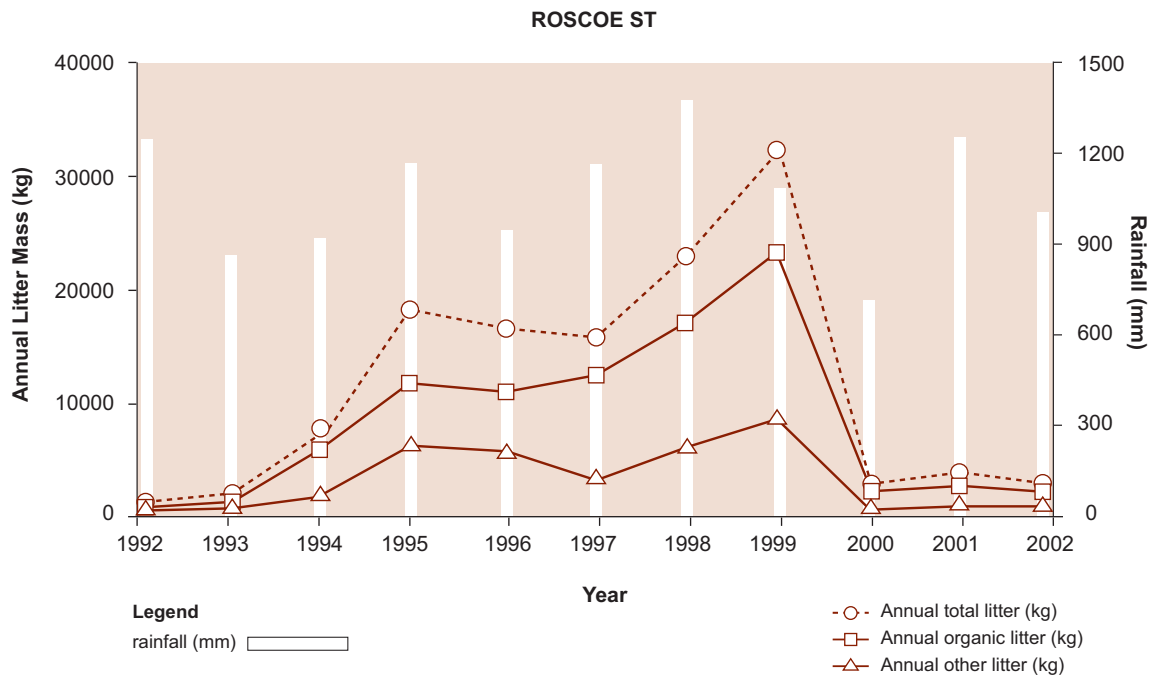
from Community Change *Littering Behaviour Studies VII National Benchmark 2004*, p.13.



**Figure 19**

Total litter captured at a gross pollutant trap in Waverley LGA 1992 – 2002

Sinclair Knight Merz



# Appendix

## SOURCE DOCUMENTS

Four sets of source documents have been the prime sources used in compiling this report:

The NSW Department of Environment and Conservation (DEC) Social Research Series *Who Cares about the Environment?*

Qualitative and quantitative research reports commissioned by the EPA/DEC associated with its litter education campaign from 1999 to 2003.

The Beverage Industry Environment Council *Littering Behaviour Studies* 1997 to 2004.

Reports by the Clean Up Australia Foundation on its two *Leave only footprints* beach litter prevention projects in 2001 and 2003.

### **Who Cares about the Environment?**

#### **Context**

The triennial social research surveys, *Who Cares about the Environment?* are conducted by the NSW DEC (formerly by the EPA) as part of its mission to monitor social indicators in order to measure the impact and relevance of its environment protection actions. The first was conducted in 1994, followed by 1997, 2000 and 2003.

#### **Scope**

The surveys each covered over one thousand NSW residents aged from 15 to 70 years in Sydney, Newcastle, Wollongong and Regional NSW. The research objectives are to:

- provide information about specific aspects of knowledge, attitudes, and behaviours of a cross section of the NSW population
- provide information relevant to planning, implementation and evaluation of DEC programs and initiatives
- provide information that may be of use to other government agencies and non-government organisations, and which will assist in coordinating programs
- provide a statistical time series which can be used to track social dimensions of environment protection for inclusion in the DEC's *State of the Environment* reports
- promote discussion and wider awareness of the social dimensions of environmental protection.

