







# Preliminary conclusions to guide the behaviour change strategy

### My waste system

The most effective systems that appeared to balance minimal effort with minimal contamination were characterised by the following.

- 1. Multiple bins in multiple rooms rather than a small number or single bin in a centralised location.
- 2. This way of organising waste infrastructure was thought to minimise the effort required to get items into their correct bins using a 'sort as you go' approach.
- 3. Use of visual cues. This may include stickers on bins, colour coding of bins and/or visual reference material displayed near bins (a 'source of truth' described throughout this summary and report).

Delegation of responsibility for waste and recycling management tended to follow one of three models.

- 1. The benevolent dictatorship. Under this arrangement, one person, typically a parent, took sole responsibility for waste and recycling management such as sorting, bin purchase and labelling and taking out the bins.
- 2. A team with a leader. This was the most common model whereby one person is appointed ultimate responsibility for waste and recycling management, however responsibility for this household function was also delegated in part to others.
- A shared responsibility. In some households, ultimate responsibility for waste and recycling management was not seen to have an appointed 'leader'. Rather, the smooth running of this household function was equally shared amongst members of the household.

No one model was necessarily better than the other. However, different sets of messaging may need to be developed to appeal to the sensibilities of different types of recycler from the 'leader' to the 'team player'.

### My waste knowledge

Victorians show very good levels of knowledge for the correct disposal of nappies, disposable face masks, aluminium and steel cans, plastic bags and other soft plastics. The lowest levels of knowledge were shown for e-waste items such as batteries and ink cartridges.

Sustainability Victoria has already commissioned a communications campaign to inform Victorians about correct e-waste disposal. However, it would appear that the message has not become embedded in the community. We do not conclude that the campaign was of low quality, but rather suspect that it was not at a scale that the required 'dose' was achieved to influence knowledge and/or behaviour. Further investment in campaigns targeting this aspect of waste management is recommended to enhance knowledge with corresponding improvements to practice.

It is worth noting that self-reported (i.e., perceived) knowledge does not correlate well with actual practice (i.e., correct sorting). However, there appears to be little difference between tested knowledge of appropriate recycling and actual practice. In this way, those with incorrect knowledge who perceive themselves to be doing the right thing will need to be gently challenged in a way that corrects knowledge without offending the individual.

Unsurprisingly, assessment of knowledge using objective tests that determine whether an individual can identify correct practice is a far better predictor of practice. When tested, high polluters (of recycle bins) show far lower levels of correct disposal knowledge for problem items such as soft plastics, waxed cardboard and some e-waste.





### Preliminary conclusions to guide the behaviour change strategy

### My waste influences

The strongest influencers of behaviour appear to be those that happen either in-person, or closest to home.

Attendance at council events or pop-ups, is a very strong influencer, however few people engage in this behaviour and thus such events should not be the focus of a behaviour change campaign.

Strategies that focus on getting material into people's homes such as fridge magnets or bin tagging were also strong influencers and had been experienced by more people. These are better candidates for the focus of a behaviour change strategy.

Participants spoke of their reliance on a 'source of truth' that was maintained within the home. This may be printed information stuck on the fridge and/or stickers placed on bins. Those with good waste and recycling management practices often referred to their use of these 'sources of truth. Sustainability Victoria will likely gain traction if the organisation works with councils on strategies to become effective 'sources of truth'.

Mass media such as advertising and news articles were moderate influencers.

Word of mouth is not a strong influencer of behaviour, though it is a fairly common activity undertaken within a household. It is unlikely that Sustainability Victoria will be able to rely on positive or accurate messaging to spread in the community via word of mouth, either in general, or for the specific roll-out of glass and FOGO bins. Interest in discussing such matters outside of the home is limited; and those with poorer levels of practice were sometimes overly-reliant on the advice of others which may well have been inaccurate.

### My waste information

Numerous reports have identified that council websites and Google searches are the primary sources of information about recycling. While this research confirms this assertion, the in-depth qualitative research identified a number of other touch-points that Victorians refer to before turning to council websites.

