

NSW Litter Report 2008

Department of Environment and Climate Change NSW



Acknowledgement

The Department of Environment and Climate Change NSW (DECC) acknowledges Keep Australia Beautiful (KAB) and their contractors McGregor Tan Research for allowing DECC to publish extracts from their National Litter Index Annual Report 2007/08¹. All 2007/08 litter data used in this report is reprinted with the express permission of KAB.

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DECC 2008/625
ISBN 978 1 74232 093 9

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¹ Keep Australia Beautiful - National Litter Index Annual Report 2007/08 by McGregor Tan Research

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Executive Summary

This is the third of the series of biennial reports on littering in NSW. The first litter survey was undertaken in 2004, sampling 60 sites over NSW to establish a baseline of information on the amount and types of litter.

The second was undertaken in 2006 sampling the same 60 sites plus an additional 40 new sites across NSW. Litter was coded into one of seven categories and was analysed by count, as well as weight and volume. Site type and region were also analysed.

For the 2008 report the NSW Litter survey was conducted as part of the National Litter Index (NLI) undertaken by McGregor Tan Research for the Keep Australia Beautiful National Association (KAB). Participating as part of this ongoing national survey will enable consistent national litter reporting, identification of common littering issues and comparison between performances in different states.

Strategic litter reduction or prevention programs for litter hot-spots identified in the Keep Australia Beautiful National Litter Index have already been identified as a program priority for National Packaging Covenant funding in 2009. The NSW government through the Department of Environment and Climate Change NSW (DECC) provides matched funding with Covenant industry signatories for successful projects under this program. This may provide further opportunities for litter reduction projects to be undertaken in NSW.

The KAB litter survey is different to previous NSW surveys undertaken by DECC in the methodology used, the number of sites sampled, the site type and definition and the material categories. It is therefore not possible to compare data or trends to previous DECC surveys. The KAB survey covered 151 sites across NSW in nine site types with the litter being coded into one of five material categories (refer to pages 6 & 7 for details).

NSW performance in the 2007-08 National Litter Index

The 2007-08 Litter Index showed that the average volume of litter per NSW survey site was 20% lower than the previous year, however the average number of items per site increased slightly by 7 items per site (8%) to 77 items. NSW was 13% above the national average on a per item basis. Attachment 2 provides an example of the NSW data provided through the KAB National Litter Index.

Key findings for NSW:

- Cigarettes continue to be the most littered item in NSW at 50% of all items littered.

- There has been a significant drop in the volume of items illegally dumped. These items are still a strong contributor to the estimated litter volume present at sites within NSW.
- Counts for other material types have remained similar in comparison with previous years.
- The most littered NSW sites occurred in industrial areas, shopping centres and along highways.
- Beach locations and recreational parks were the cleanest sites in NSW. Beach locations have shown a considerable drop in the volume of materials littered.

Introduction

'Litter' is 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 in an inappropriate manner is to be regarded as litter – the end outcome of an environmentally undesirable disposal action²

Litter includes a wide variety of solid waste materials. Common types of litter include cigarette butts, cigarette packaging, chewing gum, confectionery wrappers, glass pieces and soft drink containers (both plastic and metal).

The Protection of the Environment Operations Act 1997 (section 146D) requires the Department of Environment and Climate Change NSW (DECC) to report estimates of the composition and quantity of litter types in sites that represent significant littering activity, once in every two years. The first two NSW Litter Reports: 2004³ and 2006⁴ were based on surveys commissioned by DECC. This NSW Litter Report 2008 report is the third in this series, however it was a different methodology following DECC's decision to fund Keep Australia Beautiful National Association (KAB) to survey litter in NSW as part of the National Litter Index (NLI). The Index provides litter data based on a standard methodology that measures both volume and number of items littered. It is now used by all State and Territory Governments and provides a consistent way of measuring and comparing performance in different states. Surveys are conducted twice per year and a national report is released annually.

NSW Government action to tackle litter includes:

- Changes to environmental regulations to increase fines for littering, prevent littering on private land and decrease the quantity of unwanted advertising material that often ends up as litter;
- Media campaigns to make people aware of the impacts of litter on the environment and encourage behaviours that reduce littering;
- Local and regional community education activities that build on media campaigns such as resource kits and community workshops; and
- Information and training for regulatory agencies, such as councils and government agencies, to enable them to better target litterbugs and prevent littering.

The data provided in regular litter surveys assists the government, industry and the community to further improve the management of litter and littering.

² (Community Change (2003) Littering Behaviour Studies, National Benchmark 2002, Beverage Industry Environment Council).

³ NSW Litter Report 2004, DEC 2004

⁴ 2006 NSW Litter Report, DEC 2006

KAB describes the National Litter Index as follows⁵:

The National Litter Index was initially developed by the KAB Network member in South Australia, KESAB. The methodology has been refined over many years of continuous surveying in South Australia with periodic extensions to cover the whole of Australia when funding has been available. It is a high profile report, the results of which are publicised on major radio stations and newspapers nationally. NSW co-funds the Index with all jurisdictions in Australia.

The purpose of the National Litter Index is to provide insight regarding:

- *The presence of litter items at sites within broadly comparable regions.*
- *Estimated volumes of litter objects within the litter stream, based upon a volume-per-item model.*
- *The contribution of objects recognized within established main material types to the overall litter stream.*
- *The most significant contributors to the litter stream - the 'Dirty Dozen'.*

The National Litter Index is not a study of littering behaviour. It is exclusively intended as an assessment of the presence of litter objects within surveyed regions. As such, no corrections for population densities are carried out. The information derived from the Index provides no indication of whether residents of a particular region litter more or less frequently than those in a different region. It does, however, provide insight regarding the relative presence or absence of litter objects and particular material types within the regions surveyed.

Results specific to NSW are detailed below. It should be noted that the methodology used to determine the NLI is quite different to the methodology used previously by DECC in determining NSW litter data and caution should be applied when comparing that data with the KAB data.

The key differences between the two methodologies are:

- For the KAB survey data was collected from 151 sites and reported as an average per 1000m². In the DECC surveys data was collected from 100 sites of 48m² across NSW.
- The KAB survey includes illegally dumped materials as part of the litter stream. DECC surveys have not considered illegal dumping as part of the litter stream; separate programs are run to deal with this material.
- With the DECC survey all litter was collected and taken off-site. With the KAB survey all litter is left on site and therefore yearly totals may be cumulative, potentially resulting in a higher item count per m² than DECC surveys
- Litter categories are not directly comparable. Previous DECC surveys classified litter into 7 broad categories based on the "function" of the litter

⁵ Keep Australia Beautiful - National Litter Index Annual Report 2007/08 by McGregor Tan Research

rather than the actual material component of the litter as does KAB. For example:

- the DECC Cigarette category included all cigarette related items including butts, packets and wrapping whereas with the KAB survey butts are a separate category and packets and wrapping are included in the Paper/Paperboard category
- the DECC survey included a Confectionary category which included chewing gum, aluminium foil, confectionary and chewing gum and ice cream wrappers, whereas these items in the KAB survey are categorized under, Miscellaneous, Metal and Paper/Paperboard respectively
- The DECC survey had a more extensive number of site types, 11 compared to the 8 for the KAB survey. Included in the DECC survey was specific cigarette smoking areas and schools, which are not included in the KAB survey.
- The KAB survey includes collection of material along highways whereas the DECC surveys focussed on road side stops due to OHS risks associated with collecting litter along highways.

The majority of the following sections, *Methodology* and *Results* are extracts taken from the KAB annual report⁶. They detail the methodology used in the National Litter Index survey and the specific results of that survey which are relevant to NSW. They are reprinted here with the permission of the Keep Australia Beautiful National Association.

⁶ Keep Australia Beautiful - National Litter Index Annual Report 2007/08 by McGregor Tan Research

Methodology

Scope

Sites surveyed within the research program were sampled primarily from urban and near-urban areas (i.e. generally within 50km of the urban areas surrounding each state capital). Generalisation of findings to regional locations must therefore be made with caution.

The total area surveyed across all sites nationally was 1,499,791m². This area spanned a total of 983 sites, and the average site size was 1,526m². A complete table of site area information across all states is provided in the Attachment 1.

Material Categorisation

All litter items counted were incorporated within 7 main material type categories. These main material types were further broken down into object sub-categories, as follows:

Main Material Type	Object Sub-Category
Cigarette Butts	Total
Glass	Alcoholic beverage container
	Non-alcoholic beverage container
	Plain water container
	Other
Illegal Dumping	Total
Metal	Alcoholic beverage container
	Food container or utensil
	Non-alcoholic beverage container
	Plain water container
	Other
Miscellaneous	Total
Paper/Paperboard	Cigarette packets
	Food container or utensil
	Non-alcoholic beverage container
	Publication
	Other
Plastic	Alcoholic beverage container
	Food container or utensil
	Non-alcoholic beverage container
	Plain water container
	Shopping bag
	Other

These object sub-categories were further broken down into a total of 84 separate item-type distinctions (a full list of these is shown in Attachment 2). Litter counters were required to record the numbers of items within each of these item types that were present at any given site surveyed.