#### **Methodology**

After review, piloting and finalisation of the questionnaire, a quantitative survey by telephone (doorstep in the first survey in 1994) with a representative sample of the NSW community is conducted. This is followed by in-depth qualitative research using focus groups to evaluate the findings.

The wording and structure of survey questions have been maintained as much as possible to ensure comparability of results over time, although new questions are included to cover environmental issues of contemporary significance, such as water conservation and the use of pesticides in 2000.

#### **Findings**

In 1994 the environment ranked fourth in important issues that the community believed needed attention by the State Government. In 2000, it was amongst a group of five second order issues after health and education as first order issues.

Waste issues, which included litter, were raised by only 9% of respondents in 2000 as the single most important environmental issue with another 16% mentioning pollution of creeks, rivers, beaches and the ocean, in which litter introduced via stormwater is a contributing factor. In 2003, waste was again mentioned by 9% but pollution of creeks, rivers, beaches and oceans had fallen to 10% as the single most important issue. When asked about the top two issues, waste was included by 19% of which 8% mentioned litter and rubbish dumping.

## Availability of reports

All of the survey reports have been published and can be purchased by the public.

## The 1999 to 2003 litter education campaign

The litter education campaign was one component of the NSW Government three year litter prevention program that included the introduction of expanded and stronger litter laws, broad stakeholder involvement, public education campaigns and the promotion of litter reduction projects with the local government and community groups.

The following reports were commissioned by the EPA and are listed in chronological order – see Figure 3 in Section 1.

Reeve I, Ramasubramanian L, and McNeill J (2000) *Lessons from the Litter-ature: A review of New South Wales and overseas litter research*, The Rural Development Centre, University of New England.

Donnelly D, Mellor W and Dexter A. (2000) *Fast Life Fast Litter: The parameters for strategic response*, Taylor Nelson Sofres.

Rickards S. and Dawson R (2000) *Litter Prevention Program Evaluation Final Report*, AC Nielsen.

Donnelly D and Benton M (2001) *Concept Testing of Littering from Vehicles Advertising Campaign*, Taylor Nelson Sofres.

Taverner Research Company (2002) *Litter Education Campaign Evaluation Final report*.

Anonymous (2002) *Report on the 2000 to 2002 Litter Prevention Program*, internal EPA report.

Donnelly D, Faedda S, and Earl A (2003) *Optimising the Tosser 2 Campaign: Market and consumer insights*, detailed explanation, instinct and reason.

Donnelly D and Earl A. (2003) *Evaluation of the Don't be a Tosser campaign*, Final Report 2003, instinct and reason.

## Keep Australia Beautiful reports

### Context

As part of each phase of the Litter Prevention Program, Keep Australia Beautiful (KAB) administered funding provided by the then NSW EPA for community groups to carry out litter prevention projects that targeted local or priority littering problems or high litter areas in both metropolitan and regional NSW. As well as supporting community groups in their local litter prevention activities, the grant scheme aimed to build up community awareness of litter prevention activities.

### Scope

In the first round of grants, 75 groups applied for \$325,000 worth of grants and \$160,000 was allocated to 37 community groups. In the second round, 33 community groups received grants totalling \$110,000 in response to 68 applications for just under \$300,000. In both there was significant media coverage in local newspapers and radio interviews. In the third round, in 2003, \$100,000 is to be allocated.

### Methodology

Letters of invitation were sent to over 1500 community contacts on KAB's database. A panel of three people, one each from KAB, the Nature Conservation Council and the EPA, reviewed all applications against criteria that ensured the project demonstrated the following:

- significant community participation
- clear objectives and anticipated outcomes
- a system for evaluating and measuring performance
- identification of target groups or issues
- a focus on litter prevention rather than clean up activities
- use of local media
- reference to the Litter Prevention Program and its related logos
- good understanding of littering research and legislative requirements.

## Outcomes

Projects covered such diverse activities as distribution of personal ashtrays, production of anti-litter materials for distribution, theatre production with strong anti-litter themes, signage for local fishing area, targeted campaign for truck drivers and distribution of car litter bags through local businesses. The groups receiving grants included business clubs, youth groups, Tidy Towns organisations, river, water and coastal groups, neighbourhood groups and progress associations.

## Availability of reports

Copies of the reports are held by KAB and the DEC.

