Bin Tagging Pilot Program

Summary of Outcomes

Acknowledgement

The WA Local Government Association would like to acknowledge the support for this Program provided by the Cities of Kwinana and Joondalup and the Town of Cambridge.

The Project was funded by the Waste Authority through the Waste Avoidance and Resource Recovery Account.

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Executive Summary

The Bin Tagging Pilot Program was implemented in the Cities of Joondalup, Kwinana and Town of Cambridge in February – April 2015. The Pilot aimed to audit 2,000 households per Local Government area. The Pilot was based on the Recycle Right Bin Tagging Program developed in South Australia. Where possible the Pilot utilised the Recycle Right Branding and website developed by the Southern Metropolitan Regional Council. Over five fortnights, auditors checked waste and recycling bins in the designated areas, collected data on the materials in the waste and recycling bins and provided residents with feedback about their bins' content.

Correct Recycling

Kwinana showed the greatest increase in correct recycling rates, moving from 36% to 69% (33% improvement). In Kwinana the rating per household for contamination dropped from an average of 0.7 per household to 0.3 per household. Joondalup showed the next greatest change in the correct recycling rates, moving from 52% to 78.5% - a 26.5% improvement. The rating in relation to contamination per household decreased in Joondalup from 0.5 to 0.2 per household. Cambridge increased from 64% of correct recycling to 76.7% over the course of the Pilot, with the contamination per household decreasing from 0.4 to 0.29.

For each household where contamination was present a rating of 1 – 3 was given, indicating the level of contamination. The ratings were based on 1 = 1 – 2 incidents of contamination, 2 = 3 – 7 incidents of contamination and 3 = over 8 incidents of contamination. The drop in the average contamination per household shows not only a drop in the frequency of contaminated bins but also the severity of the contamination which was found.

Major contamination

The key contamination issue identified in the pilot was that recycling was often tied up in plastic bags. None of the Material Recovery Facilities which sort the recycling can recover materials tied up in bags. Kwinana saw the percentage of bagged recycling decrease from 34.8% to 18.4% - a drop of over 16%. Cambridge saw the bagged recycling rate drop from 23% to 14%, a decrease of 9%. Joondalup had a far lower initial rate of bagged recycling, at 10.4%. During the trial period this decreased to 3.6%.

The Pilot Bin Tagging Program was successful in changing behaviour for households waste and recycling behaviour. From undertaking the Pilot, the following findings:

- The initial Bin Tags need to be refined based on feedback and key issues identified by Local Governments and residents over the course of the Pilot.
- The level of resources commitment to the roll out of the Program is now better understood and WALGA is able to provide this information to Local Government considering Bin Tagging.
- Based on the demographics of an area, and the level of existing waste education, WALGA is able to provide information to Local Governments on what results to expect.
- It is essential in undertaking the tagging to ensure good systems of data capture and comparison are in place and regular updates are provided to those involved in the Program.
- To ascertain the long term impact of Bin Tagging it will be important to check the Cambridge, Joondalup and Kwinana pilot sites in February/March 2016.

1 Introduction

In 2014, WALGA was allocated funding by the Waste Authority to implement a community engagement and enforcement program that increased the recycling rate from kerbside collections and reduced contamination. WALGA undertook research into the key recycling / public awareness campaigns operating in Australian jurisdictions. The following campaigns were identified and evaluated to identify approaches that could be used in Western Australia:

- Get it Right on Bin Night (VIC)
- Love Food Hate Waste (NSW)
- Do the Right Thing, Use the Right Bin (QLD)
- Recycle Right – Bin Tagging (SA).

The Bin Tagging Program from South Australia was selected for use, due to its impressive results in reducing contamination rates in the recycling bin and increasing recycling rates. If the results from the SA Program could be replicated in Western Australia, the Program would assist Local Governments with meeting the State Waste Strategy targets for diversion of municipal waste from landfill (Metropolitan area 50%, and 30% for Regional Centres by 2015). WALGA utilised the existing, Recycle Right, branding developed by the Southern Metropolitan Regional Council where possible in the pilot.

