

Compostable bag supply via supermarkets pilot

City of Holdfast Bay and Green Industries SA
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Document verification

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Executive summary

The City of Holdfast Bay (CoHB), with funding from Green Industries SA (GISA), has piloted an alternative model of distribution for compostable bags. This involved distributing the bags via food retailers (supermarkets) from March to September 2018. Plastic bags were replaced with compostable bags in the fruit and vegetable sections of two local Foodland supermarkets. This allowed customers to purchase their fruit and vegetables in a compostable bag and then reuse the bag at home to dispose of their food waste into the green organics bin.

Due to the success of the pilot it was extended for a further six months, until March 2019. Rawtec was engaged to provide project assistance and measure the outcomes of the project. This report brings together the multiple stages including three physical kerbside bin audits and insights from the third round of customer surveys.

The pilot achieved the goals that it intended to explore, including:

- Demonstrating that standard plastic fruit and vegetable bags can be replaced with compostable bags.
- Showing a suitable compostable bag can be designed to fit standard dispensers in supermarkets.
- Demonstrating a design of compostable bags that supports the weight of fruit and vegetables and allows checkout staff to easily identify the type and price of fruit and vegetables.
- Identifying that residents will use the compostable bags in kitchen organics baskets to collect their food waste. They then recycle this in the green organics bin and the bags are composted through commercial composting systems.
- Developing a greater understanding of the cost considerations for supermarkets and CoHB.
- Assessing the strength and weaknesses of the supermarket distribution method.

Further it was found that:

- Based on customer surveys and community feedback, the response to the pilot and compostable bags is overwhelmingly positive.
- The supermarket compostable bags are increasingly being used in the home to collect and recycle food waste.
- The pilot led to a positive change in levels of food diversion from landfill (based on targeted physical bin audits).

Key results

Customer surveys

Three rounds of customer surveys (early, mid and late-pilot) were conducted to understand the behaviours and views of customers to the two supermarkets. The results from the third round of interviews in November included that:

- 62 per cent of Glenelg South and 56 per cent of Brighton Foodland customers were aware of the trial.
- 73 per cent of Glenelg South and 44 per cent of Brighton Foodland customers said they use the kitchen organics basket and compostable bags to dispose of their food waste.
- 94 per cent of customers would like to see the compostable bags to continue to be provided.

- 67 per cent of customers found it more convenient to get compostable bags from the supermarket compared to getting them from Council. Seven per cent indicated either option was convenient, and only two per cent indicated that getting them from Council was more convenient. The remainder did not answer, or it was not applicable.
- From the June surveys, many customers would be willing to pay for compostable bags. 72 per cent of Glenelg South and 48 per cent of Brighton customers from Glenelg South would be willing to pay a small fee (5 cents or less).

Kerbside audits

Three kerbside bin audits were conducted to measure the waste and food recycling behaviours of residents living nearby the supermarkets. A pre-pilot audit took place before the compostable bags were available and promoted in supermarkets (March). The second audit took place in the middle of the initial trial (May) and the third late in the extended trial (November). A comparison of the results found that:

- The volume of food waste in the green organics bin increased by 0.40 kg/household/week across the two audit areas between March and November 2018.
- There was a significant increase in the number of compostable bags used to recycle food waste (including both bags provided by CoHB and those available at supermarkets).

Cost benefit analysis

The pilot explored a range of benefits and barriers to the supermarket distribution model of compostable bags.

FINANCIAL ANALYSIS

Compostable bags are currently more expensive than the traditional plastic bags provided by supermarkets (\$0.054 versus \$0.01-\$0.025).

The CoHB currently provides residents with rolls of compostable bags for free, which can be picked up from the Brighton Civic Centre and library. It is estimated that 6,000 rolls are provided to residents each year. This means 40 per cent of households are using the compostable bags at a cost of \$60,600 per year to CoHB.

The supply of the supermarket compostable bags may not have the same coverage as the Council supplied bags, as the supply of compostable bags is limited to two supermarkets and residents shopping elsewhere would not have access. Should it be rolled out across all supermarkets in the council area, then the cost of supplying the bags would be more than the council's current distribution model. However, the increase in additional collection points may significantly increase the number of households using the bags (versus 40 percent).

FOOD WASTE DIVERSION

Analysis of data between the baseline and second audit revealed an increase in the amount of food waste recycled and therefore diverted from landfill. It is estimated that an extra 308 tonnes per year could be diverted from landfill to an organics processor. If this was to happen, the CoHB could save an estimated \$33,800 in landfill disposal costs due to the lower costs of composting compared to landfill.

OTHER BENEFITS

There are a range of other benefits associated with the pilot. These include:

- Providing a strong and simple link between purchasing the compostable bag and reusing it to recycle food waste.
- Reducing the amount of plastic waste generated and the amount that could escape into the environment.
- Reducing the amount of greenhouse gas emissions by 154 CO₂ equivalent tonnes per year by increasing food waste diversion from landfill.
- Growing the circular economy by increasing the volume of organics being processed by local South Australian organics processors.

Conclusions and next steps

The alternative distribution model of compostable bag supply via the supermarkets has been demonstrated to work effectively and increase food waste diversion from landfill. It was positively received by participating customers. We expect that broader roll out of this compostable bag would provide a positive contribution to food waste recycling from households. The success of the trial came down to a few factors:

- The compostable bags were designed specifically for the supermarket and kitchen organics basket.
- The pilot was heavily promoted to ensure residents were aware the bags could be used to recycle food waste.
- The pilot had significant support from the supermarkets and Green Industries SA.

To continue the success of the pilot and explore options to increase its impact, we recommend:

- Ensuring that the supply of compostable bags in the two supermarkets is not interrupted. This will require ordering bags in advance to ensure delivery takes place before the current supply runs out.¹
- Sharing the success of the pilot including engagement with other supermarkets
- Investigating whether local manufacturing of the compostable bags may assist with reducing the cost and provide additional local jobs and investment.
- Trialling compostable checkout bags at supermarkets to further reduce plastic generation and waste.

¹ Note, the supermarkets continued to supply compostable bags following the trial



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1. Introduction

The City of Holdfast Bay (CoHB) offers a kerbside organics bin service to residents to recycle food and garden organics. Council offers free kitchen organics baskets and compostable bags to residents to promote food waste recycling and diversion from landfill.

The cost of providing the organics baskets and bags to residents is significant for the council. Residents must also collect baskets and bags from the council offices and libraries, which can be a barrier for some residents who would like to recycle their food waste but are unlikely to visit council facilities regularly or at all.

The CoHB has partnered with Green Industries SA (GISA) to pilot replacing plastic bags with compostable bags in the fruit and vegetable sections of Brighton Foodland (southern end of CoHB) and Glenelg South Romeo's Foodland (northern end of CoHB). The purpose of the project is to pilot an alternative model of distributing compostable bags via fresh food retailers (supermarkets). The pilot assessed:

- If standard plastic fruit and vegetable bags could be replaced with compostable bags.
- If the compostable bags were suitable for the standard dispensers.
- The ability of the compostable bags to carry the weight of the fruit and vegetables.
- Whether the bags allowed checkout staff to easily identify the type and price of fruit and vegetables.
- Customer and supermarket feedback on this supply mechanism.
- If the bags were reused as intended (in the home for collecting food waste and then recycling in the green organics bin for kerbside collection).
- Any measurable change in food diversion from landfill based on targeted physical bin audits.
- Cost differences from standard plastic bags to the compostable bags.
- The strengths and weakness of this method of distribution of compostable bags versus current methods.