## Clean Up Australia Leave only footprints reports

### Context

During the summer holidays of 2000 - 2001, and again in January 2003, Clean Up Australia (CUA) conducted a beach litter prevention project under the slogan *Leave only footprints*. The first campaign targeted young people in the 15 to 24 year age group and the second was broadened to include all age groups.

### Scope

In the 2000 to 2001 campaign, beaches in four South Coast local government areas were chosen: Wollongong, Shellharbour, Kiama and Shoalhaven. In the second, Wollongong and Gosford were chosen.

### Methodology

A variety of activities were used to convey the litter prevention message, which involved public events to educate beach users about the impact of beach litter on the environment including signage, an information kit listing the facts about litter, environmental theatre, interactive performers, games, litter sculptures and sand sculptors; promotional material; the *Leave only footprints* beach litter quiz and advertisements in magazines, newspapers, radio and television, editorial in newspapers and radio interviews.

Methods used to gather information about litter and littering behaviour in the region were the *Leave only footprints* beach litter quiz, litter counts

and attitude surveys. A methodology for sourcing beach litter was described.

## Outcomes

There was substantial media coverage in the local press, local TV stations and radio. Litter counts indicated that cigarette butts were the most prevalent litter item overall with polystyrene cups and pieces being 50% at one beach (MacMasters).

## Availability of reports

The reports are held by the Department of Environment and Conservation. A *Leave Only Footprints* campaign kit has been developed by CUA and distributed to all coastal councils.

## Studies by the Beverage Industry Environment Council

### Context

The Beverage Industry Environment Council (BIEC) was concerned in the mid 1990s that, in previous research and strategies for litter prevention, almost no checks were made to ensure that people's behaviour actually matched their reports. Accordingly, they commissioned and published a study *Understanding Littering Behaviour in Australia*<sup>49</sup> to address links between attitude and behaviour.

A second study assisted by the NSW Waste Reduction Grants program was undertaken to investigate the impact of litter prevention and related waste minimisation initiatives on public space disposal behaviour<sup>50</sup>.

### Scope

In 1997 BIEC developed a comparative benchmarking study of littering and disposal behaviour across all Australian state capitals cities, *Littering Behaviour Studies National Benchmarks*. These became annual studies from 2000 that aimed to better understand and positively change littering behaviour in Australia. A number of other projects in specific locations, such as the Sydney Olympic Games and the Brisbane Goodwill Game, have used the same methodology to measure littering behaviour.

## Methodology

An Observational Approach was developed as “a systematic and direct method of measuring behaviour in the actual context in which it occurs, and to (link) an individual’s behaviour to their reported attitudes and intentions”<sup>51</sup>.

Annual benchmarking uses the Disposal Behaviour Index that places disposal behaviours at a site on a spectrum of levels ranging from appropriate disposal behaviour (rating of 7) to a majority of people littering (rating of 1).

## Findings

There is much of value in this work to inform future litter prevention campaigns, now and in the future which includes:

- the finding that littering behaviour is complex
- development of the Observational Approach to record details of disposal behaviour in public places as it happens
- description and use of core sites in all State capitals
- definition of the Disposal Behaviour Index to measure both positive and negative dimensions of the way people dispose of waste, either by binning or littering.

## Availability of reports

The Beverage Industry Environment Council publishes the *Littering Behaviour Studies National Benchmarks*.