The Program also had the potential to reduce costs for Local Governments, as it focused on making sure the right things were in both the waste and the recycling bin. This was positive because with the increase in the Waste Avoidance and Resource Recovery Levy, effective January 2015, the cost of landfill again increased. Another factor was that recycling contractors were considering introducing penalty rates for highly contaminated recycling.

2 The Pilot

To test how the South Australian Program would be received in WA, it was decided to run a pilot with three Local Governments, aiming for 2,000 households in each.
Expressions of Interest were sought from Local Governments in September 2014. In a period of three weeks, interest was expressed by 20 Local Governments. This level of interest in a pilot demonstrates that this is an area where the sector requires support, and is willing to experiment. The criteria used to select the three Local Governments, included demographics, level of prior waste education undertaken in the area and engagement with contractors.

2.1 Preparation

In order to give the trial the best possible chance of succeeding, it was imperative that the Local Governments had close relationships with both the collection and processing subcontractors. Collection routes had to be delayed, taped shut bins not collected, and an increase in customer queries on waste related matters to be dealt with.

The logistical considerations of the pilot included:

- Timing of Audits: Initially it was planned to roll the audits out January – March. However the strong preference from the contractors was that the pilot not be run during the January school holidays, as they had lower than usual staff numbers and less ability to alter collection schedules as a result. It was agreed the audits would start in February, after the school holidays had finished.
- Selecting the Audit areas: The decision of what areas to audit was made by the individual Local Governments. The guiding advice provided by WALGA, was for the Local Governments to talk with the collection and processing contractors and determine areas the areas they have observed high levels of contamination and which would minimise disruption to operations.
- Preparation of areas: WALGA requested that the Local Governments provide a map of the areas to be audited and a list of addresses.
- Design of materials: A key component of this program, involved progressing an agreement with ZeroWasteSA to use the concept and artwork required to carry out Bin Tagging. ZeroWasteSA have spent many years trialling the Bin Tagging approach, and gauging the community's response to various phrases, images, and colours. As a result of the agreement, WALGA was able to use the artwork and tailor the wording to suit the collection systems in each Local Government area. All materials used are included in Appendix 1.
- Local Government Briefings: An important part of the preparation for the Bin Tagging, involved briefing the senior management and Council of the participating Local Governments. WALGA developed resources for staff working in the public relations, waste management, and customer service areas that explained the purpose of the pilot and the approach to be used.

2.2 Pilot Roll out

The Pilot was rolled out over five fortnights, using auditors from WALGA, the Local Governments, Regional Councils and contractors, as required.

Fortnight 1
The first fortnight audits involved:

- Undertaking a visual audit of both waste and recycling bins and recording data to establish baseline data
- Attaching an introductory tag to the recycling bin lid/handle (or putting the tag into the letter box if no bin was presented)
- Following analysis of the results, carrying out the prize draw for the first week (entrants had to be separating waste and recycling correctly).

Fortnight 2 and 3
The second and third fortnight of audits involved:

- Undertaking a visual audit of both waste and recycling bins and recording data
- Attaching performance feedback tags on the waste and recycling bins
- Carrying out the prize draw for the week.

Fortnight 4

The fourth fortnight of audits involved:

- Undertaking a visual audit of both waste and recycling bins and recording data
- Taping shut the lids of recycling bins that had extreme levels of contaminants (these residents also received a letter)
- Leaving feedback tags on recycling bins which had a low level of contaminants
- Notifying truck drivers of households where the bin had been taped
- Carry out the prize draw for the final week.

Fortnight 5

Activities undertaken in the fifth fortnight of the pilot include:

- Following up with the households that had recycling bins taped shut from the previous audit
- Council staff directly approaching residents that continued to contaminate, to mediate a solution (depending on policy).

3 Results

The overall results from each Local Government are shown in Table 1 (Cambridge), Table 2 (Joondalup) and Table 3 (Kwinana). The results showed that the Pilot did change behaviour, but the degree of influence the Pilot had on households varied.

