University of South Australia | Ehrenberg-Bass Institute for Marketing Science

Recycle Right® & Bin Usage Research

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EXECUTIVE SUMMARY

This report presents the findings of research to better understand how South Australian householders use their green organics, recycling and landfill bin system and to assess the impact of Zero Waste SA's Recycle Right® campaign on bin system usage. The Recycle Right® campaign's aim is to promote reduced householder contamination of the green organics and recycling streams through correct bin usage and to avoid materials going to landfill when they could be diverted to the other waste streams. The Recycle Right® campaign has been running since 2010 and prior research to provide attitude and behaviour benchmarks and assess the campaign's effectiveness was conducted in both 2010 and 2012.

In 2013 campaign messages around food scraps and hazardous waste disposal were added to the existing green organics and recycling themes. The campaign elements tested in 2013-14 ran from July 2013 until the end of April 2014 and were delivered primarily through print media and flyers distributed through councils.

This research aims to assess the effectiveness of the campaign. It does this through assessing:

- recall of the campaign amongst South Australian householders
- improved knowledge about which bin should be used for the disposal of common contaminants (e.g. oven glass should not go in the recycling bin)
- improved process-oriented knowledge about recycling (how items should be prepared for recycling, e.g. rinse cartons and bottles before disposal)
- contamination and poor practice levels in the three bin system using an observational method.

In total in 2014, 340 telephone surveys and 305 observational bin audits of kerbside bins were undertaken. Some bin audits (n=105) were undertaken with a subset of willing survey participants who opted in at the end of the phone interview. The additional random kerbside audits (n=200) were undertaken to boost the phone interview observational sample.

Benchmark telephone surveys and bin audits were also conducted in 2010 and 2012 and the findings from these serve as "before" measures for the current 2014 Recycle Right® campaign. The current telephone questionnaires and audit instruments were based on the prior research to allow for easy comparison.

Recycle Right® campaign recall

2014 saw overall higher levels of perceived exposure to messages around bin usage, compared to previous years (51% compared to 27% in 2012).

The levels of unaided and prompted Recycle Right® campaign recall were similar to, but slightly higher than, those seen in 2012.

- Unprompted recall of campaign through a visual description – 13% of all respondents
- Unprompted campaign recall through message outtake – 11% of all respondents
- Total unprompted recall – 22% of all respondents (15% in 2012)
- Prompted campaign recall – 26% (21% in 2012).

The total campaign recall of 48% (36% in 2012) is an extremely positive finding in light of the modest campaign budget and the limited use of media to create cut-through and reach. It shows the increasing build and householder reach of this campaign over time.

2014 saw high levels of calendar recall (64% total recall) and a greater proportion claimed contact with either the Zero Waste SA website or phone line (2% in 2012 c.f. 13% in 2014). These too are both positive findings.

Respondents recalling the Recycle Right® campaign were asked whether they had disposed of any items differently since hearing or seeing the advertisements. Over half of the respondents (55%) stated that they had not changed their behaviour since hearing the advertisements. This is comparable to the 53% in 2012. An additional 12% of respondents said their behaviour had not changed because they were doing everything correctly already. The key claimed behaviour change was around green organics material – a key theme of the campaign. All other disposal behaviours saw far more modest levels of claimed change, but this is primarily because the respondents stated (self-assessment) that they were already doing the behaviour the campaign is seeking. These findings show that the campaign had cut through in its key messages with at least some respondents who needed to make a behaviour change. It also will have reinforced the message amongst those already doing the desired behaviour, thus refreshing and reinforcing memory structures.

Perceptions and objective knowledge of recycling

Householders' general outlook on recycling was overwhelmingly positive, indicating a population that is attitudinally highly conducive to 'doing the right thing' in terms of waste disposal. Only a very small number of respondents felt that their recycling efforts were not worthwhile (2%) and the vast majority of householders felt their efforts did make a difference (93% agreement). This indicates that improper recycling practices are likely to result from incorrect knowledge or bad habits rather than attitudinal incongruence with the activity.

On the whole, respondents felt that they had received sufficient information in order to use their kerbside-bin system properly. Prior to the Recycle Right® campaign, a high mean agreement level of 8.3 out of 10 was seen for the statement "I have been given sufficient information about how to use the three-bin system properly". Overall, these results declined slightly over the Recycle Right® campaign, with means of 7.9 (2012) and 7.7 (2014). This finding shows that the majority of respondents feel they have been given sufficient information on their bin system. Incorrect bin use is not likely to be attributed to respondents feeling they don't have access to the information needed to use the system properly. This does not mean communication is no longer needed. There is a need to refresh and reinforce the bin usage messages. Memory structures erode over time, and coupled with the fact that what goes in each bin changes with technology and infrastructure, there is a need for continued communication with householders to both maintain and improve bin usage knowledge.

Seven in 10 respondents did not perceive any barriers to recycling. The key perceived barriers were the capacity or frequency with which bins were collected (12% of stated reasons and the majority of "other" responses). Lack of information was perceived by only 5% of respondents, reinforcing the prior fining that the majority of respondents feel well informed. This could potentially present a challenge to any recycling campaign aiming to achieve cut-through and educate households. If householders think they already know how to recycle correctly and that there are no barriers, they will be less likely to pay attention to communications about recycling as they do not feel it is relevant to them. Messages will need to be innovative and have good creative to address this issue and achieve cut through.

Objective knowledge about recycling

Respondents were asked, in general, how they managed their recycling. The results show that six in 10 do their recycling separation inside the home, prior to disposal. Four in 10 work on a "demand" basis, visiting the recycling bin as items are generated. Very few lack an approach or do separation of waste and recycling at the actual bin.

Respondents were asked about how often they present their bins for collection to investigate whether people wait until they are full, or just present every collection. Presenting bins for collection when they are not full incurs unnecessary costs for councils and so gaining some current data on the behavior is worthwhile. The results show that for seven in 10 respondents, the behaviour is habitual (i.e. present each collection) rather than need (i.e. when full) driven. There is substantial opportunity to educate people that bins are better presented only when at capacity, rather than at every collection opportunity.

For a more objective assessment of recycling knowledge, householders were read a list of items and asked to indicate where they would dispose of each (into the general waste bin, the recycling bin, the green organics bin, or somewhere else). The correct disposal behaviour of a number of items improved from the 2010 benchmark research. The biggest improvements were seen in correct disposal behaviour from 2010 to 2014 in the areas of:

- Dirt, bricks or rocks (52% correct in 2010, 75% in 2014)
- Crockery, oven glass or drinking glasses (41% correct in 2010, 57% in 2014)
- Polystyrene foam (65% correct in 2010, 74% in 2014)
- Clothing or fabric (73% correct in 2010, 81% in 2014)
- Garden implements (64% correct in 2010, 71% in 2014)

Items that still show room for improvement

Some items still show room for improvement in terms of where householders were disposing of them were:

- Crockery, oven glass or drinking glasses (32% incorrect disposal in 2014)
- Polystyrene foam (24% incorrect disposal in 2014)
- Dirt, bricks or rocks (25% incorrect disposal in 2014)
- Garden implements (27% incorrect disposal in 2014)
- Plastic bags (21% incorrect disposal in 2014)
- Clothing or fabric (14% incorrect disposal in 2014)
- Pizza boxes with food (25% incorrect disposal in 2014)
- Soft plastics (10% incorrect disposal in 2014)

Respondents were also asked a series of procedural questions about how they might prepare items for disposal and whether they would do these things "always", "sometimes" or "never".

Overall, results were quite positive. Fewer than one in 10 respondents claimed to "never" rinse bottles and cartons (7%) or "never" remove lids from jars and bottles (4%). For these items, over three quarters of respondents claimed to consistently ("always") prepare them for disposal in the correct manner. There was, however, room for improvement in terms of respondents who would do these things inconsistently ("sometimes").

The proportion of respondents "always" holding organics and recyclables together with a plastic bag increased from 1% in the benchmark to 10% in the 2012 research and dropped to 5% in 2014.

However, this may not be a negative change, as some councils have begun supplying their residents with compostable plastic bags for food scraps. Therefore, more respondents would be holding food scraps in a compostable plastic bag before placing them in the green organics bin. Overall, behaviour was already quite good prior to the commencement of the campaign so it did little to change the claimed behaviour of householders.

When analysed as a total score across all objective knowledge questions, there was a modest improvement following the campaign. To allow further analysis based on objective recycling knowledge, respondents were divided into three segments based on their individual responses to the battery of objective knowledge questions. The respondents were then grouped as follows:

- The *best group* of respondents gave between zero and 1.5 incorrect answers
- The *mid group* of respondents gave between two and four incorrect answers
- The *worst group* of respondents gave 4.5 or more incorrect answers.

The “best” group has grown again in size in the 2014 research in comparison to the benchmark research, now comprising of more than one half of all respondents (22% in 2010 c.f. 36% in 2012 and now 55% in 2014, p=0.00). The “worst” group has also decreased (31% in 2010 c.f. 22% in 2012 and now 10% in 2014, p=0.00), which is a very positive sign.

It should be noted though that these are claimed behaviours and do not necessarily reflect reality. For example, the proportion of audited recycling bins in which bottles / jars with lids attached were observed (31%) was significantly higher than the proportion of people who said they “never” or only “sometimes” remove lids (12%). This indicates a discrepancy between claimed and actual behaviour and perhaps the effect of having multiple household members. Findings from the observational bin audits highlight this issue.

Observed rates of contamination and poor recycling practice

All audits in the 2014 research were completed over a month period. Bins were audited as close as possible to the council collection day and time to ensure they would contain the majority of what was to be sent into the various waste and recycling streams. 111 bin audits were completed in 2010, and 110 in the 2012 bin audit research. In 2012, 73 recycling bin and 62 green organics bin audits were completed. In 2014, 215 recycling bins were audited, 62 green organics and 285 waste bins.

2014 saw six in 10 (61%) recycling bins with either visible signs of contamination (i.e. contained some non-recyclable items) or poor recycling practice (e.g. bottles still had lids attached). This is a significant drop from the 2012 research which showed higher levels (at 86%). From the bin audits it is clear that the key behavioural challenge for recycling bins is both contamination and poor practice. The main items of incorrect disposal continue to be soft and mid-strength plastics and the key poor practice is the leaving of lids on bottles and containers or loose in the recycling bins.

The rate of contamination in audited green organics bins was significantly less than that seen in recycling bins (43% for recycling bins c.f. 7% for green organics bins, p=0.00), suggesting that householders find it easier to distinguish between items that can or cannot go in the green organics bin than they can between items that can and cannot go in the recycling bin.

In the 2014 audits, slightly less than one in 10 green bins audited contained items that were not green organics (7%). This result is lower than the 2010 and 2012 audits (25% and 15% respectively). This too is a positive finding.

Waste bins were also audited where available to researchers. Half of the waste bins (51%) contained items that should have gone in the recycling or green organics bins. This is an increase on 2012. That said, the items that can go into other waste streams have changed across the course of the research. This indicates that some households do not make the effort to separate items that could be reused. Food scraps especially have had a change in how they are disposed of by councils over this time.

The demographics or recall of the Recycle Right® campaign did not have an impact on the level of contamination in any of the bin types audited. Better knowledge of correct disposal behaviour also did not have a significant impact on contamination of the households' bins. This was also found in previous years. So, we are yet to see is a link between better knowledge and better behaviour. These findings highlight the importance of continuing to build mental links between knowledge and behaviour, as bin disposal behaviour is habitual and thus hard to change. Bin disposal behaviour is also not a very socially visible behaviour and it does not have an immediate feedback loop for the householder, to reinforce correct behaviours. Again, the lack of social visibility means it may take some time to shift entrenched behaviours. Overall, the research has found that correct knowledge is increasing and this is an important first requirement for behaviour change to be possible. The challenge is now to work on ensuring this translates into improved behaviour, and there may be a lag in this, which is what we are seeing in the results.

Overall the Recycle Right® campaign can be said to have achieved a good recall given its modest budget and since 2010 there has been an improvement in the objective knowledge about correct disposal of key campaign message items. This is a positive finding. However, actual disposal behaviour evidenced through the recycling bin audits still shows significant room for improvement and remains the key challenge for future campaigns.

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INTRODUCTION

This report presents the findings of research to better understand how South Australian householders use their green organics, recycling and landfill bin system and to assess the impact of Zero Waste SA's Recycle Right® campaign on bin system usage. The Recycle Right® campaign's aim is to reduce householder contamination of the green organics and recycling streams through correct bin usage and to avoid materials going to landfill when they could be diverted to the other waste streams. The Recycle Right® campaign has been running since 2010 and prior research to provide attitude and behaviour benchmarks and assess the campaign's effectiveness was conducted in both 2010 and 2012.

In 2013 campaign messages around food scraps and hazardous waste disposal were added to the existing green organics and recycling themes. The campaign elements tested in 2014 ran from July 2013 until the end of April 2014 and were delivered primarily through print media and flyers distributed through councils.

This report presents the findings of the 2014 research. The research involved both phone interviews and bin audits with householders across South Australia to assess change in knowledge and usage of the bin system after the Recycle Right® campaign. Where possible, the results are compared to the benchmark study conducted in 2010 by the Institute, which occurred before the current campaign. Results are also discussed in relation to the 2012 research that assessed the campaign two years into its life. Where this is not done, it is because the campaign elements and the way in which questions were asked varied slightly across the years making direct comparison impossible.