Sites

All sites incorporated within the survey were categorised according to 8 different site types. Uniform guidelines were conformed to during site selection. Site specifications vary from 500 square metres (beaches) to 3,000 square metres (highways).

Residential

A street area approximately 150 metres in length, along both sides of the road from the front of the properties on each side of that road extending to the gutter including litter in the gutter.

Beach

An area of approximately 50 metres long and 10 metres wide, positioned on one or across both sides of a jetty, boat ramp or main entry access point to beach.

Industrial

A street area approximately 150 metres long within an industrial area, the count area to be from the fence line or immediate front of the properties to the gutter including litter in the gutter

Car Park

An area of approximately 30 by 50 metres in an open space public car park at a point distant from the entrance to the car park.

Shopping Centre

An area approximately 50 metres long and 25 metres wide, directly outside of the main shopping centre building and including one or across both sides of a major entrance.

Retail Strip/ Shops - Street Precinct

An area approximately 150 metres long in front of a strip of shops, extending from the front of the shops to the street gutter and including litter in the gutter.

Recreational Park

An area of approximately 40 by 50 metres in a park area which includes a playground but which is not in the immediate vicinity of a shop or kiosk. The areas should be within a frequently used park.

Highway

Highways include open major roadways bounded by a vegetated area that may include an open drain.

The count area commences from the area beginning at the edge of the road, and extending out from the road to the nearest fence/ boundary or up to a distance of 10

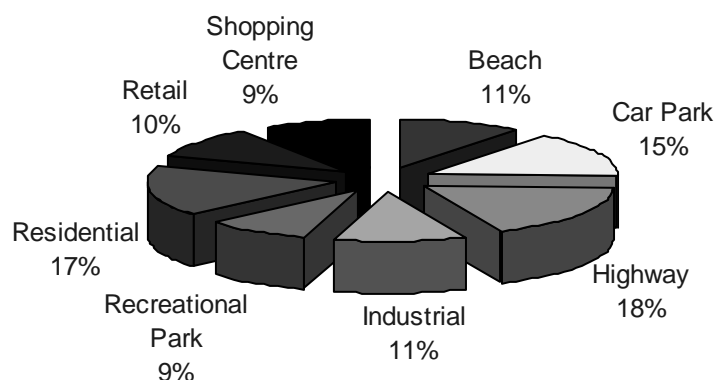
meters out from the road side if no such fence/ boundary exists. Two such areas should be collected from, one on each side of the road. Each region should extend for a length of approximately 200 meters along the road.

Site Type Representation

The following table outlines the number of sites within each of the 8 distinct site types that were sampled within NSW and overall for the states participating in the Index. All of the larger states had the same number of sites sampled with each site type. Smaller states e.g. ACT and Tasmania had smaller sample sizes.

	NSW	Total sites surveyed nationally
Beach	16	104
Car Park	23	148
Highway	27	174
Industrial	17	112
Recreational Park	13	86
Residential	26	169
Retail	15	99
Shopping Centre	14	91
Total	151	983

Proportion of Total Sites by Site Type



Volumes

Litter volumes were estimated from extensive historical litter data recorded within South Australia.

Each litter type incorporated within the study was associated with an individual figure which represented an average volume for each litter item of that type.

In order to reflect a more realistic scenario the final volumes for each litter category item take into account that a certain proportion of all items found would be crushed and weathered.

These volumetric profiles were then extrapolated to calculate estimated volumes of the national data based on the numbers of litter items recorded per category. It should be noted that these volumes represent estimates only, and as such they should be interpreted with caution.

For example, the volume estimates based upon the numbers of items found in the following categories were calculated as follows:

Item type	Estimated volume of one item of this type in litres	Number of items recorded nationally 06/ 07	Estimated volume in litres
GLASS - Plain water (carbonated or non-carb.), 1 litre+	1.05925	33	34.96
METAL - Aerosols - pressure packs	0.68424	57	39.00
PAPER/ PAPERBOARD - Cigarette packets	0.21787	3,121	679.97
PLASTIC - Flav. milk, <1 litre	0.5327	544	289.79

Timing

The 2007/08 NSW litter counts were conducted during November 2007 and May 2008

Litter Counter Training

The litter categorisations and assumptions used during the counts of designated sites were broadly as follows:

- A standard data collection form, was used when conducting the litter counts. A copy of this form is provided in the Appendices.
- Brand names were recorded when such were visible. Branded litter results have been reported in a separate document.
- Counters were trained to carefully analyse the litter to ensure that it was properly identified before recording it on the survey form. For example, to determine whether an item is glass and not clear plastic, or to differentiate

between fruit juice and fruit drink as these are recorded on different sections of the form.

- Broken bottles were counted as one bottle, a bag of dumped garbage was considered to be one item of “illegal dumping”, and scattered newspaper pages were counted as one newspaper.
- While individual cigarette butts are counted, where there are large volumes of cigarette butts an estimated count is acceptable.
- For the purpose of the Litter Count, all waste located within any count site is litter apart from that properly disposed of in a waste receptacle.
- Organic matter (including food, chewing gum, and dog faeces) was not recorded during the count.

Reporting

Annual Results

Litter counts have been conducted bi-annually in November and May across the years of 2005/06, 2006/07 and 2007/08 respectively. Unless stated otherwise, results are reported on an annual basis incorporating average figures corresponding to the combined November and May counts across these years.

Litter per 1,000 m²

Numbers of litter items and volumes are quoted against an average 1,000 square metre area, in order to allow for the detailed analysis of data within an established comparative framework.

This analysis has been applied to all data collected since November 2005, and consequently results are now tracked across 2005/06, 2006/07 and 2007/08 using a reliable benchmark comparison.

The current litter per area measurement methodology enables meaningful and valid comparisons of the amounts of litter in the litter stream nationally, regionally, and across material types.

Illegal Dumping and Miscellaneous Litter

Previous to 2006/07, illegally dumped items were incorporated within the miscellaneous material category. However, the large volumes of these items necessitate the separation of such items into a specific material category.

Furthermore, comparisons between main material types do not incorporate illegal dumping or miscellaneous litter on the basis that the material type of such litter items is not identified.

Results

NSW at a Glance

Note that the data and comparisons with previous year data in the Results chapter refer to the previous KAB surveys conducted in NSW, not the DECC published Litter Reports.

The overall average number of items per 1,000m² across all of the 151 sites surveyed within NSW during the counts in the year of 2007/ 2008 was 77, whilst the overall average estimated volume per 1,000m² was 11.90 litres.

The number of litter items per 1,000m² represents an increase from the year 2006/07 (71 items per 1,000m²) but is lower than figures recorded in 2005/06 (80 items per 1,000m²). Additionally, the current volume total is significantly lower than those recorded in 2006/07 (14.69 litres per 1,000m²) and 2005/06 (14.95 litres per 1,000m²). This is due primarily to a decrease in large-volume items such as Illegal Dumping.

The most littered sites surveyed within NSW were generally industrial locations and highway sites. Appreciable levels of litter items and volume were also recorded at beaches and car park locations.

Retail sites displayed large numbers of litter items per 1,000m², but these areas were associated with only small volumes of litter per 1,000m².

Cigarette butts were the most frequently identified item, and 39 such objects per 1,000m² (up from 34 items in 2006/07 but down from 40 items in 2005/06) were recorded within NSW for the year 2007/ 2008. Plastic litter objects contributed the largest amount of volume to the litter stream, calculated at 2.95 litres of volume per 1,000m², down from 3.50 litres in 2006/07 and 4.19 litres in 2006/07.

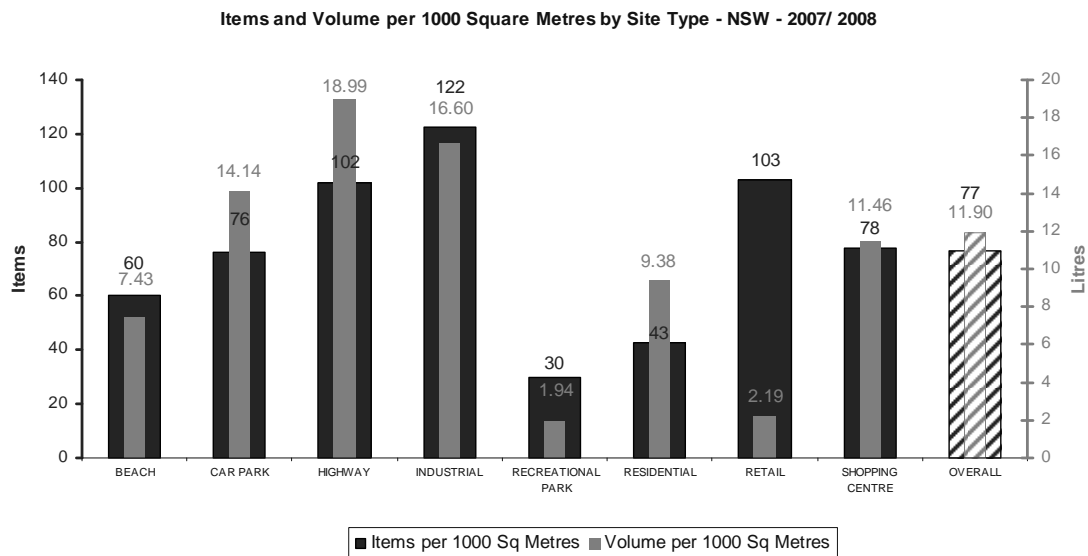
Comparisons by Site Types

Items and volume estimates per 1,000m² within NSW identify the following site characteristics across the respective site types surveyed in 2007/08:

- Industrial sites and highway sites are associated with both large numbers of items as well as large estimated litter volumes.
- Car parks and shopping centres are associated with moderate-to-high numbers of items and estimated volume totals.