The twelve-month pilot (initially six months and then extended) reduced the supermarkets reliance on plastic bags and provided the community with another supply mechanism for compostable bags. These bags can be reused by residents at home to line their kitchen organics baskets used to recycle food waste. The pilot assessed if the supermarket supply pathway would work for compostable bag distribution and food waste recycling via council kerbside collections.

Rawtec was engaged by CoHB to provide project assistance and measure the outcomes of the project. The project had multiple stages, including:

1. Pre-pilot kerbside bin audit (March 2018)
2. Rollout of compostable bags in participating supermarkets (March 2018)
3. Customer surveys (April 2018)
4. Mid-pilot kerbside bin audit (May 2018)
5. Customer surveys (June 2018)
6. Project review and extension
7. Customer surveys (October 2018)
8. Late-trial kerbside bin audit (November)
9. Project review



2. Project description

2.1. Bag design

The pilot required the design of a compostable bag that could be easily distributed in supermarkets and used again in the kitchen organics basket to recycle food waste. The design process involved input from CoHB, Rawtec, CoHB's kerbside organics processor Peat's Soils and compostable bag manufacturers. The outcomes from the design included:

- A clear, eight or ten-litre bag that was strong enough to hold a large quantity of fruit and vegetables and allowed supermarket staff to see into the bags easily to identify the type of produce.
- Information and graphics to inform customers that the bags are compostable and can be reused at home (Figure 1 left).
- The successful manufacturer of the compostable bags that was able to provide the bags in rolls that fit existing bag dispensers (Figure 1 right).
- The bag was able to fit into the kitchen organics baskets provided by the CoHB.

These bags look different to the green compostable bags that CoHB give to their residents to recycle food waste.

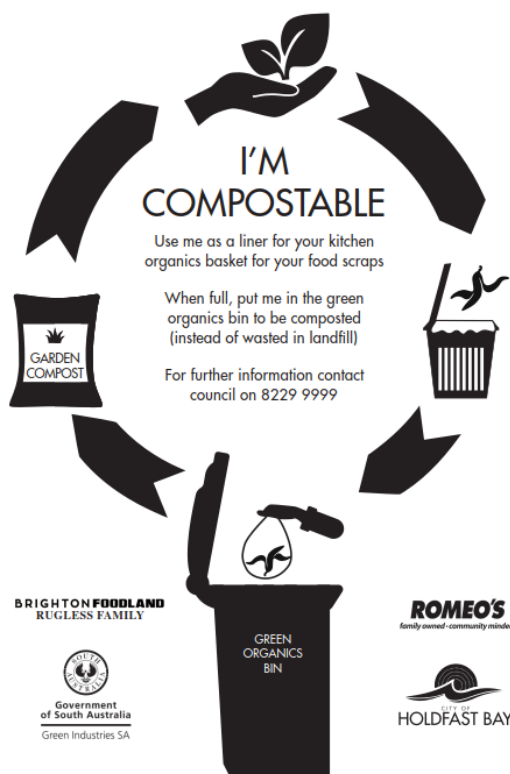


Figure 1 Graphics printed on the bags (left) and the bags installed in the supermarket (right)

2.2. Promotion of the pilot

The pilot was promoted to residents in ways:

1. Flyers were delivered to all CoHB residents' letterboxes (approximately 18,800 dwellings) before the start of the pilot informing them the bags were available at supermarkets (Figure 2 left).
2. A banner was also located prominently in each supermarket advertising the pilot (Figure 2 middle and right) and
3. Signs were placed near the bags to inform customers that they were compostable.
4. Social media (Figure 3 overleaf).



Figure 2 Promotion included a flyer delivered to all residential addresses in the CoHB (left) and a pull-up banner in each of the two Foodland supermarkets to inform customers of the pilot (middle located in Brighton, right located in Glenelg South).



Figure 3 CoHB Facebook posts were used to spread the message about the bags. They proved very successful with many 'reactions', shares and positive comments.

During the pilot extension phase, local celebrity Andrew 'Cosi' Costello from South Aussie with Cosi was engaged to produce a video promoting the compostable bags. This was shared on the CoHB social media page and the South Aussie with Cosi social media page (Figure 4). The two posts from the South Aussie with Cosi page reached an approximate 35,000 people, whilst the CoHB post reach over 10,000.

Performance for Your Post		
10,171 People Reached		
169 Reactions, Comments & Shares		
118 Like	74 On Post	44 On Shares
11 Love	8 On Post	3 On Shares
21 Comments	12 On Post	9 On Shares
20 Shares	20 On Post	0 On Shares
421 Post Clicks		
69 Clicks to Play	22 Link Clicks	330 Other Clicks
NEGATIVE FEEDBACK		
2 Hide Post	0 Hide All Posts	
2 Report as Spam	0 Unlike Page	

Figure 4 South Aussie with Cosi was engaged to promote the compostable bags available at the supermarkets.

The pilot was also heavily promoted by the CoHB at community events, school waste talks, waste tours (including the Solo transfer station) and "Green living" workshop events. All CoHB office staff were also briefed on the pilot in order to answer any resident questions.



3. Customer surveys and community feedback

The original pilot included two rounds of customer surveys (128 responses in round one and 122 responses in round two). The surveys asked customers a range of questions about how they managed their food waste at home, their awareness of the pilot, their use of the bags and view of the participating supermarkets. See Appendix 1 - Customer survey (Round 1 and 2).

During the project extension phase another round of surveys was completed (116 survey responses). The questions were largely the same as the first two rounds, however some extra questions were asked to gain specific feedback about:

- how well the number of bags customers get from the supermarket matches their reuse at home
- whether it is more convenient to pick up the bags from council or the supermarket and,
- if they would like to see supply of the bags continue.

See Appendix 1 - Customer survey (Round 3).

3.1. Survey process

The surveys took place near the start of the pilot and then near its end of the original timeframe and then in the middle of the extension phase. They were undertaken at three different times during the week; during the day, evening and on a weekend. The market researcher approached a random selection of customers in the fruit and vegetable section and gathered between 20-25 responses at each survey location and time.

3.2. Survey results

The following results are based on the third round of interviews. These took place in November 2018, eight months after the pilot began. Results from the previous rounds of surveys are included in Appendix 3.

Holdfast Bay residents

Most customers surveyed were from the CoHB. 80 per cent of Glenelg South Foodland customers and 54 per cent of Brighton Foodland customers lived locally. The remainder were from a range of councils outside of the CoHB area including Marion, Onkaparinga, West Torrens, Charles Sturt, Adelaide, Burnside, Adelaide Hills and Port Adelaide Enfield. One of these councils have different waste service frequencies that may influence their waste and recycling behaviours.