Research Objectives

This research aims to assess the effectiveness of the campaign. It does this through assessing:

- recall of the campaign amongst South Australian householders, message outtake, and the relative effectiveness of the media vehicles used
- improved knowledge about which bin should be used for the disposal of common contaminants (e.g. oven glass should not go in the recycling bin)
- improved process-oriented knowledge about recycling (how items should be prepared for recycling, e.g. rinse cartons and bottles before disposal)
- contamination and poor practice levels in the three bin system using an observational method.

It also seeks to develop improved understanding of how householders use their three-bin system and examines related issues, such as hazardous waste.

Method

In total in 2014, 340 telephone surveys and 305 observational bin audits of kerbside bins were undertaken. Some bin audits (n=105) were undertaken with a subset of willing survey participants who opted in at the end of the phone interview. The additional random kerbside audits (n=200) were undertaken to boost the phone interview observational sample.

Benchmark telephone surveys and bin audits were also conducted in 2010 and 2012 and the findings from these are drawn upon in the current research to serve as “before” measures for the current 2014 Recycle Right® campaign. The current telephone questionnaires and audit instruments were based on the prior research to allow for easy comparison.

2010 Benchmark research

The benchmark telephone survey was conducted in August 2010 with randomly selected residents from four council areas (Mitcham, Adelaide City, West Torrens and Murray Bridge). This initial research took place before Zero Waste SA released their 2010 Recycle Right® mail package campaign. Sampling quotas were used to ensure a roughly equal distribution of respondents across the four councils. 346 phone interviews were conducted in total and 111 audits.

A second telephone survey was conducted in late October 2010, approximately five weeks after distribution of the direct mail campaign. 377 telephone interviews were conducted, 243 of which were with respondents who had previously participated in the benchmark survey. The remaining 134 interviews were with new randomly recruited residents from the four pilot council areas. The sample was again split evenly across each of the council areas. 110 audits were undertaken.

The results that occurred prior to the campaign’s launch serve as benchmarks in this report. The follow-up 2010 results are not referred to much for comparison due to the geographically constrained nature of the sample.

2012 research

Phase 1

Phase 1 of the 2012 research was conducted in late January/early February 2012 with randomly selected respondents from South Australia, after the second burst of the 2011/2012 Recycle Right® campaign. A broader sample was included in comparison to the benchmark study to ensure representativeness of the reach of the 2011/2012 Zero Waste SA Recycle Right® campaign, which was targeted at South Australian residents in general. Sampling quotas were set to ensure a 75:25 split between metro and regional respondents. A total of 220 interviews were conducted in Phase 1 of the research.

Phase 2

The second phase of the research was conducted in May 2012 after the third and final burst of the 2011/2012 Recycle Right® campaign. The same questionnaire was used in Phase 2 as was in Phase 1 with a couple of additional questions. The sample was also randomly recruited from the South Australian population with a 75:25 metro:regional quota. An additional 209 respondents were interviewed in Phase 2.

In total 429 telephone interviews were completed in 2012. In addition, 110 bin audits were undertaken with respondents who agreed to opt in after the telephone survey. The audits were only conducted in the metro area due to time and budget constraints, but still covered 16 councils.

2014 research

Telephone survey

In May 2014, 340 telephone interviews were completed with a cross section of the South Australian population. A quota of 20% was set for regional areas. Additionally a quota (27%) was set for the Adelaide Hills region to ensure substantial representation of peri-urban areas. This quota, for the purpose of the table below, is included in the Metro classification.

16% of telephone respondents were based North, 18% South, 11% East, 9% West, 24% in the Hills and the remaining 22% regionally. This reflects a good geographical spread.

Table 1: Telephone survey samples

	Benchmark 2010		2012 Total		2014 Total	
	n	%	n	%	n	%
Metro	346	100	321	75	266	78
Regional	-	-	108	25	74	22
Total	346	100	429	100	340	100

The full demographic profile of telephone interview respondents is shown in Appendix 2. The profile has remained stable across 2010 to 2014.

Observational bin audits

In addition to the telephone survey, research was conducted that involved observational bin audits, in which the recycling, green organics and landfill bins of willing telephone survey participants were inspected for visible signs of contamination. Additionally, random bin audits were also carried out at the kerb with bins from nearby properties to boost the sample. All audits were visual inspections only – the researchers did not sort through the contents of bins – however, this was generally adequate to assess whether any contaminants were present. Photographic records were taken to match against auditors' notes.

The audits took place after the telephone research during June and July 2014. Bins were audited on the date of council recycling/green organics and landfill collection to ensure they would most accurately represent what was to be collected by council. 105 households from the Adelaide metro region who completed the phone survey opted in to the bin audits. Bin audits were conducted across council regions, ensuring a diverse spread of respondents across Adelaide, as well as differing socio-economic areas. The central area was not delineated in 2014, but instead spread across the other four area definitions since the central area is small. Additionally, in 2014 the Adelaide Hills region was audited as a separate peri-urban area.

The table below shows the spread of the 105 telephone respondents who opted into the bin audit. An additional 200 audits were carried out on bins at the kerb of properties surrounding these telephone bin audit addresses (so the geographical spread is the same). The table shows that the telephone bin audit sample (and hence the wider sample) was spread across the whole of metro Adelaide.

Table 2: Observational bin audit samples of phone respondents

	Benchmark 2010		2012 Audits		2014 audits	
	n	%	n	%	n	%
South	29	26	34	31	24	23
North	-	-	33	30	21	20
West	27	24	20	18	20	19
East	28	25	18	16	10	10
Central	27	24	5	5	-	-
Hills	-	-	-	-	30	29
Total	111	100	110	100	105	100

In the 2010 benchmark audits, only four specific councils were included in the research due to budgetary constraints and also to ensure that only councils receiving the mail out were included. In the 2012 audits the sample included the Adelaide metro region, only excluding the Burnside City Council from the research (due to their split-bin system). The sample from the 2014 audits managed to cover all of metro Adelaide and a specific sample for the Hills area.

Report structure

Awareness of the Zero Waste SA Recycle Right® campaign and the message outtake are reported first to give context for how much it might affect the attitudes and behaviour of the respondents. The objective knowledge of where different items should be disposed of along with respondents' procedural knowledge in relation to disposal behaviour are reported in the section following the campaign recall, along with some general perceptions. Hazardous waste is then looked at as an issue specific to the 2014 research. The report concludes with findings from the observational bin audits.

The respondents' profile, questionnaire, and knowledge classification scheme make up the four appendices.

Analysis

Analysis was performed using SPSS Statistics 21. When looking for changes in results across years, a 95% confidence level was adopted. At this level of confidence, there is only a 5% chance (one in 20) that the difference in results is due to sampling error rather than a real change. Where changes are significant at the 95% level, they are discussed and the level of significance shown in brackets. For example, $p<0.02$ can be interpreted as the difference is significant and that the probability of this result being due to chance sampling fluctuation is less than two percent. These significant differences are also highlighted in places on the tables by either a red or green arrow. A green arrow indicates a significant positive change and the red arrow indicates a significant negative change.

CAMPAIGN RECALL

This section reports aspects of Zero Waste SA's Recycle Right® campaign recall.

Recall of general bin system communications & source

Respondents were asked whether they could recall any advertising, or receiving any information about their recycling, green organics, or waste bins in the prior 10 month period, which covered the period of the 2013/2014 campaign.

Half the respondents (51%, n=173) recalled advertising or receiving information about their recycling, green organics or waste bins. As found in the prior years' research, few respondents were unsure of their exposure (4% in 2014). This recall by over half the respondents in 2014 is much higher than that seen in 2012 (27% recall overall). This can be partially explained by the 2014 research covering a slightly longer time period than 2012 (two extra months) and covering wider messaging (waste bins included) relative to 2012. However, these variations would still not be expected to explain the almost doubling in recall over the 2012 figure. Additionally, since the majority of advertising was in 2013, we might expect that the long time that had elapsed between exposure and the survey would have dampened recall. That about half the respondents believe they have been exposed to messages about their bin system shows high salience around bin system issues and suggests wider communication/coverage in the general media and by councils on the topic, outside of the Zero Waste SA campaign.

Respondents that recalled seeing advertisements or receiving information about their recycling, green organics or waste bin were asked to recall the source of the information. This was an unprompted question and respondents could name as many or few sources as they liked. This was designed to pick up if there was a particular source or campaign that had gained great cut-through with respondents.

The 2014 findings are very consistent with those from 2012. Council was the most recalled source of bin related communication – almost double that of the next most cited source of calendars (30%) and newspapers (27%). Calendars were a far more highly cited source in 2014, reflecting the increased emphasis given to this in the 2014 campaign, which is an important finding. It should be noted though that calendars are probably perceived as a council initiative too by respondents, given that they are created in conjunction with councils and also jointly badged.

Table 3: *If recall general recycling/organics/waste info:* Where did you see or hear this advertising/information (multiple response)?

	2012		2014	
	n	%	n	%
Council flier or magazine	62	52	103	60
Newspaper	28	23	47	27
Calendar	3	3	30	17 ↑
General Letterbox drop	12	10	25	15
Other	14	12	15	9
Don't know/refused	6	5	8	5
Bags for kitchen caddy	-	-	5	3
Radio	7	6	4	2
TV (eg Building Ideas)	6	5	4	2
Online	0	0	0	0
Total	120	>100	173	NA

Responses for "other" included bus stop, fridge magnets, bin stickers, the side of a truck, and at the waste depot.

Unaided Recycle Right® recall

For an unprompted recall measure of the Recycle Right® campaign, respondents who could recall seeing or receiving any information on recycling, green organics or waste bins (n=173) were asked to describe what they saw in their own words. This was then recorded against the key campaign images and messages by the interviewer, providing an unaided recall measure of the Zero Waste SA Recycle Right® campaign.

Overall 26% (n=45) of the respondents who had recalled recycling, green organics or waste bin information or advertising described what they had seen in enough detail that it could be attributed to the Recycle Right® campaign unaided. This equates to 13% of the total sample.

Of the respondents that recalled specific Recycle Right® campaign elements (n=45):

- 27% (n=12) described the specific message "food scraps are good to go"
- 16% (n=7) described the bin visual
- 11% (n=5) described the thumb visual
- 51% (n=23) recalled other Recycle Right® specific campaign messages or elements

Only a small number (n=5) recalled multiple campaign elements, without prompting.

In 2012, overall 34% of the respondents who had recalled recycling or green organics information/advertising visually described the Recycle Right® campaign unaided. This equated to 15%

of the total sample having unprompted visual recall of the Recycle Right® campaign. In summary, 2014 had a comparable proportion of the overall population recalling the campaign without prompting (13% in 2014 compared to 15% 2012). However, the difference is that in 2014, more respondents claimed to have seen advertising or information about bin systems (51% compared to 27% in 2012), but slightly fewer linked these messages to being Recycle Right® ones (26% in 2014 compared to 34% in 2012). This could be a reflection of the greater emphasis the 2013-2014 campaign had on food scraps and hazardous waste, rather than recycling per se.

Specific campaign message recall

All respondents that said they had seen or heard information about the bin system (n=173) were further probed as to the main message they took from the communication. The interviewers knew this was a very important part of the research and so this questioning was conducted slowly and thoroughly. This was different from the prior question, which focused on just a very generalised ad description. Here, message recall was being assessed which serves as another measure of unprompted campaign recall.

Unprompted message recall was 22% amongst those who had seen bin system ads or messages (n=173). Of the 78% of respondents that said they had seen or heard bin information or advertising but could not recall a Recycle Right® campaign message, almost half (45%) had no specific message recall while the remaining 33% recalled messages that were not part of the Recycle Right® campaign. Instead, these “other” messages were generally about bin collection days or described at the level of “general recycling rules”. Two exceptions were recalling that “one wrong thing can contaminate a whole truckload” and “a free e-waste drop off at Heathfield”.

Of the Recycle Right® campaign messages that were recalled, food scraps going in the green organics bin had the greatest unaided recall at 12% of all respondents who recalled some bin advertising or messages. This was followed by the message to only put organic material in the green bin (8%). The remaining Recycle Right® messages each received low mentions but a wide range of them were recalled by at least some respondents.

Table 4: Unaided recall of campaign messages

	2014	
	n	%
Green bin		
Food scraps	*20*	*12*
Only organic material	*14*	*8*
No dirt or rocks	*3*	*2*
No hoses or tools	*1*	*1*
No plastic bags	*3*	*2*
Good to Go		
Egg shells	*1*	1
Seafood	*1*	1
Cheese and Yoghurt	*1*	1
Meat & bones	*3*	*2*
Yellow bin		
Rinse bottles & jars	*5*	*3*
Empty paint tins OK	*1*	1
Pizza box no food	*1*	1
Empty aerosol cans	*1*	1
No plastic bags	*4*	*3*
No Polystyrene	*3*	*2*
No nappies	*1*	1
Red Bin		
No electronic waste	*3*	*2*
Hazardous waste		
No CFLs	*1*	1
No batteries	*2*	1
No liquid paint	*4*	*2*
Recycle batteries, globes, oil	*4*	*2*
Other	*57*	*33*
No recall of messages	*78*	*45*
Total	173	NA

Prompted Recall of Recycle Right® Campaign

The 167 respondents who did not recall seeing or receiving any bin related information, or who were unsure if they had, were prompted for campaign recall. So too were those who said they had seen advertising or information for bins but that were unable to recall the “thumb up or down” when visually describing what they could recall unprompted (n=168). They were prompted in three ways.