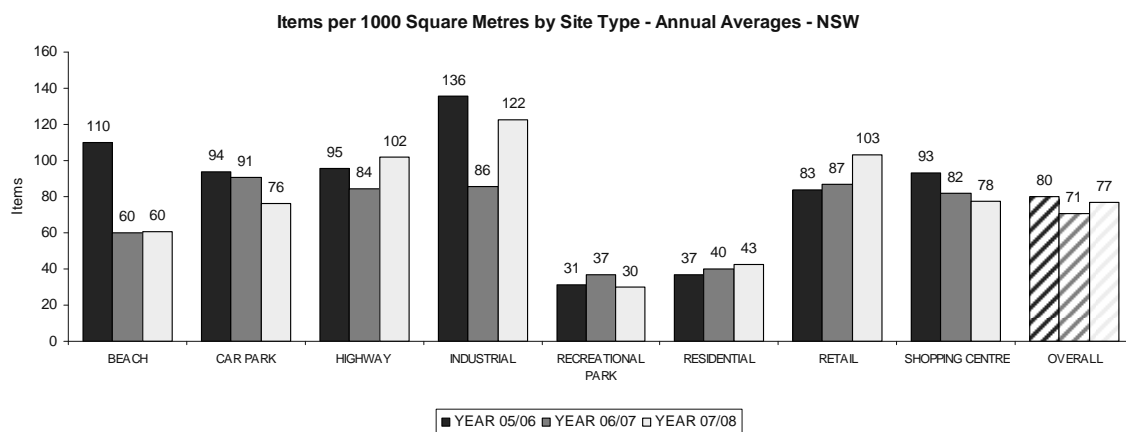
The largest numbers of items per 1,000 m² in 2007/08 were located within industrial sites (122 items per 1,000m²), retail locations (103 items per 1,000m²) and highway sites (102 items per 1,000m²).

Highway sites (18.99 litres per 1,000m²) and industrial sites (16.60 litres per 1,000m²) also displayed higher volume totals in comparison to other site types. Car parks also recorded quite high volumes (14.14 litres per 1,000m²).



The annual average of items per 1,000m² within NSW for 2007/08 (77 items per 1,000m²) is higher than 2006/07 (71 items per 1,000m²), but still lower than the findings recorded for 2005/06 (80 items per 1,000m²).

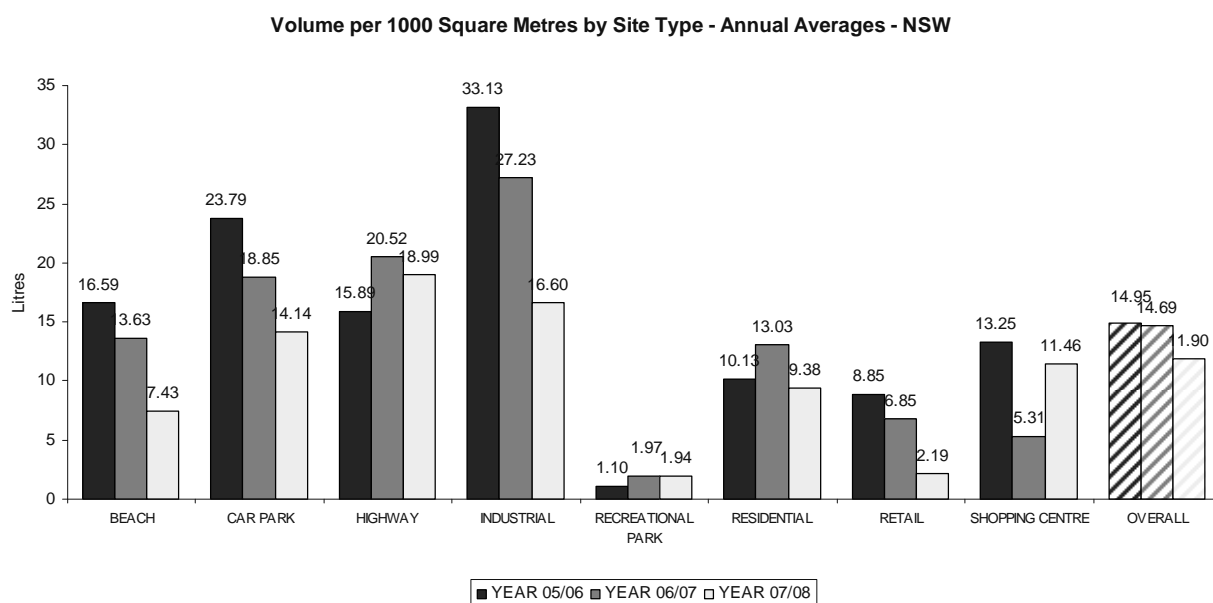
The annual increase in litter over the past 12 months in NSW is most strongly apparent at industrial sites (122 litter items per 1,000m², up from 86 in 2006/07), retail sites (103 items per 1,000m², up from 87 in 2006/07) and highways (102 items per 1,000m², up from 84 in 2006/07).



The overall annual average estimated litter volume per 1,000m² across all sites within NSW for 2007/08 (11.90 litres per 1,000m²) is lower than the results for 2006/07 (14.69 litres per 1,000m²) and 2005/06 (14.95 litres per 1,000m²).

This decrease is strongly reflected within industrial sites (16.60 litres per 1,000m², down from 27.23 litres in 2006/07 and 33.13 litres in 2005/06), and beach locations (7.43 litres per 1,000m², down from 13.63 litres in 2006/07 and 16.59 litres in 2005/06).

Conversely, the annual average estimated litter volume per 1,000m² for shopping centres in 2007/08 (11.46 litres) is higher than 2006/07 (5.31 litres), but is still lower than 2005/06 (13.25 litres).



Comparison by Main Material Types

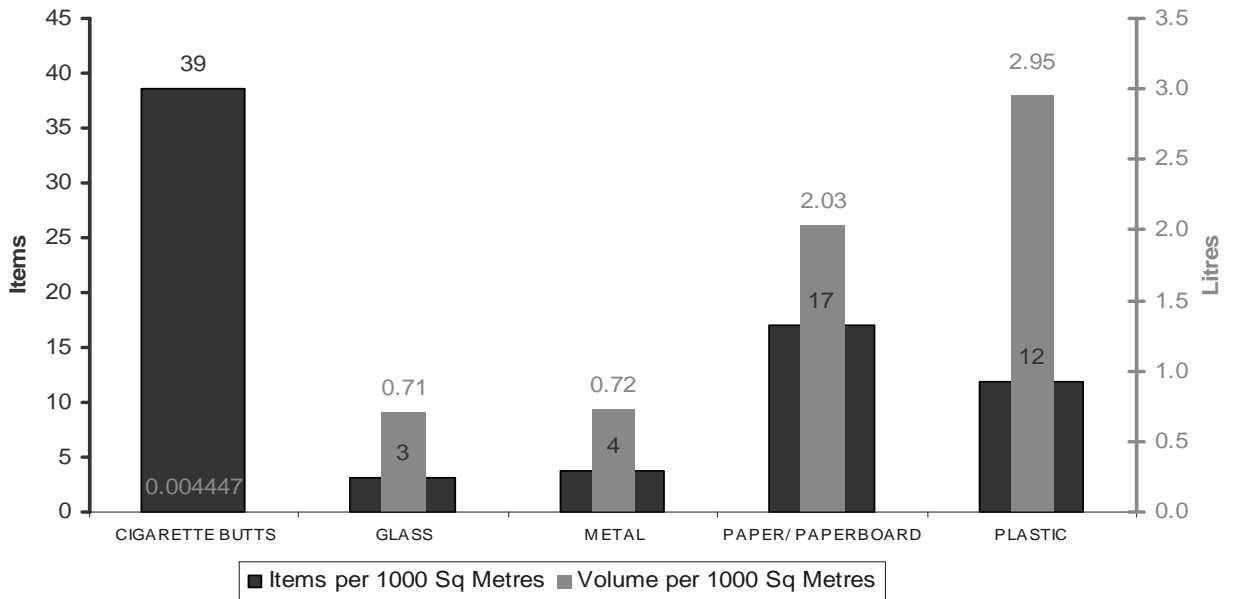
Figures for items and volumes per 1,000m² across main material types identify the following characteristics of litter objects recorded within NSW during the year of 2006/2007:

- Plastic litter items contribute large volumes to the litter stream but are associated with only a medium number of items. This implies the presence of many high-volume items.
- Cigarette butts - although a large number of such items were identified, they contribute only a negligible volume to the overall litter stream in the state.