	Fortnights (households)				Fortnights			
WASTE	1	2	3	4	1	2	3	4
Recycling in waste bin	727	792	749	372	54.54%	59.37%	53.08%	24.77%
No bin - Waste	135	208	155	226	9.20%	13.49%	9.90%	13.08%
Total Contamination	979	1030	808	476				
RECYCLING								
Recycling ok	934	1045	1155	1143	63.62%	67.77%	73.75%	76.76%
No bin - Recycling	147	196	163	239	10.01%	12.71%	10.41%	13.83%
Recycling in bags	306	320	264	210	23.16%	23.77%	18.82%	14.10%
Total contamination	613	687	619	503	0.42	0.45	0.40	0.29
Overfull Recycling					4%	5.8%	3.6%	1.7%
Total Households	1615	1738	1729	1728				

Table 1: Overall Results Cambridge

	Fortnights (households)				Fortnights			
WASTE	1	2	3	4	1	2	3	4
Recycling in waste bin	712	742	577	292	62.4%	55.0%	43.9%	27.7%
No bin – Waste	117	98	127	160	10.3%	7.3%	9.7%	12.2%
Total Contamination	850	919	767	373				
RECYCLING								
Recycling ok	597	745	837	829	52.3%	55.2%	63.7%	78.5%
No bin – Recycling	168	150	187	226	14.7%	11.1%	14.2%	21.4%
Recycling in bags	119	72	108	38	10.4%	5.3%	8.2%	3.6%
Total contamination	617	586	483	213	0.5	0.4	0.4	0.2
Overfull Recycling					4.6%	3.3%	5.2%	3.7%
Total Households	1141	1350	1313	1056				

Table 2: Overall Results Joondalup

TOTAL	Fortnights (households)				Fortnights			
WASTE	1	2	3	4	1	2	3	4
Recycling in waste bin	1010	905	525	557	69.13%	63.96%	38.32%	40.19%
No bin - Waste	352	398	443	424	19.42%	21.95%	24.43%	23.43%
Total Contamination	1536	1268	561	687				
RECYCLING								
Recycling ok	488	622	753	891	36.36%	47.96%	59.90%	68.91%
No bin - Recycling	471	516	556	517	25.98%	28.46%	30.67%	28.56%
Recycling in bags	468	458	296	239	34.87%	35.31%	23.55%	18.48%
Total contamination	1344	963	521	555	0.74	0.53	0.29	0.31
Overfull Recycling					4.5%	9.5%	6.2%	4.4%
Total Households	1813	1813	1813	1810				

Table 3: Overall Results Kwinana

Correct Recycling

For each household where contamination was present a rating of 1 – 3 was given, indicating the level of contamination. The ratings were based on 1 = 1 – 2 incidents of contamination, 2 = 3 – 7 incidents of contamination and 3 = over 8 incidents of contamination.

Kwinana showed the greatest increase in correct recycling rates, moving from 36% to 69% (32.5% improvement). In Kwinana the rating per household for contamination dropped from an average of 0.7 per household to 0.3 per household – this indicated decreases in both the number of contaminated bins and the frequency of contamination in other bins. Joondalup showed the next greatest change in the correct recycling rates, moving from 52% to 78.5% - a 26.5% improvement. Joondalup's recycling system is different to the other Local Governments in that flexible plastics cannot be processed by the MRF. If flexible plastics were able to be processed, the correct recycling rate in Joondalup would be 89%.

The rating in relation to contamination per household decreased in Joondalup from 0.5 to 0.2 per household. Cambridge had a more modest increase in correct recycling, possibly because the areas were already achieving a higher level of correct recycling. Cambridge increased from 64% of correct recycling to 76.7% over the course of the Pilot, with the contamination per household decreasing from 0.4 to 0.29.