Awareness of trial

Overall, 62 per cent and 51 per cent of customers surveyed in November from Glenelg South and Brighton Foodland were aware of the trial either from the Council advertising campaign or in-store promotion of the bags.

Current disposal of food waste

Figure 5 outlines the responses from customers who are CoHB residents when asked how they currently dispose of their food waste. Most customers indicated that they recycle their food waste. This included 73 per cent and 46 per cent of customers from Glenelg South and Brighton Foodland’s respectively indicating they use the kitchen organics basket and compostable bags. It is likely that this is overstated as the surveys do not match bin audit results. In a separate audit of CoHB kerbside services, a visual inspection of green organics bins identified approximately 50 per cent of bins contained a visible compostable bag (both CoHB bags and supermarket bags).

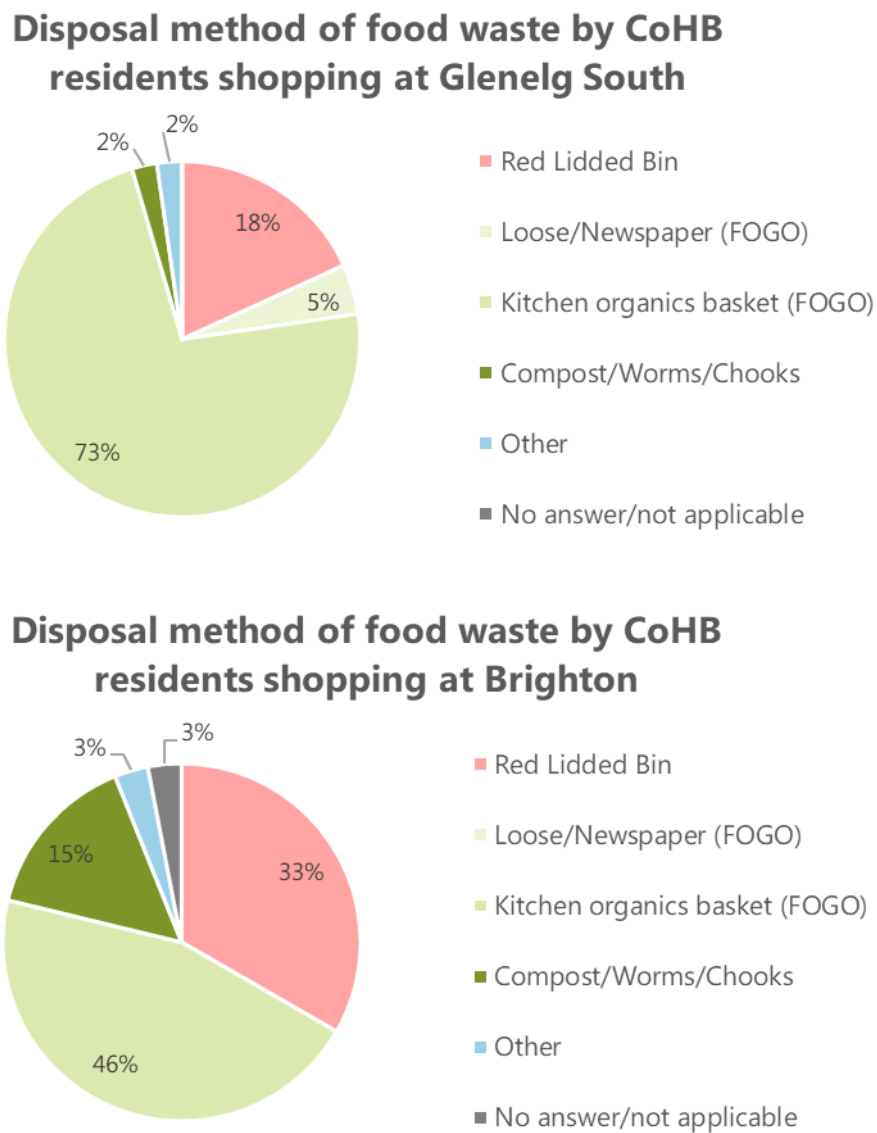


Figure 5 Results from the November survey showing how customers dispose of their food waste

Customers who said they did not recycle their food waste were asked why not. 35 per cent indicated convenience was a factor (time, space, laziness), 10 per cent had no access to a green organics bin, five per cent were unaware they could recycle food waste and another five per cent had run out of bags. The remainder either did not answer or provided other reasons (e.g. do not have much food waste, smell is an issue).



Consumption of compostable bags

Customers were asked how well the supply of bags they get from the supermarket matches the number of bags they re-use at home. Figure 6 indicates that the number of bags supplied and used was about right for 28 per cent of people. 51 per cent of customers did not provide an answer or were unsure and 9 per cent of people said it was not enough, and 11 per cent too many.

Customer feedback on supply of compostable bags versus use

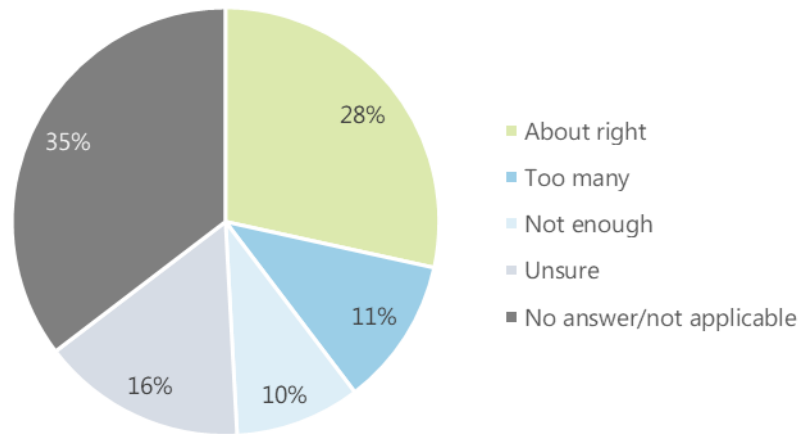


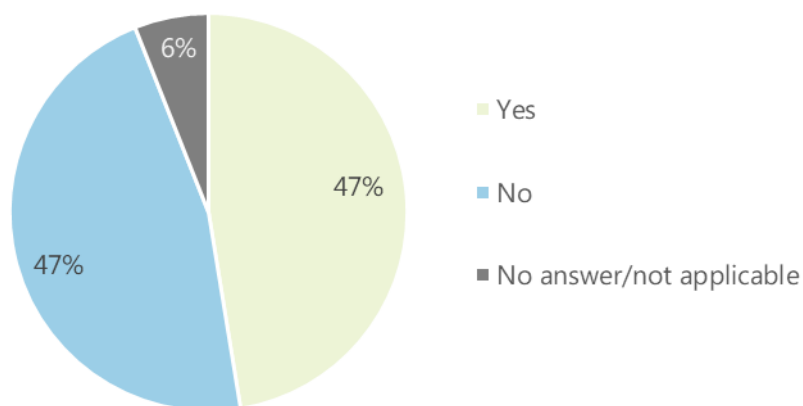
Figure 6 Customer feedback from the November surveys on the number of bags they collect and use

Reuse of the bags to dispose of food waste

Customers were asked if they had reused the bags at home to dispose of their food waste into the green organics recycling bin. Figure 7 reveals that approximately half of customers have used the bags to recycle their food waste.