> *“Have you seen an advertisement with YELLOW or GREEN thumbs indicating what to and what not to put in the yellow-lid RECYCLING bin or green-lid ORGANICS bin or tips on how to use it them?”*
>
> *“Have you seen an advertisement with RED or PURPLE thumbs indicating what should not go in any of the bins and how to manage materials that might be a hazard?”*
>
> *“Have you seen an advertisement with a picture of a bin and the message "is good to go" indicating what you can put in the green organics bin?”*

Yellow or Green prompted recall

Table 5: Prompted recall of recycling and green thumbs Recycle Right® ads

	2014 (no general ad recall or campaign specifics recall)		2014 (general ad recall but no unprompted campaign recall)		2014 total prompted recall	
	n	%	n	%	n	%
Recall recycling and green organics	21	13	34	20	55	16
Recall only recycling	12	7	16	10	28	8
Recall only green organics	6	4	6	4	12	4
No recall	118	71	101	60	219	65
Unsure/neither	10	6	11	6	21	6
Total	167	101	168	100	335	100

With prompting, 16% respondents recalled both the recycling and organic campaign elements and an additional 12% recalled just one of the two elements. In total, this is prompted recall by almost three in 10 of those who initially did not recall the campaign specifics of a thumb up or down.

Red or Purple

The same question was asked for the purple and red campaign elements. One in 10 recalled with prompting. The prompted recall amongst those who said they had seen some advertising or information for their bin system was double that (13%) of those who did not recall any such information (6%) as might be expected. Their general higher claimed exposure to bin information would lead you to expect better memory of campaigns when prompted.

Table 6: Prompted recall of purple and red thumbs Recycle Right® ads

	2014 (no general ad recall or campaign specifics recall)		2014 (general ad recall but no unprompted campaign recall)		2014 total prompted recall	
	n	%	n	%	n	%
Recall	10	6	23	13	33	10
No recall	156	93	128	74	284	85
Unsure/neither/refused	1	1	22	13	18	5
Total	167	100	173	100	335	100

Is Good To Go

The “Good to Go” prompting found 15% aided recall. The same pattern was seen of higher recall amongst those who were aware of general information or campaigns about their bin system, compared to those who were not.

Table 7: Prompted recall “Good to Go”

	2014 (no general ad recall or campaign specifics recall)		2014 (general ad recall but no unprompted campaign recall)		2014 total prompted recall	
	n	%	n	%	n	%
Recall	16	10	32	20	48	15
No recall	146	88	109	70	255	79
Unsure/neither/refused	4	2	15	10	19	6
Total	167	100	156	100	322	100

In total, 26% of all respondents claimed to recall at least some of the Recycle Right® campaign when prompted.

Calendars & Magnets

Respondents were asked if they had received a calendar from their council about recycling in the last 12 months. 30 respondents (9%) had already mentioned their receipt of the calendar in the unaided recall questions. When added to the 55% recalling when prompted, claimed receipt was high at 64%.

Table 8: Recall of receiving calendar

	2014	
	n	%
Yes	217	64
Unprompted	***30***	***9***
Prompted	***187***	***55***
No	99	29
Unsure	24	7
Total	340	100

Of those who recalled receiving a calendar (n=217), 71% said they had referred to it.

Respondents were asked if they had received a magnet in the mail, or attached to their roll of compostable bags, or in their new caddy when this was rolled out. The magnet had information about putting food scraps in the green bin. 18% (n=60) said they had, 79% (n=269) said they had not while the remaining 3% (n=11) were unsure.

Claimed behavioural changes

Respondents recalling the Recycle Right® campaign (n=164) were asked whether they had disposed of any of the items they mentioned differently since hearing or seeing the advertisements.

Over half of the respondents (55%) stated that they had not changed their behaviour since hearing the advertisements. This is comparable to the 53% in 2012. In 2014, compared to 2012, very few respondents were unsure if their behaviour had changed (27% dropped to 7%). 12% of respondents said their behaviour had not changed because they were doing everything correctly already.

The response categories were changed in 2014 to more closely reflect the campaign messages (but the question remained unprompted) and changed bin best practice (eg ban on electronics to landfill). For this reason the data across years is not always directly comparable. The key claimed behaviour change was around green organics material – a key theme of the campaign. In comparison, all other disposal behaviours saw far more modest levels of claimed change, but this is partly because the respondents stated (self assessment) that they were already doing the behaviour the campaign is seeking. These findings show that the campaign had cut through in its key messages with at least some respondents who needed to make a behaviour change. It also will have reinforced the message amongst those already doing the desired behaviour, thus refreshing and reinforcing memory structures. That said, it also shows that a number of respondents are not responding to the messages because they see themselves as being compliant already. Whether this is factually the case or not, it provides a strong barrier to gaining message cut through amongst this group.

Table 9: Which items did you dispose of differently after receiving the Recycle Right® campaign information?

	2012		2014	
	n	%	n	%
Green bin – only organic material	3	3	49	32
Green bin – Food scraps in green bin	-	-	26	17
Would not dispose of any differently as doing correctly already (claimed)	-	-	19	12
Other	7	6	11	7
Unsure	30	27	11	7
Hazardous waste - batteries	-	-	5	3
Recycling – no polystyrene	1	1	5	3
Recycling - no plastic bags	5	4	4	3
Red – no electronic waste	-	-	3	2
Recycling – rinse bottles and/or jars	5	4	2	1
Recycling - empty dry paint tins	0	0	2	1
Hazardous waste –globes	-	-	2	1
Hazardous waste – recycle batteries, globes, oil	-	-	2	1
Recycling – no crockery, oven proof glass and/or drinking glasses	1	1	1	<1
Green bin – no dirt and/or rocks	0	0	1	<1
Green bin – no garden hose, tools and/or plant pots	0	0	1	<1
Green bin - no plastic bags in green bin	-	-	1	<1
Recycling – empty aerosol OK	-	-	1	<1
Good to Go -egg shells OK	-	-	1	<1
Good to Go -meat & bones OK	-	-	1	<1
Pizza boxes	3	3	0	0
Fabric and clothing	1	1	0	0
Total	112	NA	164	NA

Other items that respondents claimed to dispose of differently since hearing/seeing the ads include soft plastics, corks, and shredded paper (in the green organics bin). Several respondents also stated they were just generally more careful about what they put where.

Seeking further information

Respondents that recalled the Recycle Right® campaign were asked whether they had visited the Zero Waste SA website or rung the customer service hotline mentioned in the advertisements. The majority of the respondents had not done so (85%), but 13% of respondents said they had. This is a significant increase on the 2010 and 2012 result which both had 2% claimed visitation or contact.

Table 10: Have you called the customer service hotline or visited the website?

	Benchmark 2010		2012		2014	
	n	%	n	%	n	%
No	179	93	109	97	287	85
Yes	8	4	2	2	45	13
Don't know/refused	5	3	1	1	8	2
Total	192	100	112	100	340	100

Summary

In summary, 2014 saw overall higher levels of perceived exposure to messages around bin usage, compared to previous years (51% compared to 27% in 2012).

The levels of unaided and prompted Recycle Right® campaign recall were similar to, but slightly higher than, those seen in 2012.

- Unprompted campaign visual/descriptive recall – 13% of all respondents
- Unprompted campaign message recall – 11% of all respondents
- Total unprompted recall – 22% of all respondents (15% in 2012)
- Prompted campaign recall – 26% (21% in 2012)

The total campaign recall of 48% (36% in 2012) is an extremely positive finding in light of the modest campaign budget and the limited use of media to create cut-through and reach. It shows the build and increasing householder reach of this campaign over time.

The main findings that differed from 2012 were higher levels of calendar recall and higher claimed contact with either the Zero Waste SA website or phone line. These too are both positive findings.

PERCEPTIONS & OBJECTIVE KNOWLEDGE OF RECYCLING

This section compares consumer perceptions about recycling in 2014 to those before the Recycle Right® campaign. It looks at the extent to which respondents feel they have received sufficient information to use the three-bin kerbside waste collection system properly. This section also looks at objective knowledge of the bin system. Given that householders generally feel confident in their knowledge about recycling, but that contamination still appears in the recycling stream, there may be a disconnect between householders' perceived and actual levels of knowledge. Alternatively they could feel generally well informed but be unsure on specifics. This may be evidenced in misunderstandings about (a) which bin items should be placed in and (b) procedural knowledge, i.e. how items should be prepared for recycling. Batteries of questions relating to these two issues were included as objective assessments of knowledge in the benchmark research as well as in the 2012 and 2014 research.

General orientation towards recycling

Fewer questions were asked about consumer perceptions in the 2014 research than in the 2010 and 2012 research as high levels of agreement were found for many perceptions about recycling and so limited change was possible/needed.

Respondents were asked to rate how much they felt their recycling efforts were worthwhile. Answers were collected on a scale from "0" (completely disagree) to "10" (completely agree) and then grouped into fewer categories to simplify reporting. This question was not asked in previous years.

A positive result for recycling perceptions is that only a very small number of respondents felt that their recycling efforts were not worthwhile (2%) and the vast majority of householders felt their efforts did make a difference (93% agreement). This indicates that improper recycling practices are likely to result from incorrect knowledge or bad habits rather than attitudinal incongruence with the activity.

No statistically significant rating difference was seen between those that could recall the Recycle Right® campaign and those that could not for feelings of recycling efforts being worthwhile.

Table 11: I feel my recycling efforts are worthwhile

	2014	
	n	%
Strongly agree (8, 9, 10)	280	82
Agree (6, 7)	39	11
Neither agree nor disagree (5)	14	4
Disagree (3, 4)	3	1
Strongly disagree (0, 1, 2)	1	<1
Unsure/Refused	3	<1
Total	340	100

Mean agreement score (out of 10)	8.7
Standard deviation	1.5

Perceived knowledge about recycling

Prior to the implementation of the Recycle Right® campaign, most householders already felt that they had received sufficient information in order to use their kerbside-bin system properly. The wording of the question changed slightly since the 2010 benchmark from: “I feel I have been given sufficient information about how to use my *three-bin* system properly”, to: “I feel I have been given sufficient information about how to use my *kerbside-bin* system properly.” However, this change should not affect results and was changed to ensure all respondents were included, and not only those with all three bins.

Table 12: "I feel I have been given sufficient information about how to use my kerbside-bin system properly"

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Strongly agree (8, 9, 10)	253	73	294	69	226	67
Agree (6, 7)	52	15	64	15	64	19
Neither agree nor disagree (5)	18	5	36	8	20	6
Disagree (3, 4)	13	4	18	4	16	5
Strongly disagree (0, 1, 2)	8	2	11	3	11	3
Unsure/Refused	2	1	6	1	3	1
Total	346	100	429	100	340	100

	2010	2012	2014
Mean agreement score (out of 10)	8.3	7.9	7.7
Standard deviation	2.1	2.1	2.1

Prior to the Recycle Right® campaign, close to three-quarters of respondents (73%) strongly agreed with the statement "I have been given sufficient information about how to use the three-bin system properly". This was reflected in a high mean agreement level of 8.3 out of 10. A small number of respondents felt they had not been adequately informed, with 6% disagreeing or strongly disagreeing with the statement. Overall, these results declined slightly over the Recycle Right® campaign from between 2010 and 2014. Yet between 2012 and 2014 the results were not significantly different.

This finding shows that the majority of respondents feel they have been given sufficient information on their bin system. Incorrect bin use is not likely to be attributed to respondents feeling they don't have access to the information needed to use the system properly.

Those who recalled the Recycle Right® campaign (either unprompted and prompted) gave higher mean agreement with the statement, as might be expected (8.8 mean compared to 7.7 no recall, $p<.00$)

These findings do not mean communication is no longer needed. There is a need to refresh and reinforce the bin usage messages. Memory structures erode over time, and coupled with the fact that what goes in each bin changes with technology and infrastructure, there is a need for continued communication with householders to both maintain and improve bin usage.

Perceived barriers

Respondents were asked if there was anything that was stopping them recycling as much as they would like. The question was again unprompted, multiple response and new in 2014.

Table 13: Barriers to recycling

	2014	
	n	%
No	242	71
Other	32	9
Recycling bin gets too full	18	5
Need more information	18	5
Green bin gets too full	15	4
Too busy	13	4
General bin capacity/frequency of collection	10	3
Unsure	7	2
Other household members don't participate	3	1
Total	340	NA

Seven in 10 respondents did not perceive any barriers to recycling. The key perceived barriers were the capacity or frequency with which bins were collected (12% of stated reasons and the majority of "other" responses). Lack of information was perceived by only 5% of respondents. This could potentially present a challenge to any recycling campaign aiming to achieve cut-through and educate households. If householders think they already know how to recycle correctly and that there are no barriers, they will be less likely to pay attention to communications about recycling as they do not feel it is relevant to them. Messages will need to be innovative and address this issue to break through this perception.

Which bin should it go in?

Respondents were asked about what they would do if they were unsure how best to dispose of an item they no longer wanted. The question was unprompted and was multiple response. It was new in 2014 but is similar to a question asked in the 2012 Householder Survey conducted by Zero Waste SA and so these are the figures used for comparison purposes. Results show approximately a quarter (26%) would use the landfill bin or dump for disposal. 47% said they would seek information from a source (59% in 2012), 8% would store it (10% in 2012), while 5% would use the hard waste collection (12% in 2012). Overall, the 2014 research has similar findings, but with greater stated use of the bin/dump and lesser of hard waste, storage or information seeking.

Table 14: Seeking info for disposal when unsure

	2014	
	n	%
Waste bin or dump	87	26
Council (in general)	72	21
Other	54	16
Unsure	51	15
Friends & family	30	9
Council web site	29	9
Store	26	8
Zero Waste SA web site	20	6
Hard rubbish	17	5
Other info source	8	2
Total	340	NA

Improved specific item disposal behaviour

Householders were read a list of items and asked to indicate where they would dispose of each (into the general waste bin, the recycling bin, the green organics bin or “somewhere else”). These were posed as hypothetical questions - respondents were told it did not matter whether they disposed of these items, but were simply asked where they would put them if they had to.