# End notes

- 1 Community Change (2003) *Littering Behaviour Studies National Benchmark 2002*, Beverage Industry Environment Council. This report is one of six National Benchmark studies conducted by BIEC in 1997, 2000, 2001, 2002, 2003 and 2004. It includes an appendix (pp. 49-50) of definitions and terms used in the BIEC studies of littering and disposal behaviour. As well as defining litter, this contains other useful definitions for describing people's disposal actions and measures of disposal.
- 2 Reeve I, Ramasubramanian L. and McNeill J (2000) *Lessons From the Litter-ature, A review of New South Wales and overseas litter research*, the Rural Development Centre, University of New England. This review imposes the hand held limitation and indicates that this 'is generally consistent with the literature'. For the purposes of this report, it means inappropriately disposed items such as whitegoods or larger packaging are not litter but part of illegal dumping and wider waste disposal issues. A discussion of definitions is given in Curnow R, Streker P and Williams E (1997) *Understanding Littering Behaviour: A review of the literature*, prepared for the Beverage Industry Environment Council (BIEC).
- 3 Phase 3 of the NSW EPA mass media campaign (Tosser 2) included TV and radio segments involving disposal of domestic waste in kitchen tidy bags on the footpath or in the back lane. This is not litter as defined in this report; the element of premeditation and planning makes it small scale illegal dumping. This was included as an extension from the focus in Phase 2 on littering from cars.
- 4 The NSW EPA consultation paper *NSW Litter Survey Program: Proposed Method for Surveying Litter in New South Wales*, published in August 2003, gives a definition of litter that includes liquid waste materials and lists some common types of litter. However, none of those listed as examples are liquid and all fall within the definition adopted in this report.
- 5 Community Change op. cit. pp. 11-13 describes the Observational Approach used in the studies for BIEC.
- 6 *Ibid.* pp. 9-10 includes more detailed discussion of the complexity of littering behaviour and the implications for litter prevention and education strategies.
- 7 Information about the Keep Australia Beautiful National Association is available on their website: [www.kab.org.au](http://www.kab.org.au)
- 8 Information about the Clean Up Australia Foundation is available on their website: [www.cleanup.com.au](http://www.cleanup.com.au).
- 9 The Litter Research Association was formed in 1978, primarily to provide an industry association for the beverage industry sector and a vehicle for product stewardship. During the 1980s, the LRA provided significant annual funding for the *Do the right thing* campaigns. Now called the Beverage Industry Environment Council, its mission is to develop and implement anti-littering programs, represent industry members with regard to environmental policy development, and assist in minimising the post-consumer waste from beverage industry member products.
- 10 Report of the State Pollution Control Commission for the year ended 30 June 1979, p.35.
- 11 State Pollution Control Commission annual report 1989–1990 p.76.
- 12 Williams E, Curnow R and Streker P (1997) *Understanding Littering Behaviour in Australia*, Beverage Industry Environment Council.
- 13 With the exception of SPCC and EPA annual reports, each of the four sets of data sources set out in Appendix 1 is a sequence of research reports related to litter and littering behaviour. The most recent report of each provides a summative evaluation of the dimensions of interest and consequently these are the prime sources of data for this review.
- 14 For the most part, the source documents report results without reading motives or attitudes into the statistical data. In some cases where there is an implication drawn about attitudes, it is apparent that the data itself may be open to other interpretations. It is therefore important to exercise care when drawing implications about people's knowledge and attitudes from their self-reported responses, or indeed from their observed disposal behaviours.
- 15 Donnelly D, Mellor W and Dexter A (2000) *Fast Life Fast Litter – The parameters for a strategic response*, Taylor Nelson Sofres.
- 16 The existence of separate legislation and/or regulations covering illegal dumping, animal droppings and toxic waste disposal means that these are separately covered in NSW, while in other jurisdictions they may be included in littering because they do not fit anywhere else.