Figure 7 Percentage of customers that have reused the bags to recycle food waste

Percentage of customers that have reused the bags at home to recycle food waste



Convenience of bag collection

Customers were also asked whether they find it more convenient to collect compostable bags from the Council or from the supermarkets. Figure 8 outlines that most people (67 per cent) find it more convenient to collect their compostable bags from the supermarket when they do their shopping. A further 24 per cent were unsure, or the question was not applicable to them (since they were not recycling their food waste or other reason).

Customer feedback on the convenient supply location of compostable bags

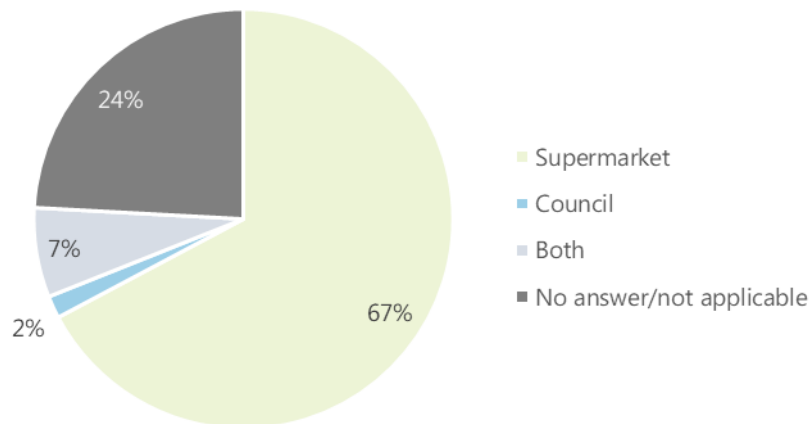


Figure 8 Customer feedback from the November surveys on their preferred method of collecting compostable bags

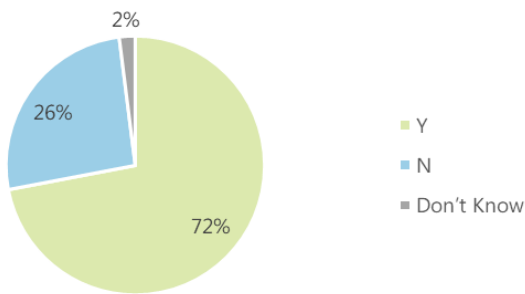
Willingness to pay for the bags

In the June surveys customers were asked if they would be willing to pay a small amount for the bags (e.g. five cents).² Figure 9 outlines customers' willingness to pay for bags. 72 percent of surveyed customers at Glenelg South Foodland and 48 percent of surveyed customers at Brighton Foodland said they'd be willing to pay for the bags. Some of the feedback from customers included:

- Some customers indicated the issue of plastics in the environment is that important that they would be happy to pay and that they would prefer to pay for compostable bags than use plastic.
- There could be a charge for the bags if using over a certain number (e.g. four per visit).
- Other customers suggested that the cost be incorporated into the food price.
- Some customers indicated they could get bags from the CoHB for free and would be unwilling to pay.
- Some customers said supermarkets should not be making a profit from the bags if there was a charge.

² Note that customers were not asked this in November

**Willingness to pay for compostable bags
Glenelg South customers**



**Willingness to pay for compostable bags
Brighton customers**

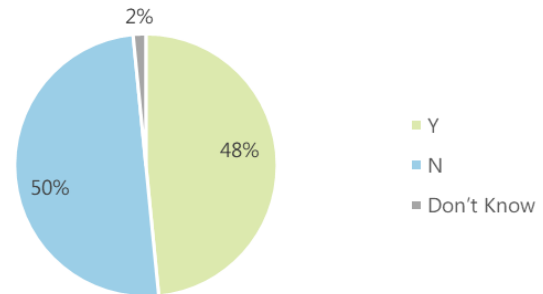


Figure 9 Results from the June surveys showing the percentage of customers willing to pay a small amount for the compostable bags

Impact of trial on customer's views of supermarket

Customers of the Foodland supermarkets were also asked about how the pilot impacted their view of the supermarket. The feedback was overwhelmingly positive, with nearly all customers positive about the pilot. There was no negative feedback, but some customers indicated it did not change their view of the supermarket (six per cent in the June surveys).

Some of the verbal feedback included:

- "Very much welcome it, one of the reasons I come here."
- "Makes me want to shop here more."
- "Really positive - big steps in trying to go plastic free. That's why I'm here, saw it on Facebook."
- "Positive, no point in banning plastic bags if you don't ban the barrier bags."
- "Coming to Foodland 40 years and best bag yet."
- "I stopped using [the] caddy when [the]bags ran out, about 3 years ago and never got around to collecting bags from Council."
- "Number one reason I shop here."
- "Positive, good view of council as well."
- "Innovative. Forward thinking."
- "Good thing. Taking responsibility which all supermarkets should do."
- "Excellent idea. Nice size [bags]."
- "Marvellous, wish everyone would do it."
- "I love the compostable bags."
- "Positive, I like the new dispenser."
- "Definitely a positive. I feel bad when I use plastic."
- "Brilliant. It's a good supermarket but this will keep me coming back."
- "I choose not to get plastic bags if possible, this provides an option."
- "Would like this to be permanent in all stores."



Continued supply of the bags

Customers were asked if they would like supply of compostable bags in the supermarkets to continue. There was overwhelming support for the continuation of the bags (See Figure 10).

Percentage of customers that would like the bags provided on an ongoing basis

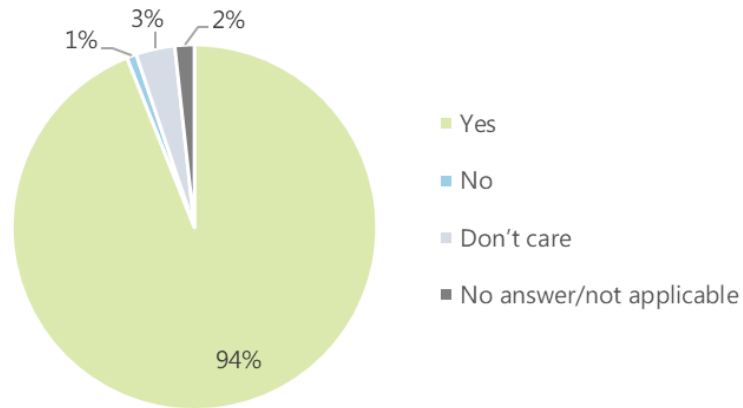


Figure 10 Customer feedback from the November surveys on if they would like supply of compostable bags to continue

3.3. Community and business response

There has been a positive response from the community, both within CoHB and beyond. This response has been in multiple forms.

Social media response

The social media response was significant. Facebook provides performance statistics for posts. Figure 11 shows the number of people reached and the different ways they were engaged.