As Figure 1 shows, Kwinana had a gradual increase in correct recycling behaviours during the pilot. Joondalup showed the greatest response after the first two fortnights, whereas Cambridge experienced a gradual increase in correct recycling behaviour, then a dip in the correct recycling behaviour in the final week.

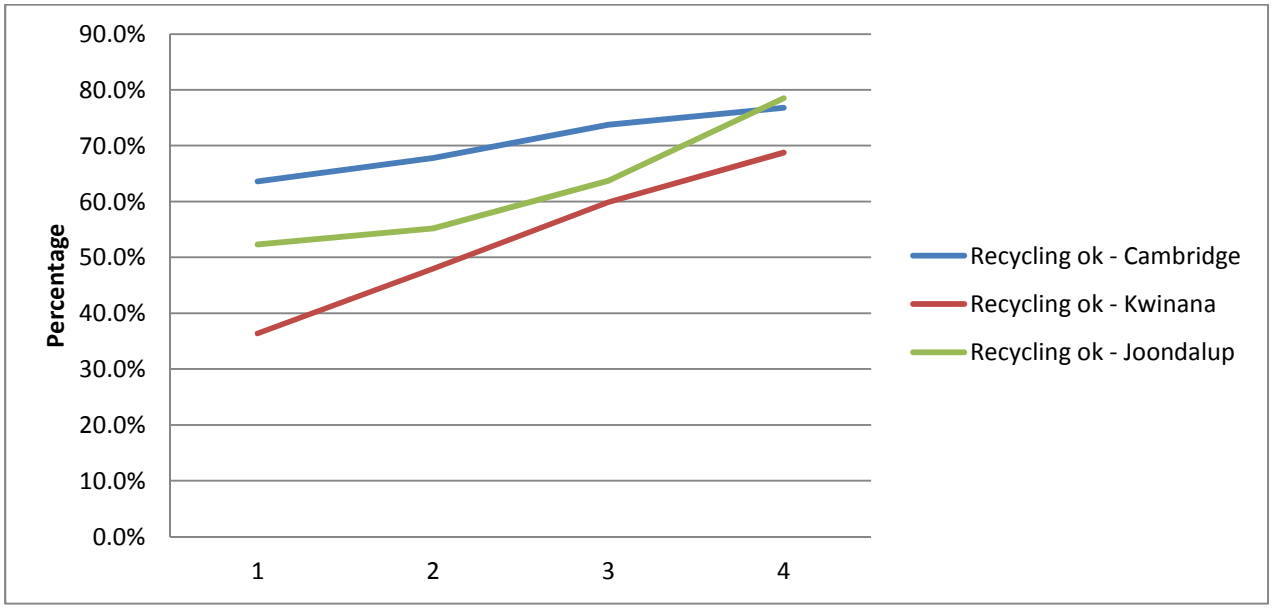


Figure 1: Comparison of Cambridge, Kwinana and Joondalup non-contaminated recycling bin (as a percentage).

Recycling in bags

A key contamination issue identified in the pilot was that recycling was often tied up in plastic bags. None of the MRFs can recover materials tied up in bags. Kwinana saw the percentage of bagged recycling decrease from 34.8% to 18.4% - a drop of over 16%. Cambridge saw the bagged recycling rate drop from 23% to 14%, a decrease of 9%. Joondalup had a far lower initial rate of bagged recycling, at 10.4%. During the trial period this decreased to 3.6%.

Overfull Recycling Bins

In addition to general contaminants, whether bins were overfull was also measured. Figure 2 shows that Kwinana had slightly higher rates of overfull bins, than the other Local Governments, for the majority of the pilot. The number of overfull bins was fairly variable, with each Local Government showing a different pattern. It is interesting to note that Cambridge's rate of overfull bins decreased. The tags for the Cambridge area included the offer of upsizing residents' recycling bins, so that could have contributed to a reduction over time. Kwinana's rate of overfull bins spiked in the second fortnight, then returned to similar levels as at the start, 4 – 5%. Joondalup's overfull rate fluctuated between 3 – 5%, with every other fortnight showing higher levels of overfull bins.