- 1. Primarily, following rules of thumb such as observing materials to gauge 'shininess', 'thickness' and other basic characteristics (these rules of thumb are often outdated or otherwise inaccurate);
- 2. Referral to labelling on packaging newer labelling standards have helped in this regard, however this practice is still hampered by the old Plastics Identification Code system (which is seldom understood and a poor way to denote recyclability in general), unrecyclable packaging with unhelpful labelling (e.g., 'please dispose of thoughtfully') and packaging with no labelling at all such as most plastic bags.
- 3. Asking others in the household, which is not without issue as described to the left.
- 4. Referral to a reliable source within the household such as the 'source of truth'.
- 5. ... And then to council websites and Google.

While it is not possible for Sustainability Victoria to play a very active role at each and every touchpoint above, some opportunities do present themselves. For example, working with local councils to become embedded as the source of truth as mentioned. Further, messaging to positively inform rules of thumb that either provide information to people who want it, or gently challenge those with incorrect knowledge and correspondingly poor practice.





# Preliminary conclusions to guide the behaviour change strategy

### My waste behaviour

Most Victorians contaminate their recycling bin in some way, however contamination is typically very minor.

The stand-out finding for notable waste behaviours was the level of contamination of bins in the form of waxed cardboard. This substance far outnumbered any other contaminant by weight. Victorians also demonstrated only moderate levels of knowledge about the correct disposal of waxed cardboard.

Other contaminating items commonly found in recycling bins included soft plastics, household electrical items and Styrofoam/polystyrene. Composite items that include combinations of plastic/paper and combinations of different types of plastic are also somewhat common contaminants.

Consistent with the findings of previous research, those in metropolitan areas appear to be more likely contaminate their recycle bins compared with those in regional areas. Males are also more likely to contaminate their bins compared with contamination rates for females.

Findings from previous research relating to differences by household language and age were not as apparent in this research. However, the small sample size for the bin audits limits our ability to detect differences by demography.





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# Background and objectives

As part of the state government's Recycling Victoria package, significant change is on the way for how many Victorians manage their kerbside waste. From 2021, many homes will be introduced to a food and garden organics (FOGO) system and many households will also begin separating glass from other recyclable items in a glass only bin.

To support the Recycling Victoria initiative a large-scale education and behaviour change campaign will be delivered to update Victorians on the household changes relevant to them, and in addition to encourage Victorians to avoid and minimise their waste.

Kantar Public Australia was commissioned to explore a range of key research questions to support the Recycling Victoria program, these included:

- What is Victoria's levels of understanding of existing kerbside collection systems, and the upcoming FOGO and four-bin systems?
- More generally what are Victorians' understanding and levels of practice for each stream of waste?
- Where are the problem areas that need to be addressed? What are the low levels of understanding and practice that may impact on contamination and uptake of new kerbside collections?
- Importantly how do we positively impact on these levels of knowledge and practice both in-home and out-of-home?
- What are the sources of information and key influential others who impact on knowledge and practice in relation to household waste disposal?
- What are the volumes and types of waste that are commonly disposed of in different waste streams both correctly and incorrectly?
- What are common waste avoidance strategies that are used in households, how can these be harnessed and encouraged for the benefit of the environment?
- Specific consideration on the quantity and nature of single use plastics, and strategies to minimise this form of waste.





### Overview of the project

- The findings from the online survey are detailed within this report. However, these findings are part of a broad program of work including qualitative, quantitative and desktop research.
- A summary of all project stages is provided below.
- The details of the methodologies for each stage are presented at the start of each chapter.





Project Inception

Rapid Evidence

Assessment

P1 Co-design











Online community, bin audit



Final reporting and presentation



Establish a shared understanding of the project's objectives and how our design will address your business needs and intended outcomes

Collate existing research to identify themes and items for ncorporation into the current research design.

Engage with Sustainability Victoria and stakeholders to capture as broad a range of input to the project's foundation and design.

workshop

Understand common beliefs, attitudes and behaviours around recycling and the circular economy. Lay the foundation for a communications and engagement strategy.

survey

Provide initial findings about effective behaviour change strategies and message targeting to the SV and creative teams who are producing communications.

reporting

Take the findings from Phase 1 and integrate them into Phase 2 to ensure an integrated, coherent research program.