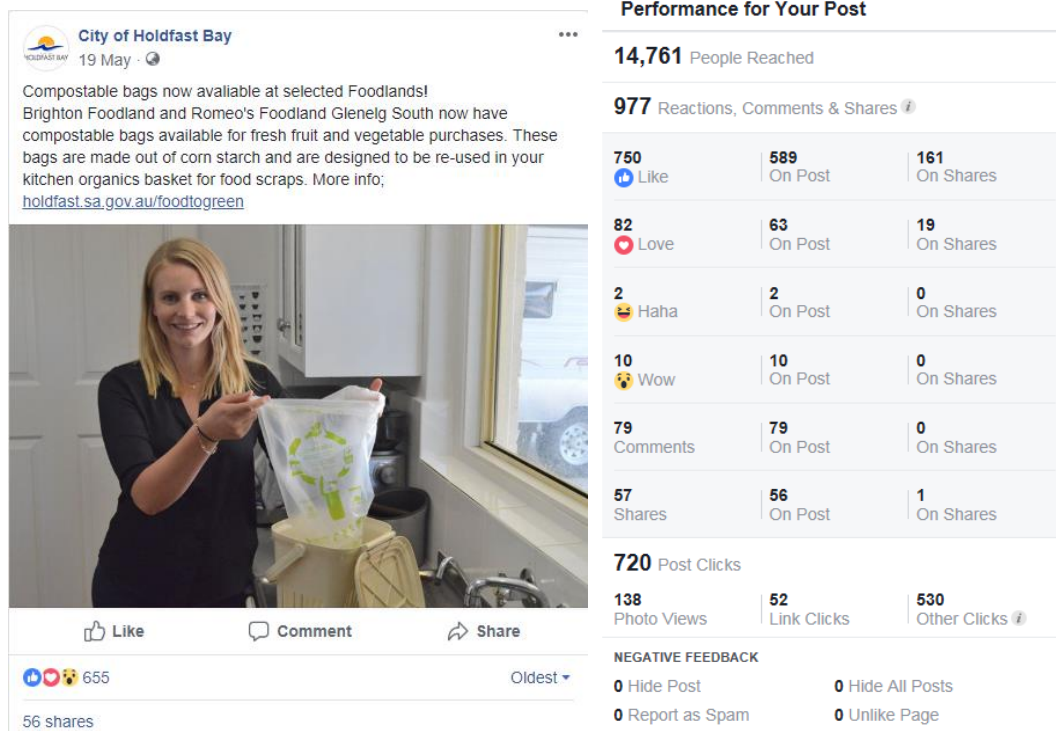


Figure 11 Facebook post statistics for the second promotion of the pilot

Comments from the Facebook posts included:

- "This is fantastic!! Compostable bags have never looked so good."
- "I wish every council was this proactive. Such a great idea."
- "Setting the standard. I wish it was available everywhere."
- "So cool. I hope this replaces the plastic bags at all SA supermarkets soon, that would be amazing!"
- "Fantastic! What a brilliant initiative! Bring it in to all Foodland's for sure!!"

Supermarket staff and management:

- Staff (from the fruit and vegetable section as well as the checkouts) from both stores indicated that they had received an overwhelming number of positive comments about the bags and the pilot.
- Managers of the supermarkets have received positive feedback from customers online and in person.
- Staff found that they have to change the roll slightly more frequently than the plastic bags.



4. Kerbside audits

Three kerbside audits were undertaken, including:

- Audit 1: Baseline audit in March 2018 (pre-pilot) before compostable bags were available
- Audit 2: Mid-pilot audit in May 2018
- Audit 3: During the project extension (in November 2018) to provide further data on any change in food waste recycling and bag use.

4.1. Audit aims and method

The audits aimed to provide information on:

- The amount of food waste in the general waste and green organics bin (kg per household per week).
- The percentage of food waste diverted from landfill.
- The number of compostable bags in the general waste and green organics bin. During the second and third audit this also included identifying council provided compostable bags and supermarket compostable bags.

Each audit took place over two days, Tuesday and Thursday, on residents' regular collection day. Residential addresses from streets within one kilometre of the participating Foodland supermarkets were targeted. The audited streets and dates are outlined in Table 1. A total of 200 bins were collected for each audit, including:

- 50 general waste bins and 50 green organics bins from Glenelg South
- 50 general waste bins and 50 green organics bins from Brighton

Table 1 Audit dates and streets for collection

Collection	Date	Street	
Brighton Tuesday	Audit 1 - 13 February 2018	Marlborough Ave	Oraston Ave
	Audit 2 - 22 May 2018	Edward St	Margate Ave
	Audit 3 - 20 November 2018	Rutland Ave	Arundel Rd
Glenelg South Thursday	Audit 1 - 15 February 2018	Bath St	Broadway
	Audit 2 - 24 May 2018	Mosely St	Partridge St
	Audit 3 - 22 November 2018	Ramsgate St Hastings St	Penzance St

The sampling method for the kerbside audit was based on:

- Providing results that accurately reflect the purpose of the audit.
- Consideration of the *Guide to Kerbside Performance Reporting - Zero Waste SA, 2007*.
- Methods and principles based on Rawtec's previous experience in kerbside auditing across Australia.

Key principles included:

- Where possible, collecting general waste and green organics bins from the same houses. If a house did not present a bin, the next available bin was collected.
- Collecting the first bin from each street at random. Every second house was then sampled.

Waste and recycling materials were delivered to the Adelaide Waste and Recycling Centre, North Plympton. Dynamic 3E sorted and weighed the material based on material type.

4.2. Food waste efficiency

The audits aimed to identify the amount of food waste in the general waste and green organics bin. All unpackaged food waste (no plastic, metal or glass) can be recycled in the green organics bins.

Food waste efficiency is a way to measure the percentage of food waste that is collected and recycled compared to the total amount in the general waste and green organics bins. The volume of food waste was calculated as a 'kilogram per household per week' value adjusted based on bin presentation rates to provide an estimate of the performance of CoHB households. The following graphs provide an overview of the findings from the audit. The food waste audit data is in Appendix 3 to provide further detail on how this was calculated.

General waste bin

Figure 12 below outlines the change in the amount of food waste in the general waste bins across the three audits. There has been an estimated decrease in the kilograms of food waste per household per week.