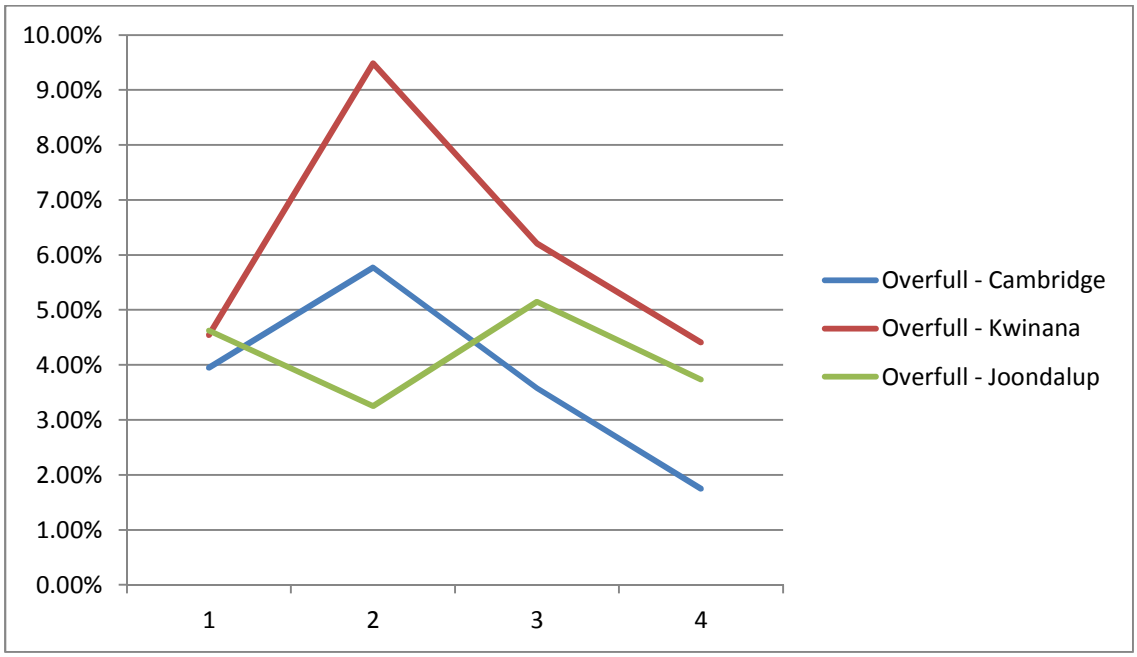


Figure 2: Comparison of Cambridge, Kwinana and Joondalup overfull recycling bins (as a percentage).

Recycling in the waste bin

Judging whether or not there were recyclables in the waste bin was often difficult, particularly if residents were using black plastic bags. Therefore some of the data may be more variable depending on the auditors and the level of investigation undertaken. For Cambridge, the initial amount of waste bins with recycling present was 54.5%, this varied over the course of the trial and eventually dropped to 24%. For Joondalup it was initially reported that 62% of households had recycling in their waste bin. Again, there was a decrease over the course of the pilot with the final result reported as 27% of households with recycling in the waste bin. For Kwinana, initially recycling in the waste bin was recorded at 69% and decreased to 40% over the course of the trial.

Presentation rates

The presentation rates for waste and recycling bins was another interesting finding. Figures 3 – 5 show the presentation rates, in number of households, for Cambridge, Joondalup and Kwinana respectively. In Cambridge the non-presentation rates for waste and recycling were virtually identical – for Joondalup and Kwinana the recycling bin had a higher rate of non-presentation. This result suggests that the smaller sizes of most waste bins and the promotional activities in Cambridge have led to residents recycling (or putting their bins out) more regularly than in the other areas. As a percentage, Cambridge had the lowest non-presentation rate between 9 – 13% for waste and recycling. Joondalup had a non-presentation rate of between 10 -12% for waste and 14 – 21% for recycling. Kwinana had the highest rate of non-presentation 19 – 23% for waste and 25-28% for recycling. The timing of usual bin collections is likely to have affected the amount of bin presentation, however an effort was made in all Local Government areas to pick locations with relatively late pick up times to minimise service disruption. It is notable, that the rate of non-presentation increased as the audit continued. This could be due to changing daylight hours, people avoiding the bin tagging or residents becoming used to later collections.