Enrich the survey findings with a deepdive into Victorian's attitudes towards recycling and the circular economy more generally.

Integrate qualitative and quantitative evidence to form a detailed comms and engagement plan for recycling and the circular economy in general.



Establishment meeting with Sustainability Victoria to confirm project vision and the approach we will use to meet objectives.

Colmar Brunton and other research to form the basis of research instruments that will capture Segmentation, Behaviour Change and Commitment Modellina.

Review existing

Convene a codesign workshop to identify research priorities, knowledge gaps and audiences to be targeted by the two phases of the research.

Capture data for segmentation, Behaviour Change and Commitment Modelling in an online survey of n=2.000 Victorians.

Provide a quantitative report communicationsspecific findings and recommendations to SV and stakeholders.

Convene a second co-design workshop with Sustainability Victoria to review quantitative findings Use findings to inform design of recruitment specs and qualitative instruments.

Conduct n=100 residential bin audits (quantitative/ qualitative) and a farreaching and week long online discussion board with n=35 Victorians (qualitative).

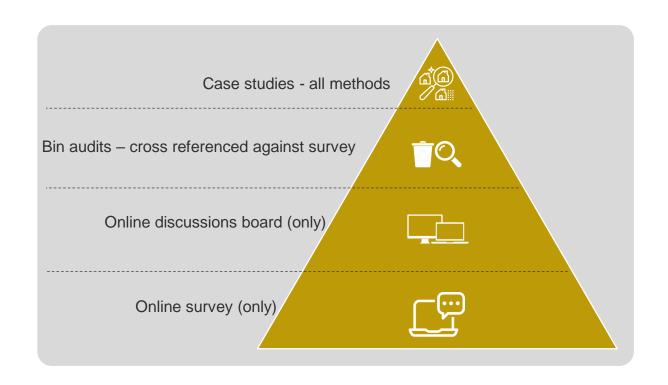
Analyse data from P1 and 2 to produce an integrated report with a segmentation, profiled by behaviour change and commitment metrics. Present findings in final co-design workshop.



This report is structured using a top-down approach whereby the most focussed aspects of the project using the smallest number of participants are presented first, followed by increasingly broad perspectives on waste and recycling management. Specifically:

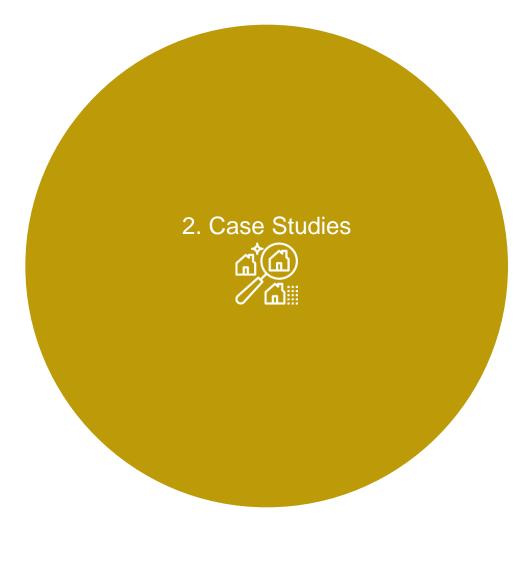
- 1. The case studies are presented first, these are four selected deepdices into the households of Victorians that include insights from the bin audits, qualitative boards and online survey;
- 2. The bin audits are presented next which include data from the audits which is also cross-referenced to the online survey;
- 3. Qualitative findings from the online discussion boards are presented in a stand-alone chapter; and
- 4. Quantitative findings from the online surveys are presented in another stand-alone chapter.
  - Significance testing was done between groups (for example, metropolitan vs. regional) and was calculated using Q.

Appendices are included at the end of the report including sample characteristics and a detailed list of waste and recycling items that were under investigation.