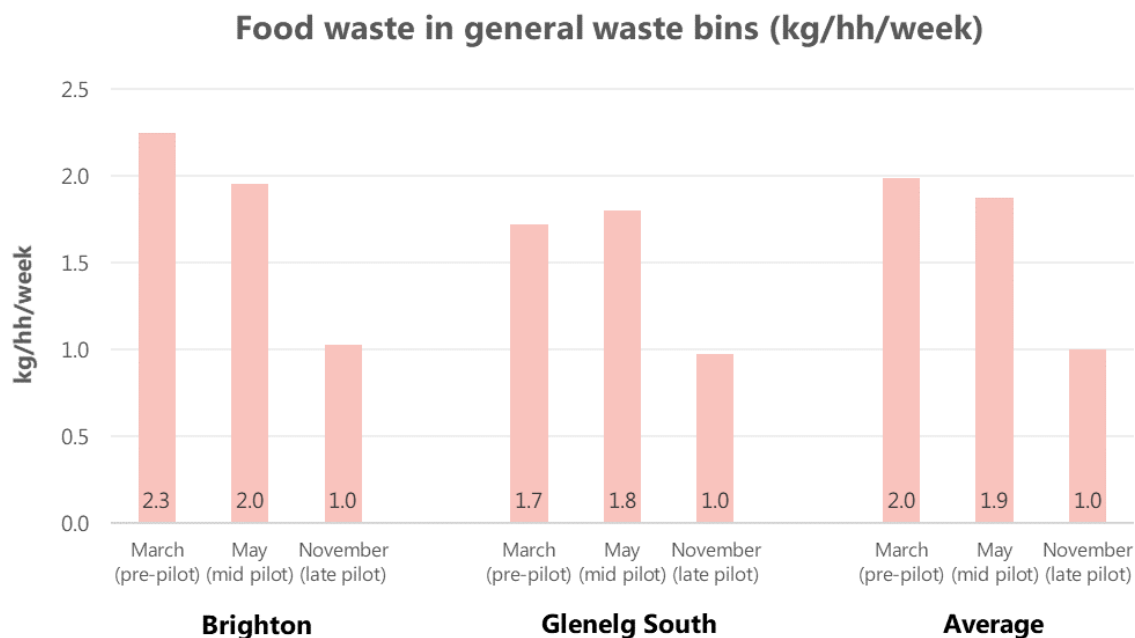


Figure 12 Estimates of the amount of food waste (kg/hh/week) in the general waste bins over the three audits

Green organics bin

Figure 13 outlines the change in the amount of correctly presented food waste in the green organics bins across the three audits. Food must be presented loose, or in compostable bags/packageing to be considered correctly presented.

The graph also reveals the food waste efficiency. This is calculated by dividing the amount of correctly presented food waste in the green organics bins by the total amount of food waste (in the general waste and green organics bins).

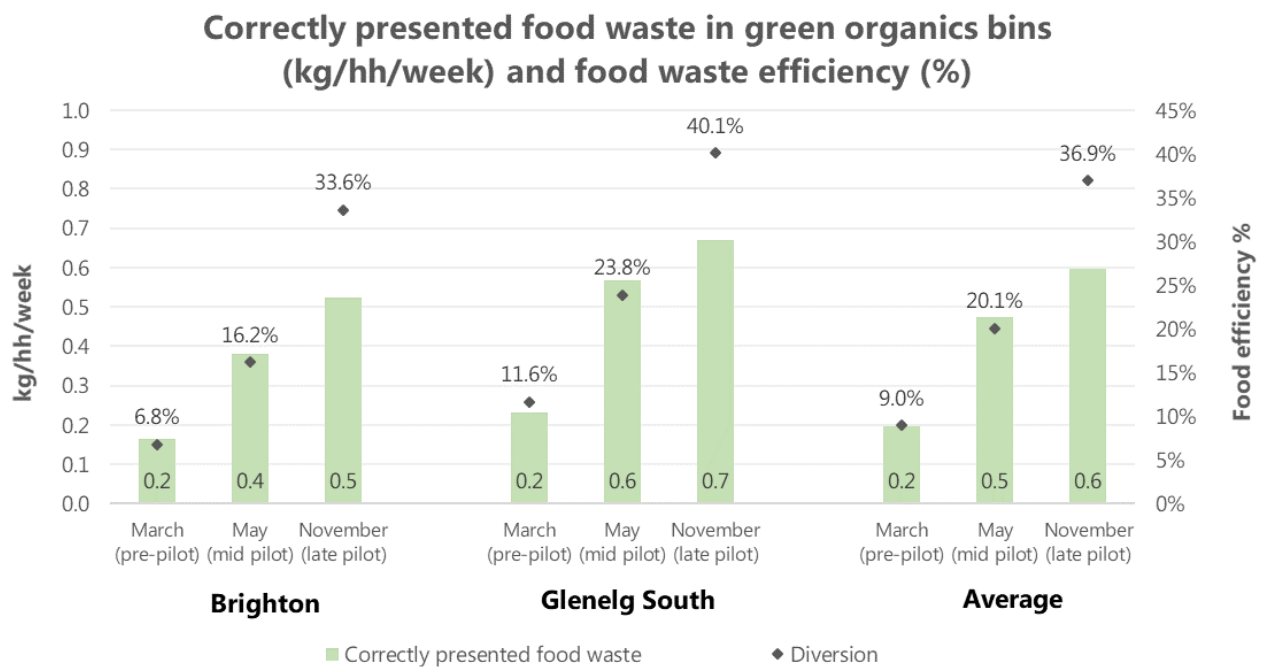


Figure 13 Estimates of the amount of correctly presented food waste (kg/hh/week) in the green organics bins and the food efficiency (%) over the three audits

As the graph reveals, there has been a consistent increase in the amount of food waste in the green organics bins. There has also been a significant increase in the food waste efficiency from the baseline audit in March, from an average of nine per cent up to 37 per cent. This provides evidence that there has been a positive change in food waste recycling.

4.3. Compostable bag use

Figure 14 overleaf outlines the number of compostable bags that were found in the green organics recycling bin during each of the three audits.

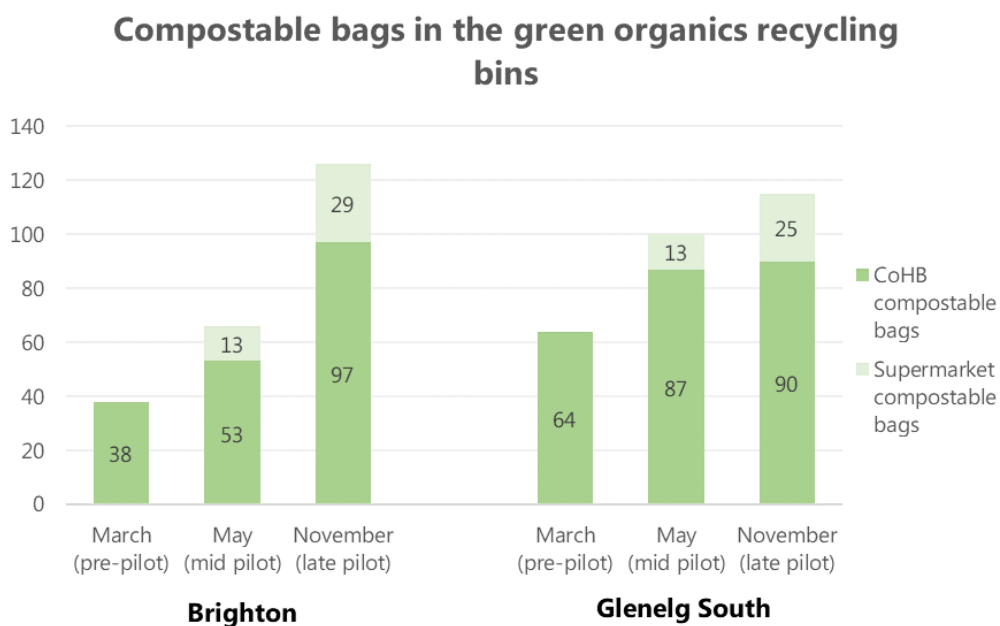


Figure 14 Number of compostable bags, from CoHB and supermarket, found in the green organics recycling bin during the three audits

There has been an increase in the number of CoHB compostable bags, as well as the supermarket bags. The number of compostable bags present in the general waste was also recorded (Figure 15). As expected, supermarket compostable bags were found in the general waste following their introduction. This could have been due to unawareness of the trial and that the bags were compostable. However, as can be seen this reduced to almost zero in the late trial, suggesting that customers became aware of the trial and the opportunity to use the bags in the organics recycling bin.