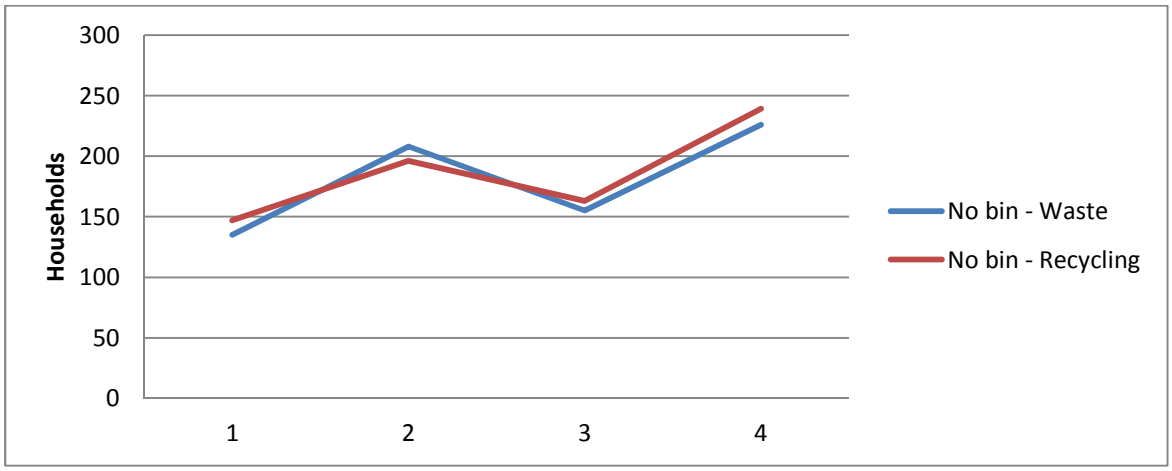


Figure 3: Cambridge Bin Presentation over the pilot

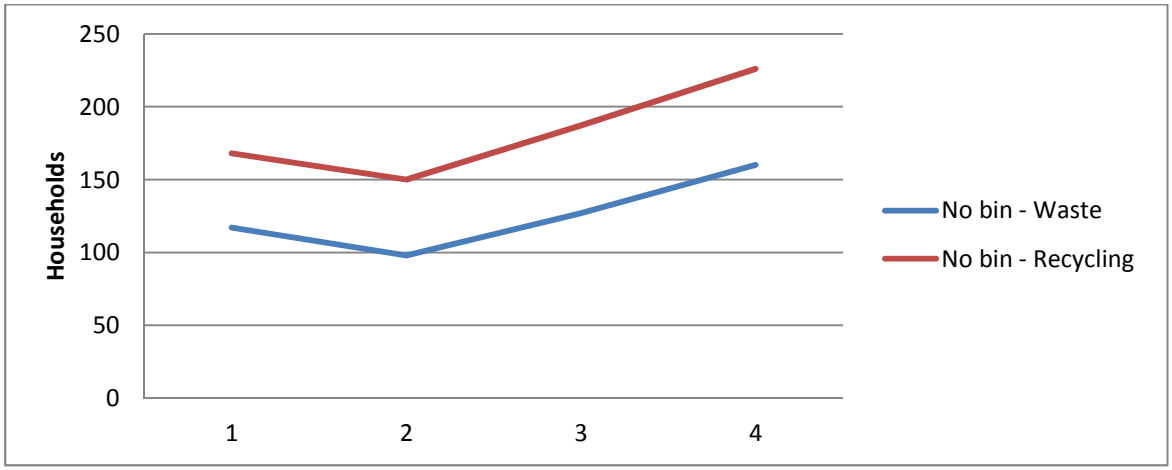


Figure 4: Joondalup Bin Presentation over the pilot

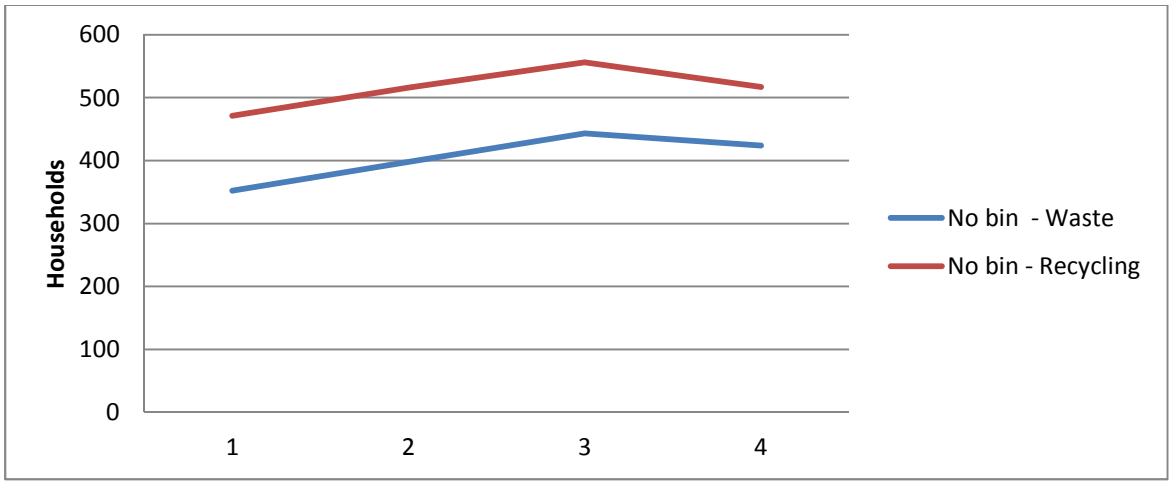


Figure 5: Kwinana Bin Presentation over the pilot

Number of bins taped

Overall, 173 bins were taped across the three Local Governments. Figures 6 – 9 show the kinds of contamination which resulted in bins being taped.

Figure 6: Bin was taped – recycling tied up in bags

Figure 7: Bin was taped, rotting food

Figure 8: Bin was taped, nappies and recyclables in bags

Figure 9: Bin was taped, dog faeces and recycling in bags

4 Conclusions and Recommendations

The Bin Tagging Program has been shown to be effective in changing behaviour related to the use of the waste and recycling bins. The Pilot had the biggest impact in areas where there had previously been limited direct engagement. The tags could use some refinements based on the feedback from this Program. At this stage it is uncertain how long the effects of the Pilot Program will last. This will need to be assessed over time and re-auditing the same households at a similar time of year would provide a good comparison.

Recommendations

- The initial Bin Tags need to be refined based on feedback and key issues identified by Local Governments and residents over the course of the Pilot.
- The level of resources commitment to the roll out of the Program is now better understood and WALGA is able to provide this information to Local Government considering Bin Tagging.
- Based on the demographics of an area, and the level of existing waste education, WALGA is able to provide information to Local Governments on what results to expect.
- It is essential in undertaking the tagging to ensure good systems of data capture and comparison are in place and regular updates are provided to those involved in the Program.
- To ascertain the long term impact of Bin Tagging it will be important to check the Cambridge, Joondalup and Kwinana pilot sites in February/March 2016.