An average of 39 cigarette butts per 1,000m² was identified across all sites surveyed within NSW during 2007/08. However, such items only contributed 0.004 litres per 1,000m² in volume to the litter stream in that state.

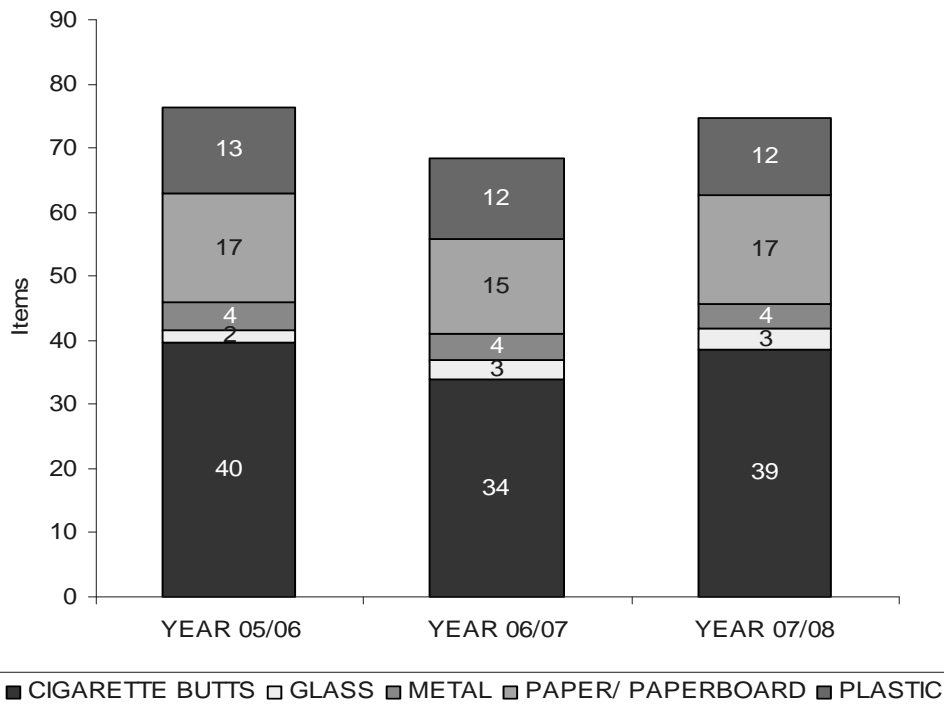
Items which contributed the greatest volumes to the litter stream in NSW were made of various plastic materials, and such objects contributed an overall average of 2.95 litres of litter volume per 1,000m². Paper/paperboard objects also contributed significant volume to the litter stream in NSW (2.03 litres per 1,000m²).

Items and Volume per 1000 Square Metres by Main Material Type - NSW - 2007/ 2008

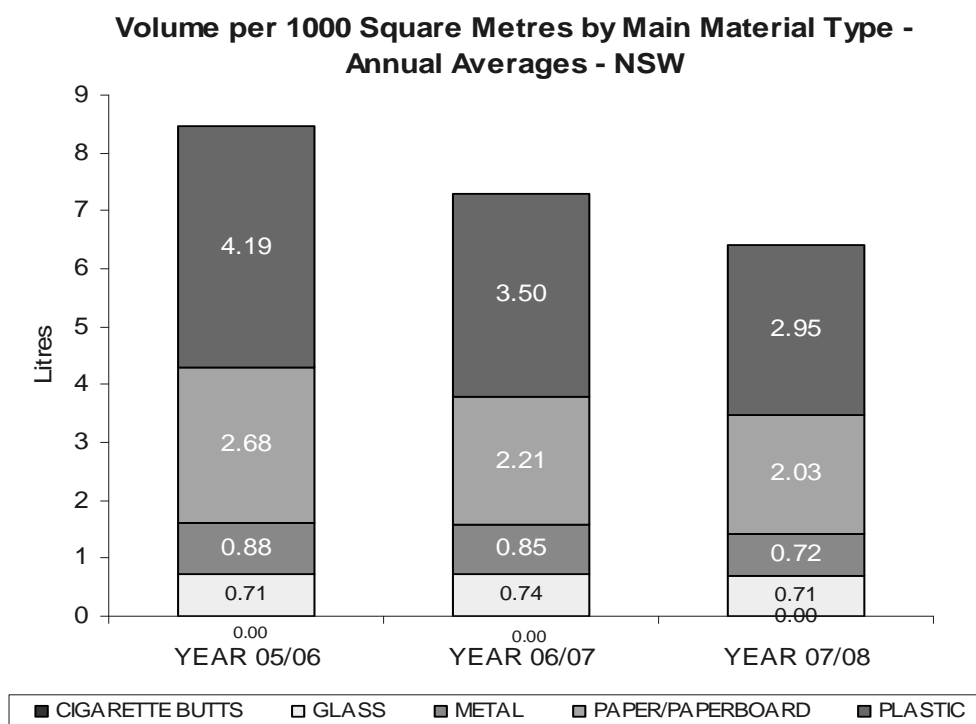


Annual averages for NSW from 2005/06 through to 2007/08 imply an overall increase in the presence of cigarette butts in the litter stream, with 39 such items per 1,000m² (up from 34 in 2006/07, but down slightly from 40 in 2005/06). Figures for other material types have remained similar compared with previous years.

Items per 1000 Square Metres by Main Material Type - Annual Averages - NSW



Annual results for the year 2007/08 indicate a substantially smaller proportion of plastic litter objects (2.95 litres per 1,000m²) compared to 2006/07 (3.50 litres per 1,000m²) and 2005/06 (4.19 litres per 1,000m²). A significant reduction is also reflected in figures for paper/ paperboard items. A total of 2.03 litres per 1,000m² was recorded for 2007/08, which is down from 2.21 litres in 2006/07 and 2.68 litres in 2005/06.

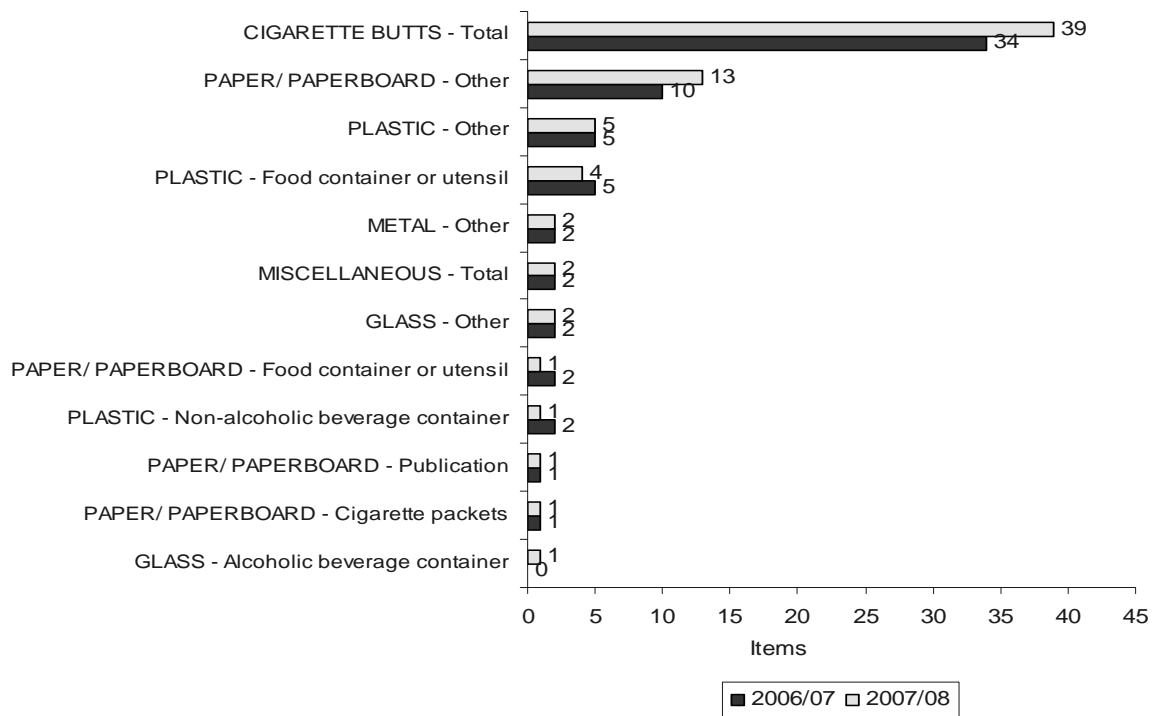


The Dirty Dozen – by Item and by Volume

Litter categories have also been broken down into sub categories within the survey. Within object type sub-categories, cigarette butts were undeniably the strongest contributors to the presence of litter objects at sites within NSW: 39 butts per 1,000m² were identified on average across the November 2007/ May 2008 counts (up from 34 in 2006/07).