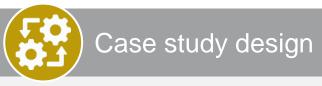








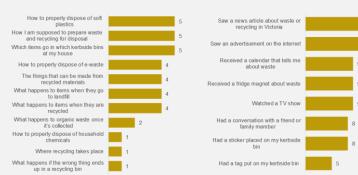


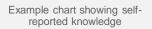


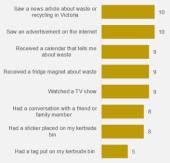
- The design of this project provides a unique opportunity to link together three distinct, though connected methodologies:
  - 1. The online survey:
  - The online discussion boards:
  - The bin audits.
- Some participants in the project participated in all three of these research components. Four households were selected to be analysed in detail using a case study methodology.
- Case study households were selected to represent a range of living arrangements, locations and levels of waste/recycling knowledge and practice. Specifically:
  - Self-reported knowledge in terms of questions where participants stated their level of understanding of recycling requirements and systems; and
  - Observed practice in terms of levels of contamination in the recycling bin (lower means lower levels of practice in terms of the level of contamination).
- The four households are summarised in the table below. The age and gender reflects the person who completed the survey.

Case Study	Characteristics	Self-reported knowledge (Survey)	Observed practice (Bin audit)			
1	Woman, 18-35, Outer Metro	Higher	Lower			
2	Man, 36-55, Outer Metro	Higher	Lower			
3	Woman, 36-55, Inner Metro	Lower	Higher			
4	Man, 55+, Regional	Lower	Higher			

- Each case study includes a number of different elements, each supported by qualitative and quantitative data drawn from the survey, board and audit.
  - An introduction to the household and its occupants:
  - A description of the waste systems employed in the household:
  - Indications of self-reported knowledge for different aspects of recycle/waste knowledge both in the home and in Victoria in general;
  - Qualitative and quantitative data about strong and weak influencers in behaviour:
  - Sources of information about waste/recycling used by the Case Study: and
  - A comparison of true levels of knowledge based on a 'quiz'-style set of questions about proper disposal from the survey, and recycle bin contamination levels from the bin audits.







Example chart showing potential influencers



Example table showing levels of knowledge and practice

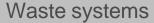




# Case Study 1: Introducing the household

#### The household

- This case study focuses on a semi-detached or terrace house, located in the outer south-eastern suburbs of Melbourne.
- There are four people living in the household, and it is being rented through a real estate agent.
- The respondent is a busy Mum with little spare time in an average day.



- The person who completed the survey is primarily responsible for managing the recycling and waste in the household. Her husband works for most of the week, so the task falls to her. Her young son is taking an interest in the processes and is being 'trained' as an assistant in waste and recycling management.
- The household subscribes to the 'multi-room-multi-bin' approach to disposal and sorting of recycling and waste. Bins are located at common points of disposal at in the kitchen and bathroom. This arrangement is thought to make management easier as less effort is required to transport items to bins. However, recycling is sometimes allowed to accumulate for later sorting and disposal.
- Case Study 1 did not describe any particular 'rules of thumb' or guiding principals that she uses to determine which goes in which bin.
   Rather, she simply states that she would ask friends or family if she was ever unsure.



I have one bin in my kitchen and two in both bathrooms. Normally kitchen waste goes to waste bin except cartons bottles etc. I sort out and then in the evening put all bags or recycling things in the bin which are outside in the backyard. This process is easy for me.





### Case Study 1: Waste knowledge

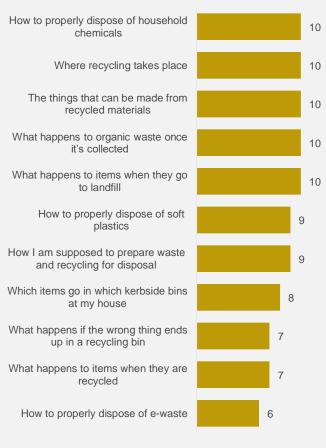
### Waste knowledge

- Based on the survey, Case Study 1 self-reports a very high level of knowledge overall for waste and recycling management. In particular, Case Study 1 believes that they know exactly how to manage hazardous materials such as chemicals; how to manage recycling in the household; and how Victoria's recycling system works.
- However, Case Study 1 is less certain about how to properly dispose of e-waste, a very common issue in Victoria identified across all aspects of this study.
- From the online discussion board, it is clear that Case Study 1 understands most, but not all terminology and concepts associated with proper waste and recycling management. General terms such as 'recyclable' are clear, however more specific terms such as 'compostable' and 'biodegradable' caused some uncertainty. The exact meaning of recycling symbols and numbers were also unfamiliar to Case Study 1.
- Case Study 1 could not identify any particularly problematic areas for managing waste and recycling in the household. As noted, she believes that she is very knowledgeable about what is required, and has a good routine which she perceives makes the task easy. One minor issue can occur if she forgets to take the bin to the kerbside.

u

Regular routine is to put the bins out one day before collection but one day I forgot to put out on the kerb and I missed waste bin collection. As a result it was full until next week.