Appendix 1: Materials Generated for the Pilot

Kwinana Materials

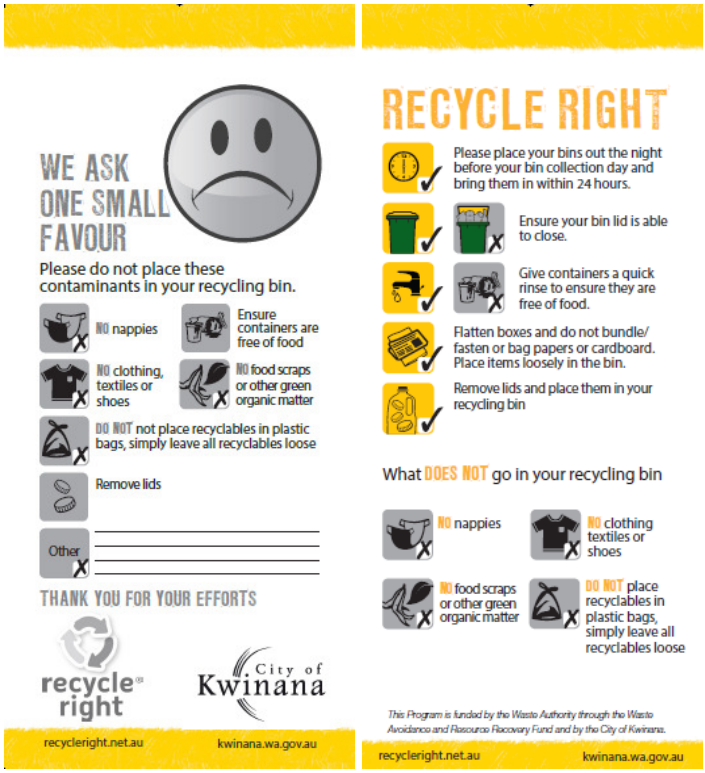
Introduction Tag

Feedback Tag – Waste: No Contamination

Feedback Tag – Waste: Contamination

Feedback Tag – Recycling: No Contamination

Feedback Tag – Recycling: Contamination



Bin Taped Tag – Front only

Cambridge

Introductory Tag

Feedback Tag – Waste: No Contamination

Feedback Tag – Waste: Contamination

Feedback Tag – Recycling: No Contamination

Feedback Tag – Recycling: Contamination

Bin Taped Tag – Front only

Joondalup

Introductory Tag

USE THE RIGHT BIN AND WIN!

The City of Joondalup provides residents with a two bin kerbside service – for waste and recycling. Data from the Recycling contractor shows that some materials are going into the wrong bin.

Did you know putting the wrong items in your recycling bin is a waste?

If the bins are contaminated with unsuitable items these cannot be processed, so the material goes as waste to landfill.

In order to improve the use of the recycling service, the City of Joondalup is implementing the RECYCLE RIGHT campaign.

And just by recycling right you could win a Coles/Myer voucher.

For more details on what you can put in your recycling bin, visit **joondalup.wa.gov.au** or contact the City on **9400 4255.**

recycle right®

City of Joondalup

YOU CAN HELP RECYCLE EVEN MORE

As part of the Recycle Right campaign we will be auditing the content of recycling bins presented for collection in your area. You will be provided with feedback from each inspection in the form of one of three tags attached to your bins:

- **Thank you** – please keep up the great effort.
- **We ask one small favour** – to not place common contaminants like clothing and foam (or polystyrene foam) in the recycling bin.
- **Unfortunately we were unable to collect your bin** – there were too many contaminants in your bin. These will need to be removed before you put your bin out next collection day.

We also need to ensure recyclable material is not going as waste to landfill, so an inspection of your waste bin will also be done at the same time and feedback provided.

DID YOU KNOW YOU CAN RECYCLE:

- cardboard food packaging such as pizza boxes
- mixed paper
- steel food cans
- plastic take-away containers and plastic bags
- aerosol cans.

PLEASE REMEMBER **recyclables need to be free of food before placing in the recycling bin.**

This Program is funded by the Waste Authority through the Waste Avoidance and Resource Recovery Account and by the City of Joondalup.

Feedback Tag – Waste: No Contamination

Feedback Tag – Waste: Contamination

Feedback Tag – Recycling: No Contamination

Feedback Tag – Recycling: Contamination

Bin Taped Tag – Front only