The correct disposal behaviour of a number of items improved from the 2010 benchmark research in comparison to the 2014 research conducted during and after the Recycle Right® campaign. The biggest improvements were seen in correct disposal behaviour from 2010 to 2014 in the areas of:

- Dirt, bricks or rocks (52% correct in 2010, 75% in 2014)
- Crockery, oven glass or drinking glasses (41% correct in 2010, 57% in 2014)
- Polystyrene foam (65% correct in 2010, 74% in 2014)
- Clothing or fabric (73% correct in 2010, 81% in 2014)
- Garden implements (64% correct in 2010, 71% in 2014)

Items that still show room for improvement

Some items still show room for improvement in terms of where householders were disposing of them were:

- Crockery, oven glass or drinking glasses (32% incorrect disposal in 2014)
- Polystyrene foam (24% incorrect disposal in 2014)
- Dirt, bricks or rocks (25% incorrect disposal in 2014)
- Garden implements (27% incorrect disposal in 2014)
- Plastic bags (21% incorrect disposal in 2014)
- Clothing or fabric (14% incorrect disposal in 2014)
- Pizza boxes with food (25% incorrect disposal in 2014)
- Soft plastics (10% incorrect disposal in 2014)

Breakdown of item disposal responses

The breakdown of responses for each item follows.

Crockery, oven glass and drinking glasses should be disposed of in the waste bin or somewhere else. Respondents disposing of these items using the recycling or green organics bins are incorrectly disposing of these items and would be contaminating these waste streams.

Table 15: In which bin would you place crockery, oven glass or drink glasses?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Waste bin	143	41	236	55	193	57 ↑
Recycling bin	169	49	159	37	109	32 ↓
Somewhere else	18	5	27	6	31	9
Unsure / refused	16	5	7	2	7	2
Total	346	100	429	100	340	100

The majority of “somewhere else” responses stated that they would take the non-broken items to charity. The rest said they would use their waste bin for broken items and place non-broken in the recycling (incorrectly), or they would place drinking glasses in the recycling bin (incorrectly, with the remainder claiming to keep the items.

In the benchmark study, 54% of respondents indicated they would dispose of crockery, oven glass or drinking glasses incorrectly or were unsure. This included 49% of respondents disposing of the items using the recycling bin. This confusion is understandable given that other glass products (such as bottles) can be placed out for kerbside recycling. The proportion of respondents disposing of crockery, oven glass or drinking glasses incorrectly in 2014 significantly decreased from these benchmark levels (34% disposing incorrectly or unsure). The proportion using the waste bin also increased from the benchmark, but not significantly between 2012 and 2014.

Table 16: In which bin would you place dirt or rocks?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Waste bin	89	26	138	32	82	24
Somewhere else	47	14	119	28	127	37 ↑
Unsure / refused	84	24	72	17	59	17
In garden/ on property	42	12	51	12	46	14
Green organics bin	82	24	39	9	19	6 ↓
Recycling bin	2	1	10	2	7	2
Total	346	100	429	100	340	100

Responses were asked about the disposal of dirt and rocks. Three quarters of respondents selected appropriate disposal methods (75%) in 2014 such as placing them in the waste bin (24%), distributing them around their garden (14%), or disposing of them in some other way (37%) such as leaving them for the hard rubbish collection or taking them to the dump. This is an improvement from the benchmark research, where only one half of the respondents disposed of these items appropriately (52%, $p<0.00$).

Fewer than one in 10 selected the incorrect option of the green organics bin (6%). 17% of respondents remained unsure of where they would put dirt or rocks, indicating room for improvement in the disposal of these items. However, there were many positive changes from the benchmark study, the key one being a decrease in the proportion of respondents using the green organics bin for disposal of these items (24% in 2010 c.f. 6% in 2014) and a decrease in the proportion of respondents unsure of where to dispose of these items (24% in 2010 c.f. 17% in 2014). An increase in respondents placing the items “somewhere else”, including in their garden or on their property also occurred in 2014 (26% in 2010 c.f. 51% in 2014), which is also a positive result.

Table 17: In which bin would you place polystyrene foam (e.g. meat trays)?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Waste bin	220	64	303	71	242	71
Recycling bin	111	32	111	26	83	24 ↓
Somewhere else	5	1	9	2	9	3
Unsure / refused	10	3	6	1	6	2
Total	346	100	429	100	340	100

The majority of respondents indicated they would correctly dispose of polystyrene foam via the waste bin (71%), however, a quarter said they would incorrectly dispose of it in the recycling bin (24%). Despite the proportion of respondents disposing of this item in the waste bin increasing significantly in 2014 (64% in 2010 c.f. 71% in 2014), scope for improvement in knowledge still exists, as foam of any sort is currently not accepted for recycling.

Table 18: In which bin would you place garden implements (e.g. a piece of hose)?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Waste bin	209	60	279	65	223	66
Recycling bin	92	27	96	22	86	25
Somewhere else	15	4	27	6	16	5
Unsure / refused	21	6	24	6	8	2
Green organics bin	9	3	3	1	7	2
Total	346	100	429	100	340	100

The majority of respondents correctly identified the waste bin as the appropriate disposal route for garden implements (66%) and this is an increase on 2010 (60%) but not 2012. However, a significant proportion said they would place these items in the recycling bin (25% and not different statistically from 2010) and a few respondents still stated that they would place them in the green organics bin (2%). Overall, the proportion of respondents stating that they would place garden implements in the recycling bin has not decreased significantly in comparison to the benchmark research, but the proportion being unsure has decreased as more opt for the waste bin.

Table 19: In which bin would you place clothing and fabric?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Waste bin	174	50	218	51	174	51
Charity store	61	18	127	30	87	26
Recycling bin	74	21	64	15	49	14
Unsure / refused	17	5	9	2	16	5
Somewhere else	18	5	8	2	13	4
Green organics bin	2	1	3	1	1	<1
Total	346	100	429	100	340	100

Half of the respondents indicated that they would dispose of clothing and fabric in the waste bin (51%), which is correct within the parameters of the three-bin kerbside system. Over a fifth of respondents stated other, more environmentally friendly, means of disposal including charity stores (26%) or using fabric as rags (the vast majority of “somewhere else” responses). However, 14% said they would place these items in the recycling bin where they are considered contaminants. This is a decrease from the benchmark results (21%) and is stable from 2012, but still signals that there is room for improvement.

The 2010 benchmark research asked about plastic bags and other soft plastics in one question. In the 2012 research, these two items were distinguished in the questions to see if respondents would dispose of them differently. Therefore the results from 2014 are compared to 2012 only.

Table 20: In which bin would you place soft plastics (e.g. cling wrap)?

	2012		2014	
	n	%	n	%
Waste bin	364	85	290	85
Recycling bin	57	13	35	10
Unsure / refused	5	1	5	2
Somewhere else	3	1	9	3
Green organics bin	0	0	1	<1
Total	429	100	340	100

When respondents were asked about their disposal of soft plastics (separate to plastic bags), correct disposal was stable from 2012. One in 10 respondents still would place plastic soft plastic incorrectly in the recycling bin. However, almost all "somewhere else" responses related to Coles recycling showing a small but growing awareness of this option.

Table 21: In which bin would you place plastic bags?

	2012		2014	
	n	%	n	%
Waste bin	299	70	206	61
Recycling bin	88	21	71	21
Somewhere else	35	8	51	15
Unsure / refused	7	2	11	3
Green organics bin	0	0	1	<1
Total	429	100	340	100

The disposal behaviour of plastic bags changed slightly between 2012 and 2014. A large, but lower than 2012, proportion of respondents (61% in 2014, 70% in 2012) correctly said that they would dispose of plastic bags using the waste bin. However, one in five respondents would still incorrectly dispose of plastic bags using the recycle bin (stable from 2012), indicating room for improvement. An increase in the proportion of respondents who claim that they would dispose of plastic bags "somewhere else" in 2014 in comparison to 2012, showed almost all these responses referred to reusing or recycling through Coles (8% in 2012, 15% in 2014). Again, this is a positive finding.

Respondents were asked a new direct question about their household's management of food scraps in 2014. The question was "How do you dispose of food scraps in your house?" and was multiple response. The results show there is scope for improvement of practice amongst three in 10 respondents who currently put food scraps in the waste stream. Almost three in 10 said they put food scraps in the green bin, which is the correct bin. Composting and animals/sink were the majority of other responses.

Table 22: How do you dispose of food scraps in your house?

	2014	
	n	%
Don't separate – waste bin	102	30
Compost	102	30
Animals/sink	81	24
Separate bin/bucket then green bin	65	19
Other	41	12
Bio bin/caddy then green bin	28	8
Worm farm	18	5
It varies	14	4
Total	340	NA

* Note: total is greater than 100% because the question was multiple response

Within the context of bin systems, respondents were also asked specifically which bin food scarps should be placed in. The responses are similar to the previous more general question (which was in another section of the questionnaire) as compost, animals and other sources were also mentioned.

Table 23: In which bin would you place food scraps?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Waste bin	129	37	153	38	126	37
Green organics bin	104	30	119	29	100	29
Compost	64	18	87	21	63	19
Feed to animals or birds	23	7	24	6	28	8
Garden	11	3	11	3	6	2
Unsure / refused	12	3	7	2	2	<1
Recycling bin	3	1	4	1	5	<2
Somewhere else	6	3	3	1	10	3
Total	346	>100*	408	100	340	100

* Note: total is greater than 100% because some respondents gave two answers

Nearly all respondents said they would dispose of fruit and vegetable scraps in an appropriate manner, with many using the waste bin (38%), green organics bin (29%), a compost system (19%), feeding them to the birds or animals (8%) or disposing of them in their garden (2%). The latter disposal routes in particular are desirable in terms of their resource recovery potential and diversion of waste from landfill. These results have been stable across the research. Given that increasingly councils accept food scraps in the organics stream, this is the area that still shows scope for improvement.

Less than 1% said that they would place food scraps in the recycling bin, indicating that this should not be a significant source of contamination. However, results show there is room for improvement in terms of environmental outcomes (encouraging composting behaviour rather than use of the council provided waste stream – especially diversion from the land fill bin).

The disposal behaviour of specific food scraps of meat and dairy showed improved disposal in 2014. Fewer respondents chose the waste bin and more the green organics. This improvement is seen from the 2010 and 2012 results. However, overall, the majority of respondents are still using the waste bin, highlighting continued need for education on this issue.

Table 24: In which bin would you place food scraps such as meat and dairy products (or meat and bones in 2014)?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Waste bin	244	71	307	72	211	62
Green organics bin	33	9	44	10	62	18
Feed to animals or birds	27	8	29	7	48	14
Compost	29	8	25	6	5	2
Somewhere else	7	17	15	3	7	2
Recycling bin	0	0	5	1	4	1
Unsure / refused	12	3	4	1	3	1
Total	346	>100*	429	100	340	100

* Note: total is greater than 100% because some respondents gave two answers

The majority of respondents dispose of food products such as meat and bones in the waste bin (62%). While some use the green organics bin (18%), feed them to their animals (14%) or use a composting system (2%). These later, environmentally friendly alternatives are less common for meat and bones than for general food scraps. This is perhaps due to concerns about odours or attracting vermin, or lack of awareness that meat and bones (or dairy in 2010 and 2012) items can be disposed of in this way. It is a concern to see that some people are placing meat and bones in the recycling, however, this is a very small proportion of respondents (1%), so the contamination caused by this behaviour should be minimal.

Between 2010 and 2014 there was a drop in the proportion disposing via the waste bin and a rise in the use of the green organics bin and feeding to animals. This is in line with the campaign messages to use the green organics bin. There was a slight wording change from 2010 and 2012 to 2014. The question related to “meat and dairy” in the first two pieces of research and “meat and bones” in 2014. This is only a minor wording change that narrows the meaning of the question slightly.

The following questions were not asked in the original 2010 benchmark study. They were added to ensure behaviour relating to campaign messages was measured for all items mentioned in the 2012 Zero Waste SA Recycle Right® campaign and then further refined in 2014. In 2014 the question was split into a situation where pizza boxes had no food scraps in them and one where they did. As the

2012 research did not use this distinction, both the 2014 questions are compared to the combined 2012 results.

Table 25: In which bin would you place pizza boxes (with no food scraps in 2014)?

	Total 2012		2014	
	n	%	n	%
Recycling bin	331	77	310	91
Waste bin	67	16	16	5
Somewhere else	14	3	2	<1
Unsure / refused	11	3	5	2
Green organics bin	6	1	7	2
Total	429	100	340	100

There was a high level of correct behaviour identification for this question with more than nine in 10 respondents correctly stating they would recycle the box.

Table 26: In which bin would you place pizza boxes (with cheese and left over pizza in 2014)?

	Total 2012		2014	
	n	%	n	%
Waste bin	67	16	158	47
Recycling bin	331	77	85	25
Somewhere else	14	3	8	2
Clean and then recycling	-	-	39	12
Green organics bin	6	1	32	9
Unsure / refused	11	3	18	5
Total	429	100	340	100

When a pizza box contains food scraps, we see an increase in the proportion of respondents placing the box in the waste bin (47% up from 5% for a clean box). As a disposal means, 9% stated the green organics bin which is the correct answer. This shows the scope for continued messages on this topic. 12% of respondents said they would clean the box and then place it in recycling which is also a correct (but unnecessary) behaviour. A number of these respondents also said they would put the food scraps in the waste bin, which shows there is still scope for reinforcing the message that food scraps go in the green organics bin or are composted.