#### Knowledge of waste systems



Based on a scale of zero (low) to ten (high)





### Case Study 1: Waste information and influencers

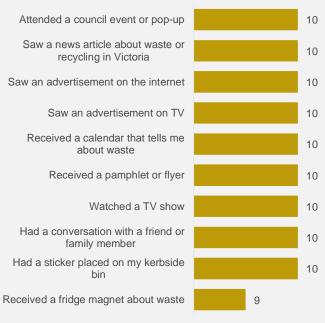
#### Waste influencers

- From the survey Case Study 1 claims to have engaged with a wide range of potentially influential
  experiences, far more so than most Case Studies under examination. This included active engagement at
  council events and having conversations with family and friends; as well as more passive forms of
  engagement such as seeing advertising and receiving waste calendars.
- Case Study 1 claims that each and every one of these forms of engagement had a high level of impact on her recycling practice (a score of 9-10 across all items).

#### Waste information

- From the survey Case Study 1 claims to actively seek information about waste and recycling practice approximately once a month.
- Her preferred sources of information include social media, council newsletters, asking family and friends and her local community centre. Interestingly, Case Study 1 does not use the most popular sources of information about waste and recycling – local council websites and online searching.
- Case Study 1 relies quite a lot on other members of her household both as sources of general information, as well as a means to determine whether something should go in the recycle bin or not. If in doubt, Case Study 1 states she would put an item in the recycle bin, even if she is not sure of the correct disposal method.
- These findings were backed up by the survey where Case Study 1 states that she turns to and is influenced by family members in the first instance, if doubt persists, she turns to internet searches.

#### Strong and weak influencers



Based on a scale of zero (low) to ten (high)



... (For information) First family members then internet ... I check local council website to see how it goes.





# Case Study 1: Waste behaviours – knowledge and practice

### Waste and recycling disposal behaviour

- From the survey despite high levels of self-reported knowledge for waste and recycling management,
   Case Study 1 demonstrates relatively low levels of knowledge when quizzed on the correct methods to dispose of different items. She is familiar with how to dispose of relatively common items such as paper and cardboard; hard plastics etc. However, She was less sure on the correct methods to dispose of less common items such as toys, pots and pans etc.
- Correspondingly, Case Study 1's bin was relatively contaminated based on the outcomes of the bin audits. Specifically, by toys and soft plastics (0.31 Kg and 0.17 Kg respectively) as well as by Styrofoam (0.01 Kg, though a relatively small level of contamination). Like many Victorians, Case Study 1's bin was also contaminated with waxed cardboard (0.66 Kg).

It's very important we know the difference between waste and recycling things as the right thing should go in right bin to dispose off and reuse. It's a very hot issue for Victoria as normally we become lazy and don't bother to put the right thing in right bin.

#### In summary:

Overall Case Study 1 is very confident in her knowledge of waste and recycling management, and trusts in her systems to ensure that everything is being done correctly and that bins are not contaminated. She sees proper recycling as an important aspect of life to get right and is critical of the tendency to become lazy and put things in the wrong bin.