Uncategorised paper/ paperboard objects (13 items per 1,000m², up from 10 items in 2006/07) were also frequently identified, as were uncategorised plastic objects (5 items per 1,000m², unchanged from 2006/07) and plastic food containers or utensils (4 items per 1,000m², down from 5 items in 2006/07)

Dirty Dozen - Items per 1000 Square Metres - Object Sub-Categories - NSW - 2007/ 2008

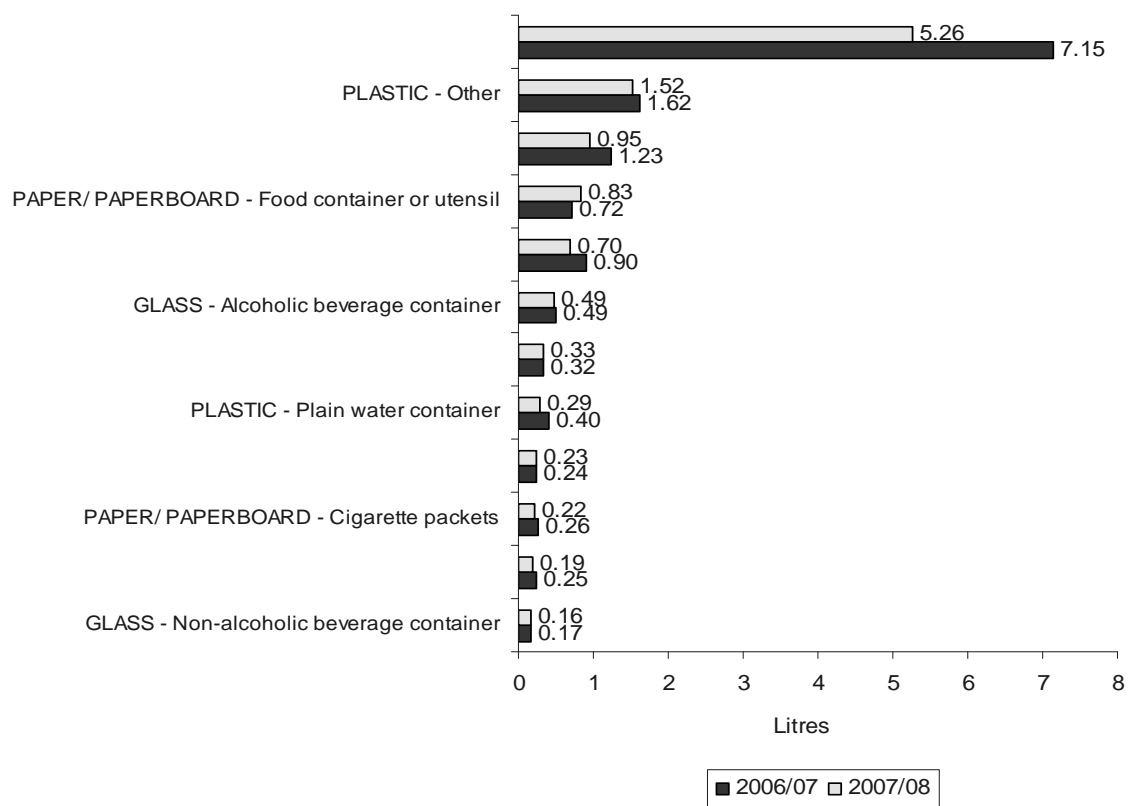


When looking at volumes of litter, illegal dumping represented a particularly strong contributor with an estimated 5.26 litres of litter volume per 1,000m² (down from 7.15 litres in 2006/07).

Other object sub-categories associated with large litter volume estimates included:

- Uncategorised plastic objects (1.52 litres per 1,000m², down from 1.62 in 2006/07)
- Plastic - non-alcoholic beverage containers (0.95 litres per 1,000m², down from 1.23 litres in 2006/07)
- Paper/ paperboard - food containers or utensils (0.83 litres per 1,000m², up from 0.72 litres in 2006/07)
- Paper/ paperboard - publications (0.70 litres per 1,000m², down from 0.90 litres in 2006/07)

Dirty Dozen - Volume per 1000 Square Metres - Object Sub-Categories - NSW - 2007/ 2008



Comparison to earlier NSW surveys

DECC 2006

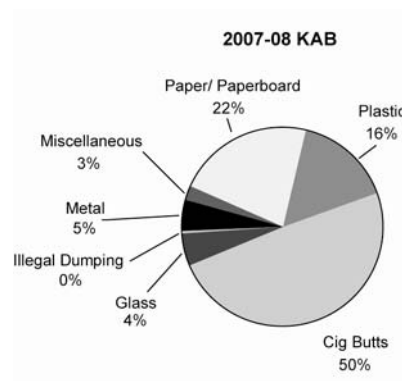
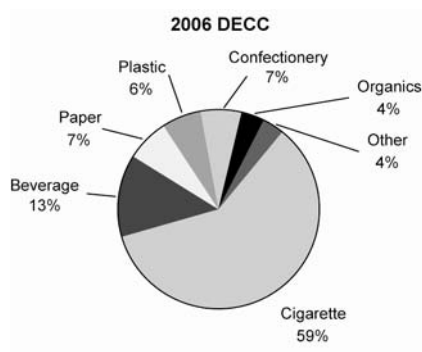
As indicated earlier in this report, the methodologies used in the two Litter Reports previously published by DECC were different and as a consequence direct comparisons of the data is difficult. However some broad comparisons can be made where similarities exist.

The key findings of the 2006 DECC survey that can be compared with results from the 2007-08 KAB survey were:

- Cigarettes were the most littered item in both surveys. In 2006 59% of all items littered, were cigarette items (butt, packets etc.). In 2008 cigarette items (butts, packets etc.) made up 52% of all items counted in NSW.
- In 2006 the most littered sites (average number of items per site) were Natural Waterfront sites followed by Constructed Waterfront sites, Public buildings and Transport sites. In 2008 the most littered sites (items per 1000 m²) were Industrial, followed by Retail and Highways.
- In 2006 Beach sites and Markets had the least average number of items littered per site. In 2008 Recreational, Residential and Beach sites were the least littered by the number of items per 1000 m².

Despite the differences in litter categories between the two surveys the following graphs illustrate the overall contribution of each category to the litter count.

Proportion of Main Material Types - NSW



KAB Surveys 2005-06 to 2007-08

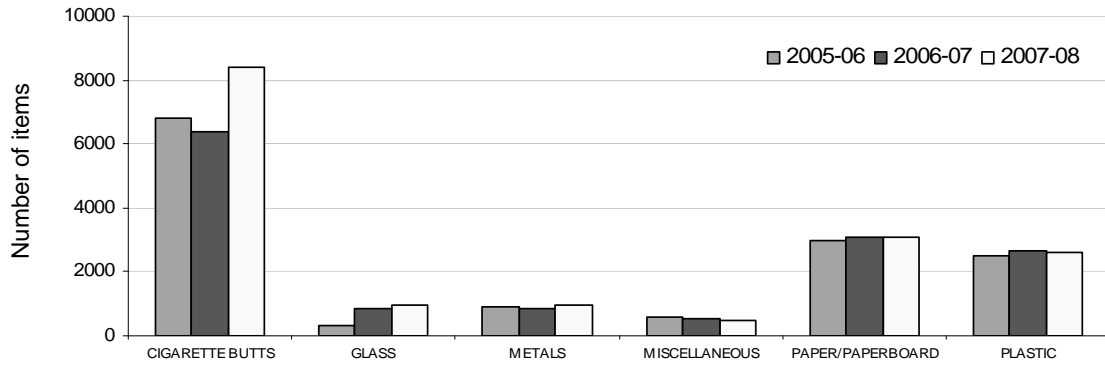
Although DECC undertook its own surveys prior to 2007/08, KAB was also surveying litter using its own methodology as part of the National Litter Index. Details of the KAB NSW data are provided earlier in this report, however, looking at the three years of NSW NLI data the following general conclusions can be made about the NSW results:

- The overall average number of items per 1000m² across all of the 151 sites surveyed in NSW in 2007/08 was 77, up 8% on 2006/07 but down 4% on 2005/06.
- The overall average estimated volume per 1000m² was 11.90 litres. At 11.90 litres the overall average volume per site was 20% lower than in previous years.
- Cigarettes continue to be the most littered item in NSW equating to half of all items investigated and contributing to a significant proportion of total litter state-wide as shown in the table below.