Procedural knowledge

For context, respondents were asked, in general, how they managed their recycling. The results show that six in 10 do their recycling separation inside the home, prior to disposal. Four in 10 work on a “demand” basis, visiting the recycling bin as items are generated. Very few lack an approach or do separation of waste and recycling at the actual bin.

Table 27: Do you have a separate bin for recyclables inside your home, or do you take them out to the recycling bin as you go, or separate them out of the general waste bin once you are outside at the bins?

	2014	
	n	%
Separate inside house	192	57
Take outside as needed	132	39
Separate at bin	6	2
Varies	8	2
Don't recycle	1	<1
Other	1	<1
Total	340	102

Respondents were asked about how often they present their bins for collection to investigate whether people wait until they are full, or just present every collection. Presenting bins for collection when they are not full incurs unnecessary costs for councils and so gaining some current data on the behavior is worthwhile.

Table 28: Do you put your bins out at every council collection, or only when they are full?

	2014	
	n	%
Every collection	233	68
Only when full	54	16
It varies by bin	46	13
Other	7	2
Total	340	100

The results show that for seven in 10 respondents, the behaviour is habitual (i.e. present each collection) rather than need (i.e. when full) driven. The "other" responses primarily were about presenting the waste bin every time but the yellow and green only when full or when they reach a certain weight. These results show there is substantial opportunity to educate people that bins are better presented only when at capacity, rather than at every collection opportunity.

Householders were read a series of statements about ways in which they might prepare items for disposal and were asked to indicate if they do the following things "always", "sometimes" or "never":

- Rinse bottles and cartons (desirable)
- Remove lids from jars and bottles (desirable)
- Hold recyclables together in a plastic bag when putting them in the recycling bin (undesirable).

Overall, results were quite positive. Fewer than one in 10 respondents claimed to “never” rinse bottles and cartons (7%) or “never” remove lids from jars and bottles (4%). For these items, over three quarters of respondents claimed to consistently (“always”) prepare them for disposal in the correct manner. There was, however, room for improvement in terms of respondents who would do these things inconsistently (“sometimes”).

The proportion of respondents “always” holding organics and recyclables together with a plastic bag increased from 1% in the benchmark to 10% in the 2012 research and dropped to 5% in 2014. However, this may not be a negative change, as some councils have begun supplying their residents with compostable plastic bags for food scraps. Therefore, more respondents would be holding food scraps in a compostable plastic bag before placing them in the green organics bin.

Breakdown of responses

The breakdown of responses for each recycling procedure is presented and discussed in the following tables.

Table 29: When you dispose of plastic bottles and cartons, do you rinse them out first?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Always	262	76	336	78	270	79
Sometimes	47	14	61	14	47	14
Never	34	10	31	7	22	7
Unsure / refused	3	1	1	0	1	<1
Total	346	100	429	100	340	101

The majority of respondents claimed to “always” rinse bottles and cartons out before disposal (79%) and this proportion has stayed stable across the research. The remaining 14% do so only “sometimes” and 7% “never” showing two in 10 respondents can still improve their practice in relation to plastic bottles and cartons disposal.

Table 30: When you dispose of drink bottles or jars, do you remove the lids first?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Always	285	82	371	86	294	87
Sometimes	34	10	32	7	28	8
Never	22	6	24	6	15	4
Unsure / refused	5	1	2	0	3	1
Total	346	100	429	100	340	100

More than eight in 10 respondents (87%) claimed that they “always” remove the lids from bottles and jars before disposal. Less than one in 10 do so “sometimes” (8%) with only 4% “never” performing this activity. The results also remained unchanged across the research years.

Table 31: Do you hold your recyclables or organics together using a plastic bag when you put them in the recycling or green organics bins?

	2010 Benchmark		2012		2014	
	n	%	n	%	n	%
Always	5	1	45	10	17	5
Sometimes	8	2	30	7	22	7
Never	225	95	349	81	301	88
Unsure/refused	0	0	5	1	0	0
Total	238	100	429	100	340	100

It was pleasing to see that the majority of respondents (88%) claimed they “never” hold their recyclables together in a plastic bag. Again, the results have been fairly stable across the years.

An extra procedural question was asked in 2014, to identify respondents’ behaviour regarding disposal of containers with food scraps. The results are detailed in Table 32.

Table 32: If you needed to dispose of a plastic container that still had food in it, like a half eaten take-away, would you empty it first and then put it in the recycling bin or put it still full in the general waste bin?

	2014	
	n	%
Empty and put in recycling	223	65
As is in waste bin	68	20
Varies	37	11
As is in recycling	9	3
Unsure / refused	3	1
Total	340	100

The majority of respondents would follow the correct procedure of emptying the container and the recycling it. Two in 10 would take the less desirable option of putting into the waste bin. 3% of respondents would create contamination by putting it straight into the recycling stream.

Again, as a new question, respondents were asked about their disposal of e-waste as during the campaign phase e-waste was banned from landfill. Over half of the respondents (55%) claimed to have used either a council collection or specialist e-waste collector (or both) to dispose of electronic goods. 6% said they used a dump or put in their waste bin still. This shows high levels of new behaviour (i.e. not sending to landfill via the waste bin) occurring in relation to e-waste disposal.

Table 33: Electronics disposal

	2014	
	n	%
Yes collection day	61	18
Yes specialist collector	97	29
Yes - both	27	8
No	124	36
Unsure	12	3
Dump or waste bin	19	6
Total	340	100

Respondents were asked about their use of the Back Light service. There are over 50 drop off locations throughout the state. Given the relative infrequency with which light globes are disposed of, it is not surprising that only 12% said they had used the service.

Table 34: Have you recycled light globes through the Back Light service run through hardware stores?

	2014	
	n	%
Yes	42	12
No	294	87
Unsure	4	1
Total	340	100

Soft plastic recycling is growing, with 19% of respondents claiming to have used Coles to recycle them.

Table 35: Have you ever taken your soft plastics back to a Coles store for recycling?

	2014	
	n	%
Yes	64	19
No	274	81
Unsure	2	1
Total	340	100

Overall knowledge: the level of "incorrect" responding

To gauge respondents' overall level of recycling knowledge, the number of "incorrect" answers per respondent was tallied across all of the objective knowledge questions posed.

Evaluating the number of items for which householders responded incorrectly permits assessment of the change (if any) in overall levels of knowledge following the Recycle Right® campaign. Furthermore, grouping respondents like this enables comparison against demographics and other factors to identify types of householders that show better/ worse knowledge before the intervention, or who are more/ less likely to improve their knowledge afterwards.

Note: in this analysis, a low score is desirable. A lower score indicates a lower rate of incorrect responding, and hence higher levels of knowledge.

Calculating overall knowledge

To calculate respondents' overall level of knowledge prior to the campaign, a value of "1" was assigned to any question that a respondent answered incorrectly, or for which the respondent was unsure. For example:

Respondent places polystyrene in recycling bin. Value = 1
Respondent places polystyrene in waste bin. Value = 0

Where the question was procedural, a response of "sometimes" was considered neither "correct" nor "incorrect" but somewhere in between; an inconsistent behaviour. As such, these responses were attributed a value of 0.5. For example:

Respondent never removes lids from bottles and jars. Value = 1
Respondent sometimes removes lids from bottles and jars. Value = 0.5
Respondent always removes lids from bottles and jars. Value = 0

The classification scheme for all objective knowledge questions is outlined in Appendix 3.

After classifying each response as correct or incorrect, and assigning a value accordingly, a total score for "incorrect answers" across all objective knowledge questions was calculated for each respondent and for each objective knowledge question. As such, the lower the score, the better the respondent's overall recycling knowledge.

Summarising levels of objective knowledge

Incorrect responses were calculated for each of the objective knowledge questions and the equivalent proportion of households that answered the question incorrectly are also noted. In 2014, the disposal of crockery, oven glass and drinking glasses was the objective knowledge question that the highest proportion of respondents answered incorrectly. However, this proportion of respondents did decrease from 2010 (53% in 2010 c.f. 34% in 2014, $p<0.05$). The biggest change from 2010 to 2014 was seen in the objective disposal knowledge of dirt, bricks and rocks. Although the incorrect responses to this question remained high (23%) in 2014, a decrease of 24% was observed in incorrect responses from 2010 (48% in 2010, $p<0.05$).

Two in 10, to three in 10 respondents also selected incorrect responses of objective knowledge for the disposal of garden implements (25% in 2014), polystyrene foam (26% in 2014, down from 35% in 2010, $p<0.05$), plastic bags (24% in 2014 and stable from 2012).

Decreases in incorrect responses were seen for the objective knowledge of disposing of clothing or fabric (27% in 2010 c.f. 19% in 2014, $p<0.05$) and the disposal of soft plastics (25% in 2010 c.f. 12% in 2014, $p<0.05$). Only one increase in the proportion of incorrect responses occurred between 2010 and 2014, which was for holding recyclables or green organics in plastic bags before disposal (3% in 2010 c.f. 12% in 2012 and 5% in 2014). However, this is most likely due to Council regions introducing compostable plastic bags for food scraps, so is not a discouraging result.

Questions that were answered incorrectly by less than 5% of respondents include; disposing of fruit and vegetable food scraps (2%), disposing of meat and dairy food scraps (2%) and disposing of (clean) pizza boxes (2%). This indicates that such items and behaviours should not be a concern for contaminating the kerbside bin system. That said, the waste bin is still used by the majority of respondents for these organic waste streams and, while not contaminating, this is less than best practice.

The distribution of incorrect knowledge scores for each question are outlined in Table 36 below.

Table 36: Benchmark overall knowledge scores - total incorrect answers to objective knowledge questions

	Benchmark 2010		**2012**		**2014**	
	# of incorrect responses	**%**	*# of incorrect responses*	**%**	*# of incorrect responses*	**%**
Dispose of crockery/oven glass/drinking glasses	185	53	166	39	116	34
Dispose of garden implements	122	35	123	29	101	30
Dispose of polystyrene foam	121	35	117	27	89	26
Dispose of dirt/bricks/rocks	254	48	121	28	85	25
Dispose of plastic bags	85	25	95	22	83	24
Dispose of clothing/fabric	93	27	76	18	66	19
Dispose of soft plastics	85	25	62	14	40	12
Rinse bottles and cartons	37	11	32	8	23	7
Hold recyclables/organics with plastic bag	5	1	50	12	17	5
Remove lids	27	8	26	6	18	5
Dispose of fruit/vegetable scraps	12	3	11	3	7	2
Dispose of pizza boxes	-	-	11	3	5	2
Dispose of meat scraps	12	3	9	2	7	2
Total	346	NA	429	NA	340	NA

Respondents' overall knowledge

To allow further analysis based on objective recycling knowledge, respondents were divided into three segments based on their individual responses to the objective knowledge questions outlined in Table 36 score. The respondents were then grouped as follows:

- The *best group* of respondents gave between zero and 1.5 incorrect answers
- The *mid group* of respondents gave between two and four incorrect answers
- The *worst group* of respondents gave 4.5 or more incorrect answers.

Table 37 shows the distribution of respondents across the three segments and compares the benchmark 2010 results to the 2012 and 2014 results.

Table 37: Overall knowledge segments distribution

	Benchmark 2010		2012		2014	
	n	%	n	%	n	%
Best group (0 – 1.5 incorrect)	75	22	153	36	186	55
Mid group (2 – 4 incorrect)	163	47	182	42	119	35
Worst group (4.5+ incorrect)	108	31	94	22	35	10
Total	346	100	429	100	340	100

The "best" group has grown again in size in the 2014 research in comparison to the benchmark research, now comprising of more than one half of all respondents (22% in 2010 c.f. 36% in 2012 and now 55% in 2014, p=0.00). The "worst" group has also decreased (31% in 2010 c.f. 22% in 2012 and now 10% in 2014, p=0.00), which is a very positive sign.

No demographic variables such as education, age, income, household type, and employment status showed statistically significant relationships with the overall knowledge segment membership. In 2012, females were found to be more knowledgeable. This trend was apparent again in 2014, but not to a statistically significant extent, suggesting it is only a weak relationship.

Unlike in 2012, respondents that could recall the Recycle Right® campaign were no more likely to be in the "best" group or the "worst ".

While respondents in the "best" group were more likely to agree that their recycling efforts were worthwhile and that they had been given sufficient information about their bin system, these differences were not great enough to be statistically significant. In the benchmark study, the levels of agreement with these statements were not significantly affected by whether respondents were in the "best" or "worst" group, which highlights the limitations of self-assessments of knowledge: Perceptions of competence in using the kerbside-bin system are not always grounded in actual knowledge. This is also apparent in that respondents who answered several questions incorrectly were still highly confident in their knowledge of the kerbside-bin system as those who answered them all correctly. This is not necessarily surprising given that waste disposal behaviours are highly habitual and occur in the home, resulting in little opportunity for feedback when they are performed incorrectly. It does, however, present a significant challenge in gaining cut-through with recycling communications; a belief

that one's recycling knowledge is already sufficient provides no motivation to attend to new pieces of information (particularly when they are delivered in a passive manner such as a letterbox drop).

HAZARDOUS WASTE

In 2014 questions on hazardous waste were included. The term hazardous waste was said to include things like garden chemicals or pesticides, paint, rat poison, pool and spa chemicals, and household cleaners, so that all respondents had a shared understanding of what hazardous waste was.

Respondents were asked if they had ever taken hazardous waste to the hazardous waste depot or used the council mobile collection service. Four in 10 respondents had used either one or both of these services. This compares to the 45% that said they had disposed of hazardous waste before in the 2012 Zero Waste SA Householder survey which also examined hazardous waste issues.