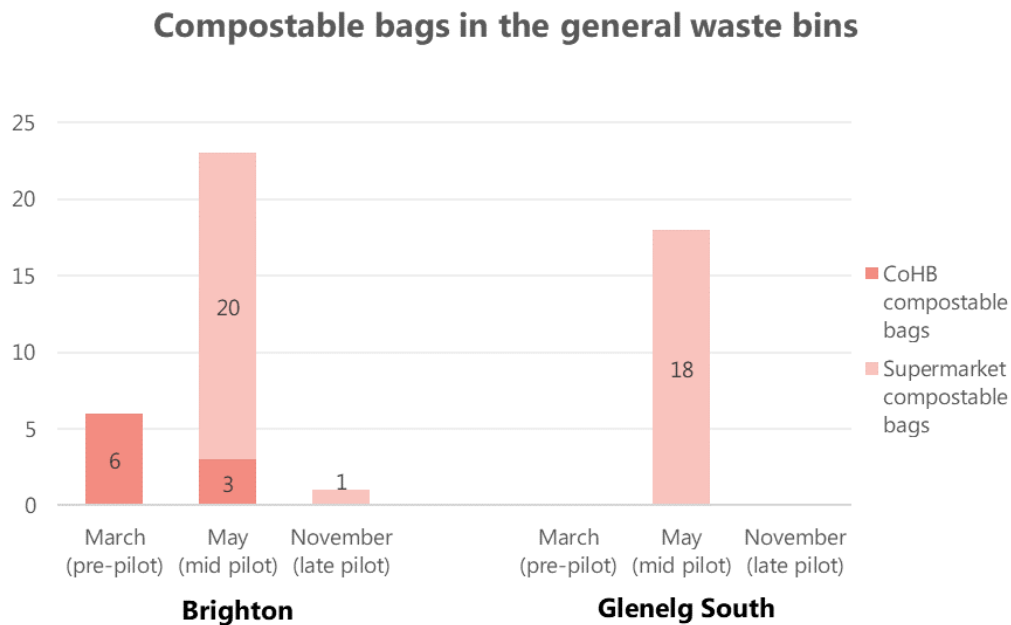


Figure 15 Number of compostable bags, from CoHB and supermarket, found in the general waste bin during the three audits

4.4. Increase in orders for organics baskets

Following the implementation of the pilot the CoHB has had a dramatic increase in the number of kitchen organics baskets collected by residents. Estimates from council in June 2018 suggest nearly 250 organics baskets had been provided to residents since the pilot began. It is estimated that over the same period in 2017 collections of basket were 60 (approximately five per week). This suggests that the pilot lead to an increase in food recycling participation.



5. Cost benefit analysis

Financial aspects of distributing compostable bags in supermarkets have been explored to assess the feasibility of continued supply. A range of measures have been considered including the economics of bag cost and consumption, food waste diversion and other environmental, economic and social benefits.

5.1. Financial analysis

Supermarket compostable bag cost

The rolls of plastic fruit and vegetable bags cost approximately \$0.01 per bag. In comparison, the compostable bags selected in the pilot were \$0.054 per bag. Current compostable bags supplied by CoHB - cost and consumption

The CoHB currently provides kitchen organics baskets and compostable bags to residents. Each household was entitled to one roll at the initial roll out phase in 2013. Since then, residents have been able to visit the Brighton Civic Centre or Library to collect rolls.

Current use of bags with the pickup model is approximately 6,000 rolls per year at a cost of \$60,600. Based on the assumption of one roll per household³, this indicates that likely that up to 40 per cent of households are using the bags to dispose of their food waste. This figure is supported by a separate whole council kerbside bin audit completed for the CoHB in June where visual inspections of the bin recorded approximately 43 per cent containing a green compostable bag provided by the CoHB.

It should be noted that the supply of the supermarket compostable bags may not have the same coverage as the Council supplied bags, as the supply of compostable bags is limited to two supermarkets and residents shopping elsewhere would not have access. Should it be rolled out across all supermarkets in the council area, then the cost of supplying the bags would be more than the council's current distribution model. However, it would have close to full coverage (versus 40 percent).

5.2. Food waste diversion

The audits provide an indication of the amount of food waste diverted from landfill via the green organics bin. The March pre-pilot audit indicated 0.20 kg of food waste per household is diverted per week, which increased to 0.60 kilograms per household per week.

Based on the 0.40 kg/hh/week increase, it estimated an additional 308 tonnes of food waste per year would be diverted from landfill.

We have quantified the cost savings that this would provide to CoHB based on the cost of disposal to landfill (gate rate and landfill levy) minus the cost of sending organic material to a commercial composter. The estimated 308 tonnes diverted from landfill could save \$33,000 per year in disposal costs.

Table 2 Cost savings from increasing food waste diversion from the general waste bins into the green organics bin

Estimated costs saving for CoHB from increased food waste diversion	
Tonnes of diverted food waste	308

³ Calculated based on the number of occupied dwellings - http://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA42600

Landfill cost gate rate (assumed to be \$40) savings	\$12,319
Landfill levy cost (\$100 as of 1 July 2018) savings	\$30,797 ⁴
Commercial composter gate rate (assumed to be \$30) cost	-\$9,239
Estimated annual savings (extrapolated for total CoHB council)	\$33,877

5.3. Other benefits

There are other economic, social and environmental benefits that can be realised from the pilot.

Reuse of the compostable bags

The compostable bags are reused (used twice). Once as a barrier bag for purchased goods and secondly as a compostable bag for food waste recycling in the CoHB food and organics recycling bin.

Reduce plastic waste generation

Replacing plastic barrier bags with compostable alternatives will reduce plastic waste generation.

Greenhouse gas emissions

The diversion of food waste from landfill also provides the additional benefit of reducing greenhouse gas emissions. Based on the food waste diversion outlined above, an estimated 154 CO₂ equivalent tonnes would be saved each year if food waste previously going to the general waste bin and landfill went into the green organics bins.

Circular economy

The South Australian organics processing market has continued to grow over recent years. All food and garden waste is collected and processed locally. Feedback from these processors indicates their desire to source more tonnes of organic material. A key pathway for this would be to remove further organic material from the kerbside general waste bin. Therefore, there is a ready market for more organic material from the increased diversion from landfill.

An increase in the diversion of organic material from the general waste bin into the green organics bin can also mean an increase in jobs at composting facilities. Based on the food waste diversion outlined above (308 tonnes per year), an estimated 0.15 FTE jobs would be created. This estimation may appear small in relation to the tonnes diverted from CoHB, however, if this initiative was rolled out across SA, it is expected to have a much larger impact.