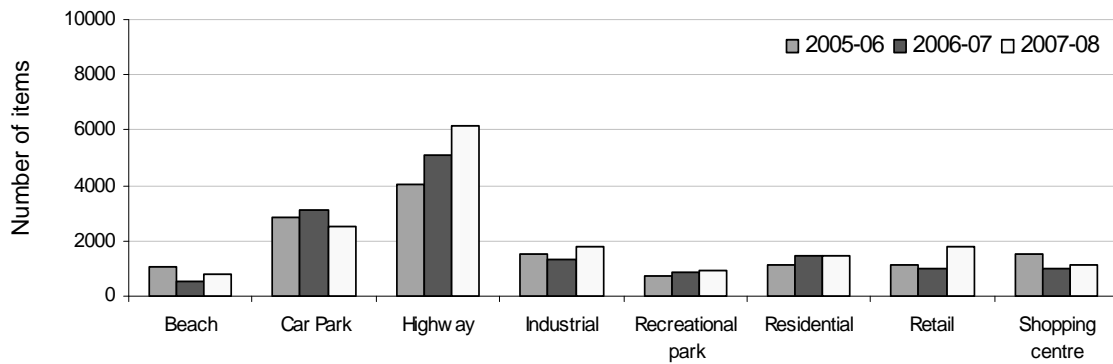
Financial Year	Period	Proportion of Total Litter
2005-06	Nov-05	48%
2006-07	Nov-06	44%
2006-07	May-07	51%
2007-08		50%

- Plastic litter objects contributed the largest amount of volume to the litter stream in NSW with such objects associated with 2.95 litres of volume per 1,000m², down from 3.50 litres in 2006/07 and 4.19 litres in 2006/07. This result is similar to previous years with plastic objects notably contributing to the greatest proportion of volume in the NSW litter stream.
- In 2007/08, industrial areas (122 items per 1,000m²), highways (102 items per 1,000m²), and shopping centres (103 items per 1,000m²) were the most littered sites in NSW. In 2005/06 and 2006/07, highways were the most littered sites followed by car parks. Littering in industrial sites was minimal by comparison over these years.

Comparison of overall item count across all sites 2005-06 to 2007-08



Comparison of overall item count per site type 2005-06 to 2007-08



Attachment 1: Areas Surveyed KAB NLI Surveys⁷

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	NATIONAL
BEACH									
Averages site area	500	563	500	842	939	506	500	500	630
Number of sites surveyed	8	16	8	16	16	8	16	16	104
Total area	4000	9000	4000	13464	15017	4050	8000	8000	65531
CAR PARK									
Averages site area	1500	1528	1335	1490	1379	1489	1594	1494	1485
Number of sites surveyed	11	23	11	23	23	11	23	23	148
Total area	16500	35148	14680	34271	31717	16378	36657	34365	219716
HIGHWAY									
Averages site area	3046	2209	3358	3114	3889	2785	3480	3243	3159
Number of sites surveyed	13	27	13	27	27	13	27	27	174
Total area	39600	59636	43660	84076	105002	36200	93950	87565	549689
INDUSTRIAL									
Averages site area	1117	1017	1200	1266	1340	504	914	881	1049
Number of sites surveyed	9	17	9	17	17	9	17	17	112
Total area	10050	17288	10800	21520	22786	4540	15545	14985	117514
RECREATIONAL PARK									
Averages site area	2000	2061	1507	1690	1539	2000	1951	2000	1845
Number of sites surveyed	7	13	7	13	13	7	13	13	86
Total area	1400	26790	10550	21972	2003	14000	25360	26000	158675
RESIDENTIAL									
Averages site area	1235	1509	1395	1161	1233	819	1272	1380	1274
Number of sites surveyed	13	26	13	26	26	13	26	26	169
Total area	16050	39237	18141	30191	32047	10650	33075	35870	215261
RETAIL									
Averages site area	876	1163	724	767	663	647	687	904	815
Number of sites surveyed	8	15	8	15	15	8	15	15	99
Total area	7005	17450	5791	11502	9946	5172	10311	13556	80733
SHOPPING CENTRE									
Averages site area	1250	1211	1221	501	752	1250	1179	1116	1018
Number of sites surveyed	7	14	7	14	14	7	14	14	91
Total area	8750	16950	8550	7008	10534	8750	16505	15625	92672
Average area across all sites	1526	1407	1529	1483	1636	1312	1585	1563	1526
Total number of sites	76	151	76	151	151	76	151	151	983
Total area surveyed	115955	221499	116172	224004	247052	99740	239403	235966	1499791

⁷ Keep Australia Beautiful - National Litter Index Annual Report 2007/08 by McGregor Tan Research

Attachment 2: NSW Raw Data from KAB NLI Survey - November 2007

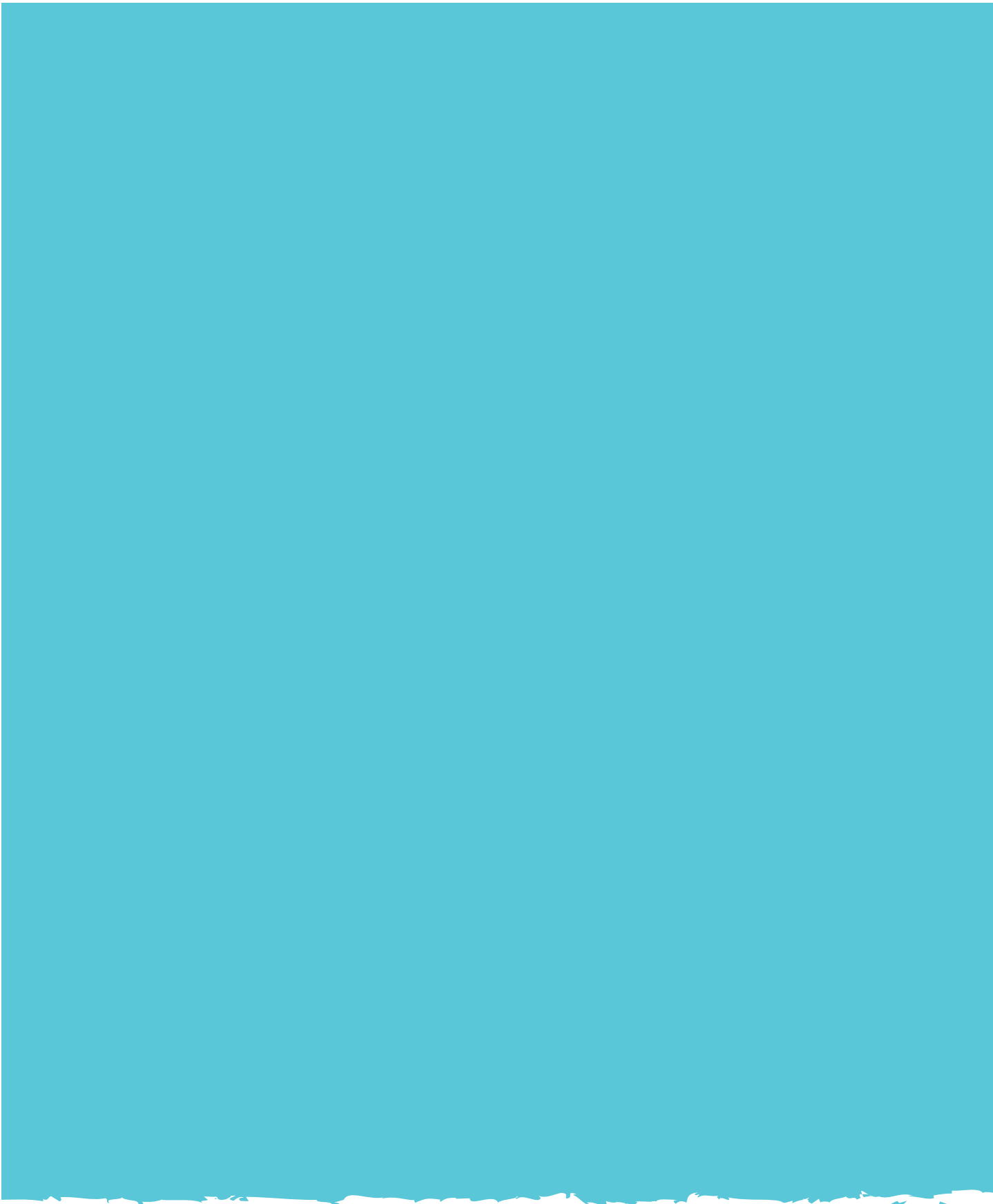
	Items								Total
	Beach	Car Park	Highway	Industrial	Recreational Park	Residential	Retail	Shopping Centre	
NSW-Nov.07									
MISCELLANEOUS									
Clothing & materials	8	24	57	12	4	20	3	4	132
Condoms	0	0	0	1	0	0	0	0	1
Construction materials	2	4	32	59	0	10	1	1	109
Disposable nappies	0	0	8	0	0	0	0	0	8
Ice cream sticks	12	14	17	2	13	21	37	3	119
Other miscellaneous	0	2	3	1	7	3	3	7	26
Rubber pieces (not tyres)	1	5	33	8	0	6	1	4	58
Syringes	0	0	3	0	0	0	0	0	3
Tyres & pieces	0	0	20	1	0	1	0	0	22
Total	23	49	173	84	24	61	45	19	478
PAPER/PAPERBOARD									
Cartons, flavoured milk < 1 litre	3	0	20	5	0	1	1	2	32
Cartons, flavoured milk 1 litre+	0	0	2	0	0	0	1	0	3
Cartons, fruit juice, < 1 litre	0	5	8	0	0	0	0	0	13
Cartons, fruit juice, 1 litre+	0	0	3	0	0	0	0	0	3
Cartons, milk, plain (white) all sizes	0	0	1	0	0	2	0	1	4
Cigarette packets	5	24	101	16	5	24	5	4	184
Cups/false away containers	7	35	96	26	14	28	4	9	219
Flav. water/fruit j. drink/sports drink, non-carb, <1 litre	3	2	1	2	0	3	0	0	11
Flav. water / fruit j. drink/ sports drink, (non-carb), 1 litre+	0	0	0	0	0	0	0	0	0
Ice cream wrappers	8	6	28	2	1	3	6	7	61
Junk mail / free circulars	4	6	20	0	1	29	4	3	67
Newspapers & magazines	1	5	21	12	0	43	6	0	88
Other paper	41	289	577	321	109	323	115	110	1885
Packages & boxes	0	20	61	34	0	10	0	0	125
Paper bags	9	14	46	5	5	4	4	5	92
Shopper dockets & related shopping paper (eg, lists)	7	48	10	5	4	76	24	29	203
Tickets, e.g. bus, ATM, vending machine etc.	2	30	8	0	2	9	58	11	120
Total	90	484	1003	428	141	555	228	181	3110