Table 38: Hazardous waste disposal

	2014	
	n	%
Depot	111	22
Mobile collection	17	5
Both	8	2
No	196	58
Unsure	8	2
Total	340	100

Those who had used a depot, mobile service or both were asked when they had last used the service. For the majority (67%), it was over a year ago. In the Householder Research, 51% said they had disposed of hazardous waste over a year ago.

Table 39: Hazardous waste last disposed

	2014	
	n	%
In the past month	5	3
More than a month but less than 6	12	9
6 months to a year	26	19
Over a year	92	67
Can't recall	1	<1
Total	136	100

Respondents were asked if they had any hazardous waste they were currently storing at home that they wanted to get rid of. Almost three in 10 (28%) did. The Householder Research had 20% claiming to have hazardous waste they needed to dispose of. This finding shows continued demand for disposal of these items.

Table 40: Stockpiling of hazardous waste

	2014	
	n	%
Yes	94	28
No	239	70
Unsure	7	2
Total	340	100

OBSERVATIONAL BIN AUDITS

In addition to the telephone surveys, observational bin audits were conducted, in which the recycling green organic and waste bins of willing telephone respondents of the 2014 research were inspected for visible signs of contamination. Additionally, random audits were carried out on bins physically near to these respondents to increase the sample. Waste bins were also inspected for poor practice. These were all visual inspections only – the researchers did not sort through the contents of bins – however, this was generally adequate to assess whether any contaminants were present. Photographic records were taken to match against auditors' notes. The results from the 2014 bin audits are compared to the results of the 2010 benchmark bin audits and the 2012 research.

All audits in the 2014 research were completed over a month period. Bins were audited as close as possible to the council collection day and time to ensure they would contain the majority of what was to be sent into the various waste and recycling streams. 111 bin audits were completed in 2010, and 110 in the 2012 bin audit research. In 2012, 73 recycling bin and 62 green organics bin audits were completed. In 2014, 215 recycling bins were audited, 62 green organics and 285 waste bins.

This section outlines findings from the bin audits in terms of:

- the proportion of recycling and green organics bins that contained contaminants
- the proportion of recycling bins that showed signs of poor practice
- the most prevalent contaminants / examples of poor practice.

Contamination in the recycling bin includes observation of non-recyclable items such as plastic bags, polystyrene foam and food items. Poor practice relates to cases where the household did not rinse recyclable items properly (to the extent that they were significantly soiled), left lids attached to bottles and jars, or placed detached lids in the recycling bin. A full list of observed contaminants and cases of poor practice is presented in Table 45.

Contamination and poor practice: recycling bins

This section outlines the incidence of contamination and poor practice in the observational bin audits both prior to and following the Recycle Right® campaign, and lists the contaminants observed. It starts by examining how full bins were.

Table 41: How full were the recycling bins?

	2012 Audits		2014 Audits	
	n	%	n	%
0-25% Full	13	18	16	8
26-50% Full	23	32	49	23
51-75% Full	19	26	43	21
76-100% Full	18	25	102	49
Total	73	100	210	100

The table shows that the 2014 recycling bins were fuller than in 2012. This is a reflection of the 2014 refined method of doing audits, where they were examined on the day of bin collection and so at their maximum usage level. Only 8% were less than a quarter full. Approximately a quarter of the recycling bins audited were one quarter to half full, 20% were half to three quarters full while almost half were three quarters or more full (49%).

Table 42: Incidence of visible contamination or poor practice in the recycling bin

	Benchmark 2010		2012 Audits		2014 Audits	
	n	**%**	n	%	n	%
Some contaminant(s)/poor practice visible	76	68	63	86	130	61 ↓
No contaminants/poor practice visible	35	32	10	14	84	39
Total	111	100	73	100	214	100

In 2014, contamination and poor practice was significantly lower than in 2012 and 2010.

Table 43: Incidence of visible contamination in the recycling bin

	Benchmark 2010		2012 Audits		2014 Audit	
	n	**%**	**n**	**%**	**n**	**%**
Some contaminant(s) visible	64	58	49	67	92	43 ↓
No contaminants visible	47	42	24	33	124	57
Total	111	100	73	100	215	100

Contaminants in the recycling bin include items that cannot be recycled. When only assessing contaminants, four in 10 of the recycling bins audited in 2014 contained contaminant(s). This is a drop from 2012.

Table 44: Poor practice visible in recycling bin

	Benchmark 2010		2012 Audits		2014 Audits	
	n	**%**	**n**	**%**	**n**	**%**
Poor practice visible	37	36	49	67	72	33 ↓
Poor practice not visible	74	63	24	33	143	66
Total	111	100	73	100	215	100

Two thirds of the 2012 recycle bins audited contained poor practice. Poor practice includes placing recycling items in the recycle bin without appropriately preparing them first, such as not rinsing food from containers, not removing lids from bottles or leaving lids loose in the recycling bin. The incidence of poor practice was an increase from the 2010 audits. However, 2014 saw poor practice levels drop back to 2010 levels.

The observed incidence of different contaminants and cases of poor practice are outlined below in Table 45. Contaminant items are ordered by the proportion of households they were observed in during the 2014 bin audits.

In 2014, 39 respondents had both poor practice and contaminants evident in their recycling bin.

Table 45: Contaminants and poor practice observed in recycling bins

	Benchmark 2010		2012 Audits		2014 Audits	
	n	%	n	%	n	%
Plastic bags/ Soft and mid-strength plastic	45	40	49	67	72	34
Lids attached or separated	39	35	58	79	67	31
Miscellaneous other	13	12	9	12	13	6
Soiled containers	7	6	9	12	13	6
Polystyrene foam	8	7	5	7	11	5
Fabric	3	3	2	3	7	3
Miscellaneous metal	5	5	4	5	5	2
Bundled or shredded paper	0	0	4	5	4	2
Toys and other hard-waste	2	2	2	3	4	2
Organics	7	6	5	7	2	1
E-waste	1	1	1	1	2	1
Food	1	1	3	4	1	<1
Nappies	0	0	0	0	1	<1
Drinking glasses	0	0	2	3	0	0
Crockery	1	1	0	0	0	0
Total	111	NA	73	NA	215	NA

Visible contamination: green organics bins

Green organics bins were also inspected during the bin audits. Because these were not the primary focus of the research, fewer were audited compared to the recycling and waste bins.

Table 46: How full were the green organics bins?

	2012 Audits		2014 Audits	
	n	%	n	%
0-25% Full	21	33	16	26
26-50% Full	8	13	15	25
51-75% Full	15	23	7	11
76-100% Full	14	22	24	39
Overfull	6	9	-	-
Total	64	100	62	100

Audits were conducted on 62 green organic bins. One quarter of these were conducted with bins that were less than one-quarter full. One quarter of the bins (25%) were one quarter to half full, 11% were half to three quarters full and 40% were more than three quarters full.

Table 47: Incidence of visible contamination in the green organics bin

	Benchmark 2010		2012 Audits		2014 Audits	
	n	%	n	%	n	%
No contaminants visible	41	75	53	85	57	93
Contaminant visible	14	25	9	15	4	7
Total	55	100	62	100	61	100

The rate of contamination in audited green organics bins was significantly less than that seen in recycling bins (43% for recycling bins c.f. 7% for green organics bins, p=0.00), suggesting that householders find it easier to distinguish between items that can or cannot go in the green organics bin than they can between items that can and cannot go in the recycling bin.

In the 2014 audits, slightly less than one in 10 green bins audited contained items that were not green waste (7%). This result is lower than the 2010 and 2012 audits (25% and 15% respectively). This is a positive finding.

Contaminants seen in green organics bins included items such as non-compostable plastic bags (5%), dirt (2%) and “other” contaminants (2%).

Table 48: Contaminants and poor practice observed in green organics bins

	Benchmark 2010		2012 Audits		2014 Audits	
	n	%	n	%	n	%
None	41	75	53	85	57	93
Plastic bag	1	2	5	8	3	5
Other plastics	1	2	5	8	0	0
Other	4	7	2	3	2	2
Soil, dirt or sand	0	0	1	2	1	2
Any metal	2	4	0	0	0	0
Total	55	NA	62	NA	63	NA

Waste bins

Waste bins were also audited. Of the waste bins audited, almost three in 10 were less than one quarter full (27%), another three in 10 were between a quarter and half full. Only 10% were half to three quarters full with the remaining 34% three quarters or more full. 1% of bins were more than 100% full, indicating that the lid of the bin could not shut properly.

Table 49: How full were the waste bins

	2012 Audits		2014 Audits	
	n	%	n	%
0-25% Full	18	18	76	27
26-50% Full	27	27	79	28
51-75% Full	32	32	29	10
76-100% Full	19	19	95	34
Overfull	5	5	2	1
Total	101	100	281	100

Half of the waste bins (51%) contained items that should have gone in the recycling or green organics bins. This is an increase on 2012. That said, the items that can go into other waste streams have changed across the course of the research. This indicates that some households do not make the effort to separate items that could be reused. Food scraps especially have had a change in how they are disposed of by councils over this time.

Table 50: Incidence of recycling or organics present in waste bin

	2012 Audits		2014 Audits	
	n	%	n	%
Recycling or organics visible	33	33	137	51
No recycling or organics visible	68	67	144	49
Total	101	100	281	100

Some households audited did not have green bins, or their green organics/recycling bin was observed to be overfull, which also partially explains this behaviour for some households. Of the contaminants, recyclables were the most prevalent (23%), followed by food scraps (21%), compostable paper (7%), garden organics (6%), and other (2%).

APPENDIX 1: RESPONDENTS PROFILE

This section outlines the demographic profile of respondents from each stage of the telephone and bin audit research. In summary, this section shows that the research achieved a good cross-section of respondents responsible for household recycling and this cross section has been stable across the years of research.

Telephone respondent demographics

The telephone samples used were not intended to be representative of the state of South Australia as the respondents were screened to be from the population of "main recycler for household".

Table 51: Gender of survey respondents

	Benchmark 2010		2012		2014	
	n	%	n	%	n	%
Female	211	61	284	66	213	63
Male	135	39	145	34	127	37
Total	346	100	429	100	340	100

The ratio of females to males is around 60:40 in each wave of data collection. Clearly, females are more likely to be the main recyclers in the household.

Table 52: Age make up of survey respondents

	Benchmark 2010		2012		2014	
	n	%	n	%	n	%
18-24 years	8	2	10	2	7	2
25-34 years	25	7	15	3	8	2
35-44 years	57	17	59	14	40	12
45-54 years	85	25	84	20	59	17
55-64 years	80	23	101	24	73	22
65 plus	89	26	160	37	150	44
Refused	2	1	0	0	3	1
Total	346	100	429	100	340	100

Younger respondents (aged between 18-34 years) are under-represented in the sample compared to the other age groups, while respondents aged 65 or over are over-represented. This is to be expected

as in many households the older family members take on the role of recycling and waste management.

Table 53: Household make up of survey respondents

	Benchmark 2010		2012		2104	
	n	%	n	%	n	%
Single, live alone (no children at home)	72	21	78	18	50	15
Single person in shared accommodation (no children)	8	2	7	2	3	1
Single with one or more young children living at home (no older)	15	4	7	2	3	1
Single with one or more older children living at home (no younger)	11	3	22	5	11	3
Single with younger and older children at home	5	1	7	2	4	1
Married/living with partner, no children (young or old) at home	117	34	162	38	137	40
Married / living with partner, young children (no older) at home	48	14	53	12	40	12
Married / living with partner, older children at home (no younger)	37	11	57	13	46	14
Married / living with partner, older and younger children at home	16	5	9	2	8	2
Widowed / widower	9	3	19	4	17	5
Other	6	2	7	2	15	4
Refused	2	1	1	>0	6	2
Total	346	100	429	100	340	100

More than one third of respondents in each stage of data collection were living with a partner and had no children at home (34% benchmark, 40% 2014 research). A further two in 10 were single with no children at home (21% benchmark, 15% 2014 research) while around three in 10 were living with a partner and had children of some age at home (30% benchmark, 28% 2014 research).

Table 54: Education level of respondents

	Benchmark 2010		2012		2104	
	n	%	%	n	n	%
Year 9 or below	28	8	35	8	28	8
Year 10	37	11	51	12	37	11
Year 11	25	7	60	14	34	10
Completed secondary school	75	22	99	23	72	21
Certificate 1 or 2	10	3	10	2	8	2
Certificate 3 or 4	23	7	27	6	32	10
University or other tertiary – undergraduate	84	24	82	19	77	23
University or other tertiary - postgraduate	63	18	59	14	44	13
Refused	1	>0	6	1	8	2
Total	346	100	429	100	340	100

Two in 10 respondents had completed secondary school (22% benchmark, 21% 2014 research). A further four in 10 had completed either a university undergraduate course (24% benchmark, 23% 2014 research) or postgraduate course (18% benchmark, 13% 2014 research). While around three in 10 respondents had not completed secondary school (26% benchmark, 29% 2014 research).

Table 55: Employment status of telephone survey respondents

	Benchmark 2010		2012		2014	
	n	%	%	n	n	%
Retired	99	29	179	42	135	40
Working full time	123	36	113	26	85	25
Working part time	78	23	95	22	68	20
Engaged in full time home duties	15	4	11	3	9	2
On a pension (other than age pension)	9	3	10	2	23	7
Not in paid work but looking	4	1	7	2	4	1
A full time student	8	2	5	1	4	1
A part time student	3	1	5	1	2	1
Both working & studying	2	1	3	1	4	1
Unsure / refused	5	1	1	>0	6	2
Total	346	100	429	100	340	100

The 2014 research included four in 10 retired respondents (40%) compared to the benchmark research, which had roughly three in 10 retired respondents (29%). The benchmark research included slightly more full time workers (36%) than the 2014 research (25%). A further two in 10 respondents were working part time in both research stages (23% benchmark, 20% 2014 research).