Nonetheless, Case Study 1 is one of the highest contaminators amongst the audits (she was chosen for this reason). This is likely because of a heavy reliance on friends and family as sources of information rather than external sources such as the internet or other independent 'source of truth' which were more heavily emphasised by other Case Studies.

ltem	Correct knowledge?	Incorrect recycling?			
Paper and cardboard	Yes	-			
Aluminium and steel cans	Yes	_			
Aerosol cans	Yes	-			
Hard plastic containers	Yes	-			
Glass bottles and jars	No	-			
Milk and juice cartons	Yes	-			
Aluminium foil and trays	Yes	-			
Plastic toys	No	Yes - 0.31			
Soft plastics	No	Yes - 0.17			
Steel pots and pans	No	No			
Wood or timber	No	No			
Ink cartridges	No	No			
Plastic bags	No	No			
Disposable face masks	No	No			
Styrofoam or polystyrene	No	Yes - 0.01			
Batteries	No	No			
Ceramics	No	No			
Glass from broken windows etc	No	Yes - 0.24			
Waxed cardboard boxes	No	Yes - 0.66			
Food scraps	No	No			
Nappies	No	No			
Light globes	No	No			
Household electrical items	No	No			
Clothing items or other textiles	No	No			





# Case Study 2: Introducing the household

#### The household

- This case study focuses on a separate or detached house, located in the outer south-eastern suburbs of Melbourne.
- There are three people living in the household, and it is owned by the residents.
- At the time of the survey and audits, much of the household was overseas, leaving only one person to manage the household's affairs.

### Waste systems

- Based on the survey the household has access to a kerbside recycling bin which is 'co-mingled', and a communal recycling bin which is 'co-mingled'.
- Even though Case Study 2 is the only person in the house at present; he is typically the one to take charge as the 'lead' for sorting and disposal. From the online discussions this role as 'lead' extends to 'educating' his wife on proper waste and recycling management.
- Case Study 2 uses a more centralised system of waste and recycling collection where a small number of bins and bags are used to store and sort items in a central location for disposal in an outside bin. Case Study 2 would like more bins to assist in collection/sorting, though appears to expect that these would be given to him, rather than actively seeking to purchase them.
- From the online discussions, Case Study 2 has some very general 'rules of thumb' that are often guided by product labelling. However some rules explained by Case Study 2 were unclear and appeared to conflate concepts such as 'compostability' and disposal in landfill.

If we are given bullet bins to sort out recyclables so we don't have to go outside the house everyday.

99% of the times there is a sticker or marking on them as in if goes to landfill or recycle. I am pretty clear with my decisions.

If there is anything that will decompose that goes to landfill.



I have been offering advice and educating my wife about sorting and the reason behind different bins and the benefits of sorting.





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### Case Study 2: Waste knowledge

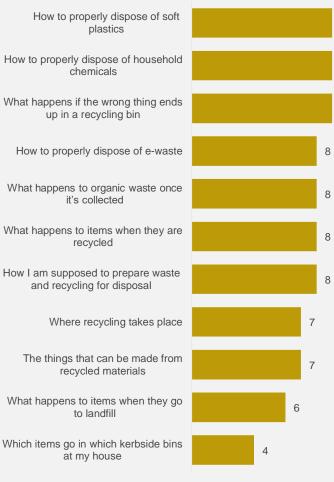
### Waste knowledge

- From the survey Case Study 2 perceives that they have a high levels of knowledge of how to correctly manage aspects of waste and recycling in the household; and how the Victorian recycling and waste management system operates in general.
- However, Case Study 2 claims a lower level of knowledge for which specific items go in which kerbside bins.
- This finding from the survey appears to be at odds with comments made in the online discussion boards, further suggesting a household with some confidence in a waste/recycling system that is in fact not as organised or well-informed as it is perceived.
- o From the online discussion board, it was clear that Case Study 2 had a good grasp on different types of waste/recycling; and the meanings behind terms such as 'co-mingled' and 'hard plastics'. Some confusion was apparent, however, in the difference between a hard plastic and a soft plastic; and the concept of general rubbish for landfill vs. hard rubbish.
- Again from the online board, Case Study 2 appears to be very confident in his knowledge of waste/recycling management. However, he did identify specific issues around the correct handling of plastic bags as he perceived that there was no 'correct container' to place them in for disposal.

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I am very strict when <things that should be> recycled go to landfill. Plastic bags are a main concern as there is no special bin given.