	Items								Total	
	Beach	Car Park	Highway	Industrial	Recreational Park	Residential	Retail	Shopping Centre		
PLASTIC	6 ring can holders	3	8	0	0	1	3	0	0	15
	Bags - heavier glossy typically branded carry bags	2	0	11	0	2	0	0	0	15
	Bags - supermarket type light weight carry bags	14	19	71	17	5	16	7	7	156
	Bread bag tags	1	3	8	2	14	1	1	2	32
	Containers, domestic type	4	0	31	0	3	3	0	0	41
	Containers, industrial e.g. oil	0	0	3	1	0	0	0	0	4
	Drink pouches	4	0	22	0	0	1	1	0	28
	Flav. milk, <1 litre	0	2	16	1	0	0	1	0	20
	Flav. milk, 1 litre+	0	0	4	0	0	0	0	0	4
	Flav.wtr/fruit j. dr. spts dr etc.(non-carb) <1 litre	0	2	40	4	0	1	1	0	48
	Flav. wtr/fruit j. dr. spts dr etc.(non-carb) 1 litre+	2	3	20	2	1	3	0	0	31
	Flav. water/soft drink (carbonated) <1 litre	2	14	40	24	5	8	2	2	97
	Flav. water/soft drink (carbonated) 1 litre+	2	4	26	4	0	0	0	1	37
	Fruit juice <1 litre	1	0	17	0	0	0	0	0	18
	Fruit juice, 1 litre+	0	0	7	0	0	0	0	0	7
	Lollipop sticks	15	16	26	5	27	17	12	11	129
	Other plastic	5	62	244	93	57	134	41	37	673
	Packing tape & straps	0	6	31	12	7	7	7	4	74
	Plain water (carbonated or non-carb) <1 litre	9	6	44	4	1	5	1	2	72
	Plain water (carbonated or non-carb) 1 litre+	1	1	24	0	0	0	0	0	26
	Plastic bottle tops	17	34	106	18	11	26	11	4	227
	Sacks - sheeting - other bags	20	2	21	14	0	4	3	3	67
	Snack bags & confectionary wrappers	10	27	114	12	12	29	12	7	223
	Spoons/ cutlery	8	9	33	11	21	5	6	1	94
	Straws	44	37	91	26	62	31	14	19	324
	Styrene foam boxes, sheets, etc	0	2	41	7	0	2	0	2	54
	Take away & cups	12	16	35	16	7	10	7	5	108
	White milk, all sizes	0	0	1	1	0	0	0	0	2
	Wine cask bladders	0	0	1	0	0	0	0	0	1
	Total	173	268	1136	274	236	306	127	107	2627
	GRAND TOTAL	793	2520	6187	1814	910	1459	1784	1133	16600

	Volume - Litres										Total
	Beach	Car Park	Highway	Industrial	Recreational Park	Residential	Retail	Shopping Centre			
GLASS	NSW-Nov.07										
	CIGARETTE BUTTS										
		0.0472	0.1633	0.3518	0.0887	0.0377	0.0439	0.1496	0.0841	0.9682	
	Alcoholic sodas / spirit-based mixers, all sizes	0.7486	5.6145	13.8491	0.3743	0.0000	0.3743	0.0000	0.0000	20.9608	
	Beer, all colours of glass, <750ml	5.7540	2.8770	39.7985	2.8770	0.0000	2.3975	0.4795	0.0000	54.1835	
	Beer, all colours of glass, 750ml+	8.1030	10.5339	32.4120	1.6206	3.2412	3.2412	0.8103	0.0000	59.9622	
	Cider/fruit based etc.	0.0000	0.0000	1.3629	0.0000	0.0000	0.0000	0.0000	0.0000	1.3629	
	Flav.wtr/fruit j. dr/sprts dr, (non-carb), <1 litre	1.6206	2.4309	4.8618	2.4309	0.0000	0.0000	0.0000	0.0000	11.3442	
	Flav.wtr/fruit j. dr/sprts dr, (non-carb), 1 litre+	0.0000	0.0000	0.0000	3.3080	0.0000	0.0000	0.0000	0.0000	3.3080	
	Flav. water/soft drink (carbonated) <1 litre	0.6022	0.0000	0.3011	2.1077	0.3011	0.6022	0.0000	0.3011	4.2154	
	Flav. water/soft drink (carbonated) 1 litre+	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.6540	1.6540	
	Fruit juice, < 1 litre	0.0000	0.0000	0.0000	0.2836	0.0000	0.0000	0.2836	0.0000	0.5672	
	Fruit juice, 1 litre+	0.0000	0.0000	0.0000	0.0000	0.0000	1.5700	0.0000	1.5700	3.1400	
	Other glass	0.0000	1.4534	4.6154	3.2995	1.3944	0.6481	0.1768	0.7463	12.3339	
	Plain water (carbonated or non-carb.), <1 litre	0.0000	0.0000	0.0000	0.4148	0.0000	0.4148	0.0000	0.0000	0.8296	
	Plain water (carbonated or non-carb.), 1 litre+	0.0000	0.0000	0.0000	0.0000	2.1185	0.0000	0.0000	0.0000	2.1185	
	Wine & spirit, all sizes	0.0000	16.9366	2.6742	0.8914	0.0000	1.7828	0.0000	0.0000	22.2850	
	Wine cooler, all sizes	0.0000	0.0000	0.7486	0.3743	0.3743	0.0000	0.0000	0.0000	1.4972	
	Total	16.8284	39.8463	100.6236	17.9821	7.4295	11.0309	1.7502	4.2714	199.7624	
	ILLEGAL DUMPING										
Total	24.0000	384.0000	408.0000	96.0000	0.0000	192.0000	0.0000	72.0000	1176.0000		
METAL	Aerosols - pressure packs										
		1.3885	0.0000	0.0000	1.3885	0.0000	0.0000	0.8842	0.0000	3.4212	
	Alcoholic sodas & spirit-based mixers	0.0000	3.3714	3.9333	0.5619	0.0000	2.2476	0.0000	0.0000	10.1142	
	Beer, aluminium, all types, all sizes	0.0000	1.2942	18.9816	1.2942	1.2942	0.8628	0.8628	0.0000	24.5898	
	Cider/fruit based etc.	0.0000	0.4314	0.0000	0.0000	0.0000	0.4314	0.0000	0.0000	0.8628	
	Flav. water/soft drink, (carbonated), all sizes	3.8826	6.9024	51.3366	8.1966	1.2942	4.7454	0.8628	0.8628	78.0834	
	Flav. water/soft drink, (non-carb), all sizes	0.3816	1.1448	1.9080	0.0000	0.0000	0.0000	0.3816	0.0000	3.8160	
	Foil take away	1.8495	1.3871	9.2476	0.4624	3.6990	0.4624	1.8495	0.0000	18.9576	
	Food cans (including pet food)	0.0000	0.0000	2.3190	0.0000	0.0000	0.0000	0.0000	0.4638	2.7828	
	Industrial cans - all types	0.0000	0.0000	18.2802	13.7101	0.0000	0.0000	0.0000	4.5700	36.5603	
	Metal bottle tops and can pull rings	0.1640	0.2240	0.2720	0.0360	0.2440	0.0840	0.1120	0.0640	1.2000	
	Metal pieces	0.0000	0.1272	0.6678	0.0424	0.0530	0.1484	0.2862	0.1272	1.4522	
	Other foil	0.0172	0.0562	0.0842	0.0281	0.0343	0.0686	0.0094	0.0296	0.3276	
	Total	7.6634	14.9387	107.0303	25.7002	6.6188	9.0506	5.0485	6.1175	182.1679	