Table 56: Income (before tax) of survey respondents

	Benchmark 2010		2012 Total		2014	
	n	%	%	%	n	%
Less than $20,000 pa	45	13	59	12	33	10
$20 000 to less than $40 000 pa	47	14	81	17	55	16
$40 000 to less than $60 000 pa	50	14	51	12	33	10
$60 000 to less than $80 000 pa	40	12	43	12	33	10
$80 000 to less than $100 000 pa	30	9	42	9	24	7
$100 000 to less than $125 000 pa	17	5	24	6	28	8
$125 000 to less than $150 000 pa	16	5	12	4	16	4
$150 000 to less than $200 000 pa	10	3	12	4	13	4
$200 000 and over pa	10	3	7	2	11	3
Unsure / refused	81	23	98	21	94	28
Total	346	101	429	100	340	100

As commonly occurs in telephone surveys, a significant proportion of respondents refused to divulge their household income (23% benchmark, 28% 2014 research).

Just over one in 10 respondents had an income of less than $20,000 per annum (13% benchmark, 10% 2014 research) reflecting the older nature of the sample. Three in 10 respondents fell into the income bracket of $20,000 to $60,000 (28% benchmark, 26% 2014 research). Almost two in 10 respondents had an income of over $100,000 per annum (16% benchmark, 19% 2014 research).

Table 57: Number of people live in household (including respondent)

	2012		2014	
	n	%	n	%
One person	98	23	67	20
Two people	185	43	158	47
Three people	58	14	45	13
Four people	59	14	44	13
Five people	19	4	18	5
Six people	8	2	3	1
Fourteen people	1	>0	1	<1
Refused	1	>0	4	1
Total	429	100	340	1

One quarter of respondents lived on their own (20% in 2014). Four in 10 respondents live in a two-person household (47%) and a further quarter of the respondents live in either three or four people households (26%).

89% of respondents were living in a detached dwelling. Flats and apartments were lived in by 4% of respondents, followed by semi-detached dwellings (3%). The rest were in retirement villages (3%)

Table 58: Number of people involved in recycling for the household (including respondent)

	2012		2014	
	n	%	n	%
No-one	1	>0	3	1
One person	128	30	93	27
Two people	194	45	154	45
Three people	49	11	45	13
Four people	35	8	31	9
Five people	17	4	11	3
Six people	4	1	2	1
Refused	1	<1	1	<1
Total	429	100	340	100

In almost half of the households, two people are involved in the recycling (45%), with a further three in 10 households only having one person responsible for the recycling (27%).

As a percentage of people in the household, 84% of respondents said all members of the household were involved in recycling. 11% of respondents said half of the household or fewer members were involved and the remaining 5% had between 51% and 99% involved.

Audit participant demographics

The demographic characteristics of opt-in bin audit participants (n=105) quite closely match those of the telephone survey. Respondents that completed a telephone survey and opted into the bin audits held the same level of agreement about believing they have received enough information to be able to use their kerbside-bin system properly and their belief that their recycling is worthwhile. This is evidence that the audits were not just opted in to by those who felt they needed more knowledge or those who were more engaged with the topic (through feeling their efforts had a greater impact)

Given the respondents that participated in the bin audits have similar attitudes towards recycling than non-participants and that their observed knowledge skills were no different, it is unlikely that the level of contamination present in the bins audited would be any different from that of the bins not audited.

Bin audit participants were also slightly more likely to have recalled the Recycle Right® campaign (36% of participants c.f. 27% of non-participants, *p*=0.06).

Table 59: Gender of audit participants

	Benchmark 2010		2012 Audits		2014 audits	
	n	%	n	%		
Female	69	62	72	66	60	57
Male	42	38	38	35	45	43
Total	111	100	110	100	105	100

The gender ratio of bin audit participants was approximately 60% females to 40% males in all audit waves. This is representative of the telephone samples (Table 51).

Table 60: Age of audit participants

	Benchmark 2010		2012 Audits		2014 audits	
	n	%	n	%	n	%
18-24 years	1	1	2	2	1	1
25-34 years	9	8	4	4	2	2
35-44 years	19	17	19	17	14	13
45-54 years	23	21	19	17	24	23
55-64 years	36	32	29	26	24	23
65 plus	22	20	37	34	40	38
Refused	1	1	0	0	0	0
Total	111	100	110	100	105	100

As in the telephone samples, a substantial proportion of bin audit participants were aged 55 years or over (52% benchmark, 61% 2014). Fewer than one in 10 participants were aged under 35 years (9% benchmark, 3% 2014). However, this is difficult to avoid considering a similar age skew in the telephone samples, from which participants were recruited (see Table 52).

Table 61: Household makeup of audit participants

	Benchmark 2010		2012 Audits		2014 audits	
	n	%	n	%	n	%
Married/living with partner, no children (young or old) at home	38	34	42	38	34	32
Married/Living with partner with young children (no older) at home	13	12	17	16	16	15
Single, live alone (no children at home)	17	15	15	14	22	21
Married / Living with partner, with older children at home (no younger)	15	14	15	14	17	16
Single with one or more older children living at home (no younger)	4	4	6	6	3	3
Single person in shared accommodation (no children)	2	2	4	4	0	0
Widowed / widower	3	3	4	4	3	3
Married, living with partner, older and younger children at home	4	4	3	3	1	1
Single with one or more young children living at home (no older)	10	9	2	2	2	2
Single with younger and older children at home	1	1	1	1	2	2
Other (specify)	3	3	1	1	3	3
Refused	2	2	0	0	2	2
Total	111	100	110	100	105	100

Bin audit participants were most commonly married or living with a partner and had no children at home (34% benchmark, 32% 2014). Around three in 10 were living with a partner with children of any age in the home (30% benchmark, 32% 2014) while around two in 10 were single with no children at home (15% benchmark, 21% 2014). This closely matches the distribution of household types seen in the telephone sample (Table 53).

Table 62: Highest education level of audit participants

	Benchmark 2010		2012 Audits		2014 audits	
	n	%	n	%	n	%
Year 9 or below	9	8	7	6	11	10
Year 10	10	9	7	6	7	7
Year 11	10	9	14	13	8	7
Completed secondary school	23	21	31	28	20	19
Certificate 1 or 2	6	5	3	3	0	0
Certificate 3 or 4	8	7	7	6	11	11
University or other tertiary – undergraduate	26	23	25	23	33	31
University or other tertiary – postgraduate	19	17	16	15	14	13
Total	111	100	110	100	105	100

Around one quarter bin audit participants had not completed secondary school (26% benchmark, 24% 2014) while a further two in 10 finished secondary school as their highest level of education (21% benchmark, 19% 2014). Around four in 10 had completed a university course, either undergraduate (23% benchmark, 31% 2014) or postgraduate (17% benchmark, 13% 2014). Again, this was very similar to the telephone survey samples (Table 54).

Table 63: Employment status of audit participants

	Benchmark 2010		2012 Audits		2014 audits	
	n	%	%	n		
Retired	30	27	42	38	37	35
Working full time	43	39	32	29	32	31
Working part time	27	24	24	22	21	20
Not in paid work but looking	1	1	5	5	1	1
A part time student	0	0	2	2	1	1
Engaged in full time home duties	6	5	2	2	5	5
A full time student	1	1	1	1	1	1
Both working & studying	0	0	1	1	1	1
On a pension (other than age pension)	2	2	1	1	6	6
Unsure / refused	1	1	0	0	0	0
Total	111	100	110	100	105	100

Four in 10 benchmark audit participants were employed in full time work (39%) compared with three in 10 2014 participants (31%). Fewer benchmark participants were retired compared with 2014 participants, but still a substantial number were retired (27% benchmark, 35% 2014). Around two in 10 audit participants were working part time (24% benchmark, 21% 2014). Again, this closely matches the telephone sample (Table 55).

Table 64: Household income of audit participants

	Benchmark		2012 audits		2014 audits	
	n	%	%	n	n	%
Less than $20,000 pa	12	11	16	15	9	9
$20 000 to less than $40 000 pa	16	14	21	19	18	17
$40 000 to less than $60 000 pa	22	20	15	14	13	12
$60 000 to less than $80 000 pa	11	10	9	8	8	7
$80 000 to less than $100 000 pa	11	10	14	13	6	6
$100 000 to less than $125 000 pa	7	6	6	6	12	11
$125 000 to less than $150 000 pa	6	5	4	4	7	7
$150 000 to less than $200 000 pa	4	4	4	4	8	7
$200 000 and over pa	4	4	2	2	1	1
Unsure / refused	18	16	19	17	23	22
Total	111	100	110	100	105	100

One in 10 bin audit participants earned less than $20,000 per annum (11% benchmark, 9% 2014) while one third fell into the income bracket of $20,000 to $60,000 (34% benchmark, 29% 2014). Between one and two in 10 participants earned over $100,000 per annum (19% benchmark, 15% 2014). This is also very similar to the telephone sample (Table 56).

APPENDIX 3: QUESTIONNAIRE

Question # 1

Good morning/afternoon/evening, My name is ... and I am calling from the University of South Australia. We're not selling anything, we're conducting some research about your thoughts and experiences with household recycling and the services provided. Can I please speak to the person in your household who does most of the recycling?

reintroduce if necessary

This research will be used to help councils and the State Government improve the use of kerbside bin collections. We would really value your thoughts. All your answers remain strictly confidential and you are never identified as having participated. The questionnaire will take less than 10 minutes. Is now a convenient time to speak with you?

1 Yes
2 No - CALL BACK SCHEDULE
3 Refusal - THANK AND TERMINATE

Question # 2

Firstly, I just need to check which Council Area you live in.

1 Adelaide City
2 Adelaide Hills
3 Burnside
4 Charles Sturt
5 Campbelltown
6 Gawler
7 Holdfast bay
8 Marion
9 Mitcham
10 Murray Bridge
11 Norwood Payneham st Peters
12 Onkaparinga
13 Port Adelaide Enfield
14 Playford
15 Prospect
16 Salisbury
17 Tea Tree Gully
18 Unley
19 Walkerville
20 West Torrens
21 Regional South Australia
22 Unsure - THANK AND TERMINATE
23 None of these - THANK AND TERMINATE

Question # 3

If answered regional

Which regional council do you live in?

1 Adelaide Hills
2 Alexandrina
3 The Barossa
4 Copper Coast/Yorke Peninsula
5 Coorong
6 Flinders Ranges
7 Light Regional
8 Mallala
9 Mount Barker
10 Mount Gambier
11 Murray Bridge
12 Naracoorte Lucindale
13 Port Augusta
14 Port Pirie
15 Victor Harbour
16 Wattle Range
17 Whyalla
18 Yorke Peninsula
19 None of these - THANK AND TERMINATE
20 Unsure - THANK AND TERMINATE

Question # 4

And can I please check that you have three bins for your household - a red, blue or green lid bin for general waste, a yellow one for recycling and a green one for organic waste?

1 Yes - I have all 3 bins
2 No - no organics (green) bin
3 No- no recycling (yellow) bin
4 No- no organics or recycling bins - THANK AND TERMINATE
5 Unsure - THANK & TERMINATE
6 Refused - THANK & TERMINATE

Question # 5

I would like you to think back over the last ten months, since July 2013. Have you seen any advertising or received any information about your recycling, green organics or general waste bins since last July?

1 Yes
2 No
3 Unsure (DO NOT READ)
4 Refused (DO NOT READ)

Question # 6

Where did you see or hear this advertising/information?

Multiple Response. Probe but do not prompt

1 Radio
2 Newspaper - Advertiser or Sunday Mail
3 Newspaper - messenger/regional
4 Banner - over road or pull up
5 Flier from council

6 Magazine from council
7 Magazine from RAA
8 Calendar - in mail
9 TV - Building Ideas segment
10 Online (e.g. Adelaide Now)
11 Letterbox drop general
12 Don't know/Unsure (DO NOT READ)
13 Refused (DO NOT READ)
14 Other (SPECIFY) «»

Question # 7

If recall seeing or hearing recycling advertisement

Could you briefly describe what you have seen or heard?

UNPROMPTED (DO NOT READ) multiple response

1 Visual - A picture of a bin
2 Visual -A thumb up or down
3 Message - 'food scraps are good to go' for items
4 Specific message recalled
5 Unsure
6 Other (SPECIFY) «»

Question # 8

Can you recall what the main message was from the advertising or information ?

Multiple responses possible. Important question so take time

1 Green bin - Food scraps can go in green bin
2 Green bin - Only organic material in green bin
3 Green bin - No dirt or rocks in green bin
4 Green - No garden hose, tools, plant pots
5 Green bin - No garden waste in plastic bags
6 Yellow bin - Rinse bottles and jars
7 Yellow bin - Empty dry paint tins ok
8 Yellow bin -Pizza boxes without food OK
9 Yellow bin - Empty Aerosol cans Ok
10 Yellow bin - No recyclables in plastic bags
11 Yellow bin - No polystyrene
12 Yellow bin - no clothing or fabric
13 Yellow bin - no nappies
14 Yellow bin - no crockery, oven proof glass or drinking glass
15 Red - no electronic waste in any bin
16 Good to go bin - citrus Ok
17 Good to go bin - egg shells ok
18 Good to go bin - seafood ok
19 Good to go bin- cheese and yoghurt ok
20 Good to go bin - tissues and paper towels ok
21 good to go - meat & bones
22 Hazardous waste - no CFLs/globes
23 Hazardous waste - no oil
24 Hazardous waste - no batteries

25Hazardous waste - no liquid paint
26Hazardous waste - recycle batteries, globes & oil
27No recall of messages
28Other (SPECIFY) «»

Question # 9

If did not indicate seen advertising or information

Have you seen an advertisement with YELLOW or GREEN thumbs indicating what to and what not to put in the yellow-lid RECYCLING bin or green-lid ORGANICS bin or tips on how to use it them?