#### Knowledge of waste systems



Based on a scale of zero (low) to ten (high)





# Case Study 2: Waste information and influencers

#### Waste influencers

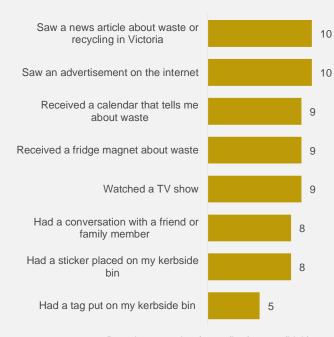
- From the survey like Case Study 1, Case Study 2 claims to have engaged with a wide range of potential influencers in relation to waste and recycling management. However, Case Study 2's engagements were almost all more passive such as seeing advertising, receiving information etc.
- Case Study 2 perceived that mass media approaches such as news articles and online advertising were the most impactful forms of engagement. More localised approaches such as bin-tagging and stickers had less of an impact.
- o In a similar manner to Case Study 1, the opinions of trusted others have a great deal of influence over the behaviours of Case Study 2. Case Study 2 is also influenced by the bin stickers on his bin from council.

#### Waste information

- From the survey Case Study 2 claims to look for information every few weeks.
- Case study 2 most typically refers to the waste calendar he received from the council, and may even phone the council if he is not sure.
- If Case Study 2 was ever uncertain about which bin to place an item in, he would most likely look it up on a council website. In the survey, he indicates that he would not place an item in the recycle bin if he was unsure where it should go, but rather, place the item in the general waste bin.
- Case Study 2's use of the internet was again re-iterated in the online discussions, where he stated that he
  always found the information he wanted online if he could not get it from a trusted friend or other source.

Family or friends are good as long as they know what they are doing and they are clear with their facts. The stickers on the bin or council website is another good reliable source.

#### Strong and weak influencers



Based on a scale of zero (low) to ten (high)

Most of them are easily identified from the name. If unsure, I will just google it and will remember for next time.





# Case Study 2: Waste behaviours – knowledge and practice

### Waste and recycling disposal behaviour

- Like Case Study 1, Case Study 2 claims to have relatively high levels of knowledge of waste and recycling
  systems in general However, he also claims to have lower levels of knowledge of what should and should not
  go in his bins. This finding is borne out by knowledge testing items in the survey, where Case Study 2
  showed incorrect knowledge for the disposal of many items including different types of plastic and e-waste.
- From the bin audits this led to moderate levels of contamination of Case Study 2's bins including some plastic bags, broken glass and waxed cardboard (0.01 Kg, 0.29 Kg and 1.1 Kg respectively). With the exception of waxed cardboard, most of this contamination is relatively low-level.

It is very important thinking of environment in time. We have different bins and different rules to dispose off. All the rules are made for a purpose and all members of the community must abide by all the rules to keep the community safe.

#### In summary:

Case Study 2 is a firm believer in the importance of recycling; and in particular the importance of 'the rules' that guide correct recycling practice. He considers himself somewhat of a master in this regard, to the extent to which he educates others based on his knowledge. However, in closer inspection it might appear that his knowledge is not perhaps as accurate as he may believe. This may result from an over-reliance on others to provide advice (who may also lack knowledge). Any poor practices perceived by Case Study 2 are often attributed to a failure of infrastructure, for example not being provided with additional bins for items such as soft plastics.

Case Study 2's practice may be influenced if a credible source gently challenges his assumed mastery of waste/recycling practice in a non-confrontational manner.

Item	Correct knowledge?	Incorrect recycling?			
Paper and cardboard	-	recyoning:			
Aluminium and steel cans	Yes	-			
	Yes	-			
Aerosol cans	Yes	-			
Hard plastic containers	Yes	-			
Glass bottles and jars	Yes	-			
Milk and juice cartons	Yes	-			
Aluminium foil and trays	No	-			
Plastic toys	No	0			
Soft plastics	Yes	0			
Steel pots and pans	No	0			
Wood or timber	No	0			
Ink cartridges	No	0			
Plastic bags	No	0.01			
Disposable face masks	No	0			
Styrofoam or polystyrene	No	0			
Batteries	No	0			
Ceramics	No	0			
Glass from broken windows etc	No	0.29			
Waxed cardboard boxes	No	1.1			
Food scraps	No	0			
Nappies	No	0			
Light globes	No	0			
Household electrical items	No	0			
Clothing items or other textiles	No	0			





# Case Study 3: Introducing the household

#### The household

- o This case study focuses on a semi-detached or terrace house, located in the inner north-eastern suburbs of Melbourne.
- o There are three people living in the household, mum, dad and a teenage son. The participant in the research was the mother.
- The property is a rental.
- o The household recently received a new glass bin which has had quite an impact on waste/recycling management.