- 17 Donnelly D, Faedda S and Earl A (2003) *Optimising the Tosser 2 Campaign: Market and consumer insights*, 'instinct and reason', p.5.
- 18 NSW EPA (2003) *op. cit.*
- 19 Adapted from Table 3, Donnelly D and Earl A (2003) *Evaluation of the Don't be a Tosser Campaign Final Report 2003*, instinct and reason.
- 20 *Ibid.* Figure 10, p.18 (with some regrouping of the raw data).
- 21 This is a reanalysis of the data in Figure 5 Donnelly and Earl *op. cit.* p.13.
- 22 Community Change (2003) *op. cit.* p.32. These data are from survey interviews conducted near a litterbin with both people who had been observed to litter and those who had used the bin. There was no difference in the willingness to participate between these two groups and the results appeared to be equally representative of people in the community displaying a wide range of disposal behaviours.
- 23 *Ibid.* Adapted from Figure 13, p.21.
- 24 *Ibid.* From Figure 14, p.22.
- 25 Donnelly et al (2003) *op. cit.* p.7.
- 26 Personal communication, D. Donnelly.
- 27 Donnelly et al. (2003) *op. cit.*: evaluation of the *Don't be a Tosser* campaign data using a cluster analysis.
- 28 Donnelly and Earl (2003) *op. cit.* Figure 3, p.11.
- 29 Clean Up Australia (2003) *Leave only footprints*, beach litter prevention project, final report, Chart 5, page 17. This survey involved only a small number of respondents, with even smaller numbers in the different age groups. However the inclusion of some younger respondents has revealed a possible generational shift that is worthy of further investigation.
- 30 Donnelly and Earl (2003) *op. cit.* Figure 5, p.13.
- 31 Donnelly et al. (2003) *op. cit.* p.11.
- 32 Donnelly and Earl (2003) *op. cit.* Figure 3, p.11. The responses to the question 'Why do you think littering is a problem' elicited responses of at least three different types, it is a problem; 'because it has the effect that ...', 'because people are ...', and 'because there are not enough ...' In this context the doubling of the relatively small proportion of responses indicating disapproval of others who litter is significant.
- 33 Reeve et al. (2000) *op. cit.* pp.15 -17.
- 34 *Ibid.* p.16.
- 35 This is in accord with the findings of the *Who Cares about the Environment?* surveys that showed continuing strong, if slightly diminishing, support for increasing the strictness of environmental regulations across different sectors.
- 36 NSW EPA (2003) *op. cit.* pp.3-4.
- 37 Donnelly and Earl (2003) *op. cit.* p.11 state "this result defies logic when viewed in the context of the amount of actual litter in NSW. However it indicates that residents see littering as a negative behaviour to the extent that they are unwilling to admit that they personally commit the offence". However, making the conservative assumptions that 'frequently' means three times per week, 'sometimes' once a week, 'occasionally' once a month, 'hardly at all' once a year; that greater metropolitan Sydney has a population of four million; and that each litter item weighs 100 grams produces the surprising result that the 1.5% of self confessed frequent litterers would contribute about half the total of nearly 20 tonnes of new litter per week. If the findings of the *Littering Behaviour Studies* are considered, then the amount of litter generated by the "comparatively small proportion of people in any location" may be much larger.
- 38 *Ibid.* The data are graphed in Figure 9, p.17.
- 39 *Ibid.* Data on changes to reduce littering are from Figures 7 and 8, pp.15-16. The data are as difficult to interpret as the self-reported frequency of littering data. The questions the raise include:
- How accurate is people's recall of how long ago their actions were?
  - Are the data to be accepted at face value as true indications of changed behaviour, rather than as an indication of wanting to be seen as doing the right thing?
  - Are the percentage frequencies to be understood as cumulative or independent? That is, assuming people accurately reported actual changes in the past three months, do the data mean that by the end of Phase 3 a total of 73% people in NSW had changed their behaviour for the better? Clearly not, as 52% already claimed 'never to litter' at the base line of Phase 1.

- 40 Community Change (2003) *op. cit.* The Observational Approach and the Disposal Behaviour Index are described on pp.11–14.
- 41 *Ibid.* See the discussion pp.30-31 and the data in Figure 5.
- 42 *Ibid.* See the discussion and figures on pp.33–37.
- 43 Donnelly and Earl (2003) *op. cit.* Data from Figure 15, p.23.
- 44 The baseline memory of TV commercials about littering is probably due to people's inability to recall accurately when in the recent past non-significant events happened, and to similarly vague recall of other environmental advertisements such as those in the stormwater campaign.
- 45 All of the data in this part of the report have been taken from Section 3.2 'Advertising recall' in Donnelly and Earl (2003) *op. cit.*, pp. 23 – 43.
- 46 Table 14 is derived from Donnelly et al (2003) *op. cit.* p.47.
- 47 The ultimate outcome is the intended end result of delivering a program, in a hierarchy of outcomes including immediate and intermediate outcomes. For further information on evaluation using the outcomes hierarchy, see *Does Your Project Make a Difference? A guide to evaluating education projects and programs*, NSW Department of Environment and Conservation 2004. Also at <http://www.environment.nsw.gov.au/community/projecteval.htm>.
- 48 *Assessment of the Effect of the Urban Stormwater Education Program on Litter Captured by GPTs and Trash Racks Report 2 Revised Assessment* Sinclair Knight Merz for the Environment Protection Authority 2003.
- 49 Williams E, Curnow R and Streker P (1997) *Understanding Littering Behaviour in Australia*, Beverage Industry Environment Council.
- 50 Curnow R and Spehr R (1998) *What Works? NSW Littering Behaviour Interventions*, Beverage Industry Environment Council.
- 51 Community Change (2003) *op. cit.*