		Volume - Litres								Total	
		Beach	Car Park	Highway	Industrial	Recreational Park	Residential	Retail	Shopping Centre		
MISCELLANEOUS	NSW-Nov.07										
	Clothing & materials	0.1224	0.3672	0.8721	0.1836	0.0612	0.3060	0.0459	0.0612	2.0196	
	Condoms	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0003	
	Construction materials	0.7200	1.4400	11.5200	21.2400	0.0000	3.6000	0.3600	0.3600	39.2400	
	Disposable nappies	0.0000	0.0000	9.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9.0000	
	Ice cream sticks	0.0110	0.0129	0.0156	0.0018	0.0120	0.0193	0.0340	0.0028	0.1095	
	Other miscellaneous	0.0000	0.0270	0.0405	0.0135	0.0945	0.0405	0.0405	0.0945	0.3510	
	Rubber pieces (not tyres)	0.0002	0.0008	0.0054	0.0013	0.0000	0.0010	0.0002	0.0007	0.0095	
	Syringes	0.0000	0.0000	0.0068	0.0000	0.0000	0.0000	0.0000	0.0000	0.0068	
	Tyres & pieces	0.0000	0.0000	4.5000	0.2250	0.0000	0.2250	0.0000	0.0000	4.9500	
	Total	0.8536	1.8479	25.9604	21.6656	0.1677	4.1918	0.4806	0.5191	55.6867	
	PAPER/PAPERBOARD	Cartons, flavoured milk < 1 litre	2.2491	0.0000	14.9940	3.7485	0.0000	0.7497	0.7497	1.4994	23.9904
		Cartons, flavoured milk 1 litre+	0.0000	0.0000	2.0253	0.0000	0.0000	0.0000	1.0127	0.0000	3.0380
		Cartons, fruit juice, < 1 litre	0.0000	3.1238	4.9980	0.0000	0.0000	0.0000	0.0000	0.0000	8.1218
		Cartons, fruit juice, 1 litre+	0.0000	0.0000	6.2100	0.0000	0.0000	0.0000	0.0000	0.0000	6.2100
Cartons, milk, plain (white) all sizes		0.0000	0.0000	1.0127	0.0000	0.0000	2.0253	0.0000	1.0127	4.0506	
Cigarette packets		1.0894	5.2289	22.0049	3.4859	1.0894	5.2289	1.0894	0.8715	40.0881	
Cups/take away containers		5.1027	25.5133	69.9792	18.9527	10.2053	20.4106	2.9158	6.5606	159.6401	
Flav. water/fruit j. drink/sports drink, non-carb, <1 litre		0.7863	0.5242	0.2621	0.5242	0.0000	0.7863	0.0000	0.0000	2.8831	
Flav. water / fruit j. drink/ sports drink, (non-carb), 1 litre+		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Ice cream wrappers		0.0192	0.0144	0.0672	0.0048	0.0024	0.0072	0.0144	0.0168	0.1464	
Junk mail / free circulars		0.6960	1.0440	3.4800	0.0000	0.1740	5.0460	0.6960	0.5220	11.6580	
Newspapers & magazines		1.1800	5.9000	24.7800	14.1600	0.0000	50.7400	7.0800	0.0000	103.8400	
Other paper		0.1386	0.9768	1.9503	1.0850	0.3684	1.0917	0.3887	0.3718	6.3713	
Packages & boxes		0.0000	1.6000	4.8800	2.7200	0.0000	0.8000	0.0000	0.0000	10.0000	
Paper bags		0.0952	0.1481	0.4867	0.0529	0.0529	0.0423	0.0423	0.0529	0.9734	
Shopper dockets & related shopping paper (eg, lists)	0.0142	0.0974	0.0203	0.0102	0.0081	0.1543	0.0487	0.0589	0.4121		
Tickets, e.g. bus, ATM, vending machine etc.	0.0018	0.0264	0.0070	0.0000	0.0018	0.0079	0.0510	0.0097	0.1056		
Total	11.3724	44.1973	157.1576	44.7442	11.9023	87.0903	14.0887	10.9761	381.5288		

	Volume - Litres										Total
	Beach	Car Park	Highway	Industrial	Recreational Park	Residential	Retail	Shopping Centre			
NSW-Nov.07											
PLASTIC											
6 ring can holders	0.0000	0.0045	0.0120	0.0000	0.0015	0.0045	0.0000	0.0000	0.0000	0.0225	
Bags - heavier glossy typically branded carry bags	0.1752	0.0000	0.9636	0.0000	0.1752	0.0000	0.0000	0.0000	0.0000	1.3140	
Bags - supermarket type light weight carry bags	0.4752	0.6449	2.4097	0.5770	0.1697	0.5430	0.2376	0.2376	0.2376	5.2946	
Bread bag tags	0.0002	0.0007	0.0018	0.0005	0.0032	0.0002	0.0002	0.0002	0.0005	0.0074	
Containers, domestic type	33.2960	0.0000	258.0440	0.0000	24.9720	24.9720	0.0000	0.0000	0.0000	341.2840	
Containers, industrial e.g. oil	0.0000	0.0000	67.3740	22.4580	0.0000	0.0000	0.0000	0.0000	0.0000	89.8320	
Drink pouches	0.3450	0.0000	1.8975	0.0000	0.0000	0.0863	0.0863	0.0000	0.0000	2.4150	
Flav. milk, <1 litre	0.0000	1.0654	8.5232	0.5327	0.0000	0.0000	0.5327	0.0000	0.0000	10.8540	
Flav. milk, 1 litre+	0.0000	0.0000	8.5468	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8.5468	
Flav.wtr/fruit j. dr, sprts dr etc.(non-carb) <1 litre	0.0000	1.1122	22.2444	2.2244	0.0000	0.5561	0.5561	0.0000	0.0000	26.6933	
Flav. wtr/fruit j. dr, sprts dr etc.(non-carb) 1 litre+	3.3080	4.9620	33.0800	3.3080	1.6540	4.9620	0.0000	0.0000	0.0000	51.2740	
Flav. water/soft drink (carbonated) <1 litre	1.2442	8.7095	24.8844	14.9306	3.1106	4.9769	1.2442	1.2442	0.0000	60.3447	
Flav. water/soft drink (carbonated) 1 litre+	3.3080	6.6160	43.0040	6.6160	0.0000	0.0000	0.0000	1.6540	0.0000	61.1980	
Fruit juice <1 litre	0.5327	0.0000	9.0559	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9.5886	
Fruit juice, 1 litre+	0.0000	0.0000	14.9568	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	14.9568	
Lollipop sticks	0.0080	0.0085	0.0138	0.0027	0.0143	0.0090	0.0064	0.0058	0.0058	0.0684	
Other plastic	0.0063	0.0775	0.3050	0.1163	0.0713	0.1675	0.0513	0.0463	0.0463	0.8413	
Packing tape & straps	0.0000	0.0016	0.0084	0.0032	0.0019	0.0019	0.0019	0.0011	0.0011	0.0200	
Plain water (carbonated or non-carb) <1 litre	7.0911	4.7274	34.6676	3.1516	0.7879	3.9395	0.7879	1.5758	1.5758	56.7288	
Plain water (carbonated or non-carb) 1 litre+	1.5416	1.5416	36.9977	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	40.0808	
Plastic bottle tops	0.1361	0.2722	0.8485	0.1441	0.0881	0.2081	0.0881	0.0320	0.0320	1.8171	
Sacks - sheeting - other bags	0.0063	0.0006	0.0066	0.0044	0.0000	0.0013	0.0009	0.0009	0.0009	0.0211	
Snack bags & confectionary wrappers	0.0783	0.2114	0.8926	0.0940	0.0940	0.2271	0.0940	0.0548	0.0548	1.7461	
Spoons/ cutlery	0.0768	0.0864	0.3168	0.1056	0.2016	0.0480	0.0576	0.0096	0.0096	0.9024	
Straws	0.1815	0.1526	0.3754	0.1073	0.2558	0.1279	0.0578	0.0784	0.0784	1.3365	
Styrene foam boxes, sheets, etc	0.0000	0.0750	1.5375	0.2625	0.0000	0.0750	0.0000	0.0750	0.0750	2.0250	
Take away & cups	2.4842	3.3123	7.2457	3.3123	1.4491	2.0702	1.4491	1.0351	1.0351	22.3582	
White milk, all sizes	0.0000	0.0000	2.1367	2.1367	0.0000	0.0000	0.0000	0.0000	0.0000	4.2734	
Wine cask bladders	0.0000	0.0000	0.4600	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4600	
Total	54.2946	33.5823	580.8104	60.0878	33.0500	42.9764	5.2519	6.0511	0.0000	816.1046	
GRAND TOTAL	115.0595	518.5777	1379.9342	266.2685	59.2060	346.3840	26.7695	100.0193	0.0000	2812.2186	



Department of **Environment & Climate Change** NSW