1 Yes - seen YELLOW ad
2 Yes - seen GREEN ad
3 Yes - seen BOTH green and yellow ads
4 No - have not seen
5 Unsure (DO NOT READ)

Question # 10

If recall advertising when prompted

Can you remember what the message of the advertisement/s was?

1 Green bin -Food scraps can go in
2 Green bin -Only organic material
3 Green bin -No dirt or rocks
4 Green - No garden hose, tools, plant pots
5 Green bin - No garden waste in plastic bags
6 Yellow bin - Rinse bottles and jars
7 Yellow bin -empty dry paint tins ok
8 Yellow bin -Pizza boxes without food OK
9 Yellow bin - empty aerosol cans Ok
10Yellow bin - no recyclables in plastic bags
11Yellow bin - No polystrene
12Yellow bin - no clothing or fabric
13Yellow bin - no nappies
14Yellow bin - no crockery, oven proof glass or drinking glass
15Good to go bin - citrus Ok
16Good to go bin - egg shells ok
17Good to go bin - seafood ok
18Good to go bin- cheese and yoghurt ok
19Good to go bin - tissues and paper towels ok
20Good to go bin - meat & bones
21No recall of specific messages
22Other (SPECIFY) «»

Question # 11

If did not recall advertising or information unprompted

Have you seen an advertisement with RED or PURPLE thumbs indicating what should not go in any any of the bins and how to manage materials that might be a hazard?

1 Yes
2 No

3 Unsure
4 Refused

Question # 12

If recall advertising when prompted

Can you remember what the message of the advertisement was?

1 Red - no electronic waste in any bin
2 Hazardous waste - no CFLs/globes
3 Hazardous waste - no oil
4 Hazardous waste - no batteries
5 Hazardous waste - no liquid paint
6 Hazardous waste - recycle paint, oil and globes
7 No recall of specific messages
8 Other (SPECIFY) «»

Question # 14

If did not recall advertising or information unprompted

Have you seen an advertisement with a picture of a bin and the message "is good to go" indicating what you can put in the green organics bin?

1 Yes
2 No
3 Unsure
4 Refused

Question # 15

If recall advertising when prompted

Can you remember what the message of the advertisement was?

1 Good to go - citrus fruits
2 Good to go bin - egg shells ok
3 Good to go - meat and bones
4 Good to go bin - seafood ok
5 Good to go bin- cheese and yoghurt ok
6 Good to go bin - tissues and paper towels ok
7 Good to go bin - meat & bones
8 None recalled
9 Other (SPECIFY) «»

Question # 16

If calendar not recalled unprompted

In the past 10 months, that is since July 2013, have you received a calendar from your council about recycling?

1 Yes
2 No
3 Unsure
4 Refused

Question # 17

If recall receiving calendar either prompted or unprompted

Have you referred to the calendar at all?

1 Yes
2 No

Question # 18

Have you received a magnet in the mail with information about putting food scraps in your green bin?

1 Yes
2 No
3 Unsure
4 Refused

Question # 19

If seen or heard recycling advertising prompted or unprompted or magnet/calendar

As a result of the information your have seen, have you disposed of any of those items differently to how you did before?

UNPROMPTED (DO NOT READ), Multiple Response

1 Green bin -Food scraps can go in
2 Green bin -Only organic material
3 Green bin -No dirt or rocks
4 Green - No garden hose, tools, plant pots
5 Green bin - No garden waste in plastic bags
6 Yellow bin - Rinse bottles and jars
7 Yellow bin -empty dry paint tins ok
8 Yellow bin -Pizza boxes without food OK
9 Yellow bin - empty aerosol cans Ok
10 Yellow bin - no recyclables in plastic bags
11 Yellow bin - No polystyrene
12 Yellow bin - no clothing or fabric
13 Yellow bin - no nappies
14 Yellow bin - no crockery, oven proof glass or drinking glass
15 Red - no electronic waste in any bin
16 Good to go bin - citrus Ok
17 Good to go bin - egg shells ok
18 Good to go bin - seafood ok
19 Good to go bin- cheese and yoghurt ok
20 Good to go bin - tissues and paper towels ok
21 good to go bin - meat & bones
22 Hazardous waste - no CFLs/globes
23 Hazardous waste - no oil
24 Hazardous waste - no batteries
25 Hazardous waste - no liquid paint
26 Hazardous waste - recycle oil, paint & globes
27 Was doing everything right already
28 Unsure
29 NO
30 Other (SPECIFY) «»

Question # 20

Have you ever called the Zero Waste customer service hotline or visited their website for recycling or waste information?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 Don't know/refused (DO NOT READ)

Question # 21-34

Now I will read out some items that your household might dispose of, and I would like you to tell me where you would dispose of each. For example would you place it in the general waste bin with the red, green or blue lid, the recycling bin with the yellow lid, the green organics bin with the green lid, or somewhere else.

It doesn't matter whether you have thrown out these items or not, we are just interested in where you would put them if you had to. And it is not a test, we just want to know where people put things...

The first item is...
If they think it can go in multiple places, probe for the BEST place. Items randomly asked

Polystyrene foam trays like the ones that meat comes in
Dirt, bricks or rocks
Pizza boxes with no food scraps
Pizza box with bits of cheese and left over pizza ?
Clothing or fabric
Crockery, oven glass or drink glasses
Garden implements such as a piece of hose
Soft plastics (such as cling film)
Food scraps
Plastic bags
Meat and bones

1 Waste bin (red / green/ blue lid)
2 Recycling bin (yellow lid)
3 Green organics bin (green lid)
4 Unsure / Refused (do not read)
5 Somewhere else (specify) «»

Question # 33- 35

When you dispose of drink bottles or jars, do you remove the lids first?
Do you use a plastic bag to hold your recyclables together when you put them in the recycling bin?
When you dispose of food containers, cartons and plastic bottles, do you rinse them out first?

-Check List- (Number of items: 4 Min: 1 Max: 1)
1 Always
2 Sometimes
3 Never
4 Unsure / Refused (do not read)

Question # 36

If you needed to dispose of a plastic container that still had food in it, like a halfeaten take-away, would you empty it first and then put it in the recycling bin or put it still full in the general waste bin ?

1 Put as is in waste bin
2 Put as is in recycling
3 Empty and put in recycling
4 Varies
5 Unsure / Refused

Question # 37

I'd like to know how you manage recycling. Do you have a separate bin for recyclables inside your home, or do you take them out to the recycling bin as you go, or separate them out of the general waste bin once you are outside at the bins?

1 Separate inside house
2 Separate at bin
3 Take to bin outside as needed
4 Varies
5 Don't recycle
6 Other (specify) «»

Question # 38

Do you put your bins out at every council collection, or only when they are full?

1 Every collection
2 Only when full
3 It varies by bin
4 Unsure/refused
5 Other (specify) «»

Question # 39

How do you dispose of food scraps in your house?

1 Separate bin/bucket then green bin
2 Bio bin/caddy then green bin
3 Compost
4 Worm farm
5 Animals/sink/other
6 It varies
7 Don't separate - go in waste bin
8 Other (specify) «»

Question # 40

Have you recycled any of your old electronics on either a council collection day or through a specialist e-waste recycler?

1 Yes collection day
2 Yes specialist collector
3 Yes - both
4 No
5 Unsure
6 Other (specify) «»

Question # 41

Have you recycled used light globes through the Back Light service run through hardware stores?

1 Yes
2 No
3 Unsure
4 Refused (do not read)

Question # 42

Have you ever taken your soft plastics back to a Coles store for recycling?

1 Yes
2 No
3 Unsure
4 Refused (do not read)

Question # 43

When you are unsure about how to best dispose of an item you no longer want, what do you do?
Unprompted and multiple responses possible

1 Seek information from friends/family
2 Seek information - council
3 Seek information - other
4 Zero waste web site
5 Council web site
6 Leave it on kerb for hard waste collection
7 Store it somewhere
8 Unsure
9 Refused
10Other (specify) «»

Question # 44

Is there anything that is stopping you recycling as much as you would like to?
Unprompted but multiple response

1 Green bin gets too full
2 Recycling bin gets too full
3 No water for rinsing containers
4 Too busy
5 Other household members don't participate
6 Unsure
7 No
8 Other (specify) «»

Question # 45-46

I'd like to ask you a couple of questions about hazardous household waste. This includes things like garden chemicals or pesticides, paint, rat poison, pool and spa chemicals, and household cleaners

Have you ever taken hazardous waste to the hazardous waste depot or used the mobile council collection service?

1 Yes - depot

2 Yes - mobile collection
3 Yes - both services
4 No
5 Unsure
6 Refused (do not read)

Question # 47

If yes to used service only

When was the last time you used such a service?

1 In the past month
2 More than a month but less than 6
3 6 months to a year
4 Over a year ago
5 Can't remember
6 Refused

Question # 48

Do you currently have any hazardous waste that you are storing at your home that you want to get rid of?

1 Yes
2 No
3 Unsure
4 Refused (do not read)

Question # 49 -51

I am now going to read you two statements and I would like to know how much you agree or disagree with each. Please answer on a '0' to '10' scale where '0' is 'completely disagree' and '10' is completely agree with that statement. You can also choose any number in between

The first statement is...

I feel I have been given sufficient information about how to use my kerb side bin system in the best way possible.

I feel my recycling efforts are worthwhile

0 0 - Completely disagree
1 1
2 2
3 3
4 4
5 5
6 6
7 7
8 8
9 9
1010 - Completely agree
1111 - Unsure / refused

Question # 52

Now just some questions about you to check that we have a reasonable spread of people in the survey.

How would you describe the home that you currently live in?

1 Detached dwelling
2 Semi-detached dwelling
3 Flat or apartment
4 Refused
5 Other (specify) «»

Question # 53

And how would you best describe your household make-up?

1 Single, live alone (no children at home)
2 Single person in shared accommodation (no children at home)
3 Single with one or more young children (no older)
4 Single with one or more older children at home (no young)
5 Single with younger and older children at home
6 Married/living with partner, no children at home
7 Married/living with partner, young children (no older) at ho
8 Married/living with partner, older children (no young) at ho
9 Married/living with partner, older and younger children at h
10 Widowed / widower
11 Refused (do not read)
12 Other (specify) «»

Question # 54

How many people are currently living in your home, including you?

Include the respondent in the count. If they refuse, enter -1

Question # 55

How many of these people are actively involved in recycling for the household?
Again, include the respondent in the count

Question # 56

In which of the following brackets do you fall into?

1 18-24 years
2 25- 34 years
3 35 - 44 years
4 45-54 years
5 55 - 64 years
6 65 plus
7 Refused

Question # 57

Gender (by observation)

Question # 58

And what is the highest level of education you have completed?

1 Year 9 or below
2 Year 10
3 Year 11
4 Completed secondary school
5 Certificate 1 or 2
6 Certificate 3 or 4
7 University or other tertiary - undergraduate
8 University or other tertiary - postgraduate
9 Refused (DO NOT READ)

Question # 59

And your postcode is....

Question # 60

Which of the following best captures your combined household income before tax?

1 less than $20 000 pa
2 $20 000 to less than $40 000 pa
3 $40 000 to less than $60 000 pa
4 $60 000 to less than $80 000 pa
5 $80 000 to less than $100 000pa
6 $100 000 to less than $125 000
7 $125 000 to less than $150 000 pa
8 $150 000 to less than $200 000 pa
9 $200 000 and over pa
10Unsure/refused (do not read)

Question # 61

And the last question is about your work. Are you currently....

1 Working full time
2 Working part time
3 A full time student
4 A part time student
5 Both working & studying
6 Retired
7 Engaged in full time home duties
8 Not in paid work but looking
9 On a pension (other than age pension)
10Don't know/ refused (DO NOT READ)

APPENDIX 4: OBJECTIVE KNOWLEDGE CLASSIFICATION SCHEME

The classification scheme for all objective knowledge questions is outlined below.

Incorrect responses were given a score of “1” and correct answers were given a score of “0”. To the procedural questions an answer of “sometimes” was allocated a score of “0.5”, which can be seen in Table 66.

Table 65: Which bin do you put it in? - assigning “incorrect” answer values

	Assigned value				
	Waste bin	**Recycling bin**	**Green bin**	**Unsure**	**Somewhere else**
Food scraps such as meat/bones Food scraps such as fruit and vegetables	Correct (0)	Incorrect (1)	Correct (0)	Incorrect (1)	Correct (0)
Polystyrene foam Clothing/fabric Crockery/oven glass Garden implements Plastic bags Soft plastics Dirt/rocks	Correct (0)	Incorrect (1)	Incorrect (1)	Incorrect (1)	Correct (0)
Pizza boxes (clean)	Correct (0)	Correct (0)	Correct (0)	Incorrect (1)	Correct (0)

Table 66: Procedural questions - assigning “incorrect” answer values

	Assigned value			
	Never	**Sometimes**	**Always**	**Unsure**
Do you rinse bottles/jars? Do you remove jar/bottle lids?	Incorrect (1)	Neither (0.5)	Correct (0)	Incorrect (1)
Do you hold recyclables or organics with plastic bags?	Correct (0)	Neither (0.5)	Incorrect (1)	Incorrect (1)