5.4. Barriers

The pilot has highlighted potential barriers to the continuous delivery of compostable bags through the supermarkets.

⁴ As of January 2020, the landfill levy is \$140 per tonne, meaning the savings today would be \$43,116



Cost

The cost of the compostable bags is a significant consideration. The cost of the plastic bags that the supermarkets were providing before the pilot were approximately one cent per bag. Comparatively, the compostable bags cost five cents per bag.

The current cost for the compostable bags used on the trial is based on the initial order of 650,000 bags. It is possible that if the demand and market for the bags increased the individual unit price could reduce.

Food spoilage

The materials the bags are made of has also been identified as a potential barrier. Three supermarket customers provided feedback that fresh produce (e.g. salad leaves) does not last as long in the compostable bags compared to the plastic barrier bags. Discussion with the bag manufacturer identified that the compostable bags let more oxygen in compared to plastic which is the likely cause of earlier spoilage. Rawtec undertook a simple trial to assess this and found that a head of lettuce stored in a compostable bags began to deteriorate faster than one stored in a plastic bag. However, noticeable deterioration only began after two weeks.



6. Conclusions and next steps

The alternative distribution model of compostable bag supply via the supermarkets has been demonstrated to work effectively and increase food waste diversion from landfill. It was positively received by participating customers. We expect that a broader roll out of the compostable bags across more supermarkets would provide a positive contribution to food waste recycling from households.

The success of the trial came down to multiple complimentary factors:

- The compostable bags were designed specifically for the supermarket and kitchen organics basket. A standard compostable bag is unlikely to have been as successful. The supermarket compostable bags were specially designed to fit on the dispenser, support the weight of fruits and vegetables and transparent for supermarket staff to easily use. They also fit into the CoHB kitchen organics baskets.
- Significant promotion of the pilot to ensure that residents and customers knew that the bags were available and suitable to go into the green organics bin. A further benefit of this was the increased awareness that food waste can go into the organics bin.
- Financial and marketing support provided by Green Industries SA ensured the pilot was feasible.
- Willingness of the supermarkets to pilot the compostable bags.

Discussions with the managers of the two supermarkets has been positive and both expressed they wish to continue providing the compostable bags. They have also indicated that they will take a recommendation to the Foodland board that all Foodland's and IGA's in South Australia provide the compostable fruit and vegetable bags.

To continue the success of the pilot and explore options to increase its impact, we recommend:

- Ensuring that the supply of compostable bags in the two supermarkets is not interrupted. This will require ordering bags in advance to ensure delivery takes place before the current supply runs out.
- Sharing the success of the pilot including engagement with other supermarkets
- Investigating whether local manufacturing of the compostable bags may assist with reducing the cost and provide additional local jobs and investment.
- Trialling compostable checkout bags at supermarkets to further reduce plastic generation and waste.



Appendix 1 – Customer survey (Round 1 and 2)

Supermarket:	Glenelg South		Survey Date: _____	Surveyor _____		
Survey Time:	Day	Evening	Weekend			
Survey Location:	Fruit/Veg	Checkout	Other: _____			
Age of Customer:	< 20	20-30	30-40	40-50	50-60	60+
Gender:	Female	Male				

Are you a resident of COHB? Yes No

If no, which Council? _____

Are you the primary shopper in your household? Yes No

Is this your regular supermarket? Yes No

How do you dispose of your food scraps at home?

- Red lidded bin together with other waste Loose/Newspaper (into green bin)
- Kitchen Caddy / Compostable Bags (into green bin) Home Compost / Worm Farm / Chooks
- Other: _____

Are you aware of the compostable bag trial at this supermarket? Yes No

Is it clear from the signage and information that the bags are compostable? Yes No

Have you used any of the bags when buying your fruit/veg? Yes No

Have you reused the bags at home to dispose of your food scraps/waste into the bin? Yes No

If yes, which bin do you place the compostable bag in?

Are you aware that food scraps can go into the Green/Organics bin? Yes No

Are you aware that plastic bags cannot go in the Green/Organics Recycling Bin? Yes No

How does the compostable bag trial impact your view of the supermarket?

Would you be willing to pay a small amount for the compostable bags, similar to paying for reusable checkout bags (e.g. 5 cents per bag)? Yes No

Any comments?

Details for Prize Draw

Name _____

Phone _____

Email _____



Appendix 2 - Customer survey (Round 3)

Supermarket:	Brighton	Glenelg South	Survey Date:	_____	Surveyor	_____
Age of Customer:	< 20	20-30	30-40	40-50	50-60	60+
Gender:	Female	Male				

Are you a resident of COHB? Yes No

If no, which Council? _____

Are you the primary shopper in your household? Yes No

Is this your regular supermarket? Yes No

How do you dispose of your food scraps at home?

Green organics bin

Kitchen caddy/compostable bags

Red lidded bin together with other waste

Loose/newspaper

Home Compost / Worm Farm / Chooks

Other: _____

(If applicable) Is there a reason you don't recycle your food scraps?

Are you aware that the supermarket is trialing compostable fruit and vegetable bags? Yes No

Have you used any of the bags when buying your fruit/veg? Yes No

Have you reused the bags at home to dispose of your food scraps into the bin? Yes No

If yes, which bin do you place the compostable bag in? _____

Does the number of compostable bags you get from the supermarket match the amount you use at home?

Unsure

Not enough

About right

Too many

Is it more convenient for you to receive compostable bags from the supermarket or pick up from the Council? Supermarket Council

Comment: _____

Would you like the supermarket to continue providing compostable bags when the trial ends?

Don't care

No

Yes

Any comments?

Details for Prize Draw

Name _____

Phone _____

Email _____



Appendix 3 - Audit food waste data

The table below outline the food waste data from the three physical audits. Note that all the kilogram per household per week figures have been adjusted to consider bin presentation

Pre-pilot audit results (March)

Baseline audit results			
	Brighton kg/hh/wk	Glenelg South kg/hh/wk	Average kg/hh/wk
Total food in general waste bin	2.25	1.72	1.99
Total food in organics bin	0.17	0.27	0.22
Correctly presented food in organics bin	0.16	0.23	0.20
Total food in general waste and organics bin	2.42	1.99	2.21
Diversion of food waste	6.8%	11.6%	9.0%

Mid-pilot audit results (May)

"After" audit results			
	Brighton kg/hh/wk	Glenelg South kg/hh/wk	Average kg/hh/wk
Total food in general waste bin	1.95	1.80	1.88
Total food in organics bin	0.39	0.59	0.49
Correctly presented food in organics bin	0.38	0.57	0.47
Total food in general waste and organics bin	2.34	2.39	2.36
Diversion of food waste	16.2%	23.8%	20.1%

Late-pilot audit results (November)

"After" audit results			
	Brighton kg/hh/wk	Glenelg South kg/hh/wk	Average kg/hh/wk
Total food in general waste bin	1.03	0.97	1.00
Total food in organics bin	0.53	0.69	0.61
Correctly presented food in organics bin	0.52	0.67	0.60
Total food in general waste and organics bin	1.56	1.67	1.61
Diversion of food waste	33.6%	40.1%	36.9%



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