### Waste systems

- From the survey the household has access to a kerbside rubbish bin for general rubbish, and a kerbside recycling bin which is comingled.
- Based on the online discussion board, responsibility for waste and recycling management is a responsibility that is shared across the household. Primary responsibility for kerbside disposal is taken by the father, maintaining adherence to correct disposal in different bins is the job of the mother. The best efforts are being made to educate the son on good recycling sorting (with mixed success).
- The household uses a multi-bin arrangement to help with correct disposal and sorting. There are a series of smaller bins placed in the household for specific items in addition to a larger general waste disposal bin. This system was described as occurring organically, perhaps in reaction to the introduction of the new glass bin in the household; rather than something that was planned.
- Case Study 3 did not mention many rules of thumb beyond routines such as taking lids off jars and bottles. However, they did mention
  that some of their old rules of thumb had recently been challenged and left them feeling guilty about how they had been disposing of
  items such as UHT milk cartons.

We usually all do this!! Although, come rubbish night, my husband is the one who actually takes the bins out to the kerb! However, during the week, we do separate the waste as we go. Even though we've told our son a million times, what goes where he still asks every time (almost), questions like "does this go in the rubbish bin? Or recycle bin"!!! Frustrating, but at least he gets it!!



Having the separate small bin and bucket inside, makes it easier for us. I don't know how we started it this way, it just happened by accident one day!!







### Case Study 3: Waste knowledge

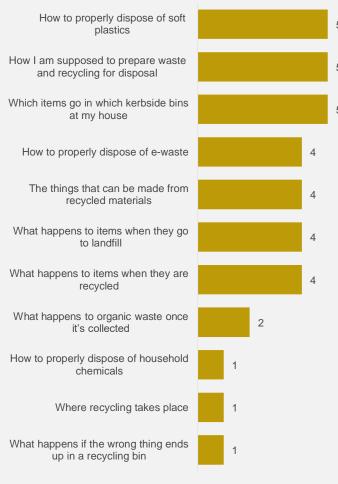
### Waste knowledge

- Unlike Case studies 1 and 2, Case Study 3 reported relatively low levels of knowledge for waste and recycling management in the home, as well as across the state. From the survey, middling knowledge was reported for the proper sorting and preparation of waste and recycling; and for appropriate soft plastic disposal in particular.
- However, Case Study 3 was able to give very detailed and clear answers to questions about the meaning of different waste and recycling terms in the online discussion board, suggesting a far higher level of knowledge that that which was self-prescribed.
- Particularly low levels of knowledge were reported by Case Study 3 for the disposal of household chemicals, where recycling takes place, and the impact of bin contamination.
- The greatest area of confusion about sorting recycling was related to plastics which plastics can and can't go in the bin, whether lids should be on or off, etc.
- As mentioned on the previous page, the household had made some recent discoveries about incorrect practice, perhaps during the research that was undertaken when the new glass bin arrived.

Some plastics have confused us, but it's been more about whether we leave the lids on or off that's confusing us!!

If we are really unsure about something and can't find the answer, we have put it into general rubbish, not recycled bin! For a very long time, our house has used UHT milk and was putting that empty container into the recycled bin!! We've recently found out that it does NOT go in that bin, it goes in the rubbish bin!! That really confused us and had us feeling very guilty for doing the wrong thing!!

#### Knowledge of waste systems



Based on a scale of zero (low) to ten (high)





# Case Study 3: Waste information and influencers

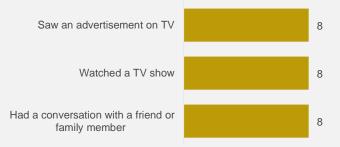
#### Waste influencers

- Case Study 3 reported far lower levels of engagement with potential influencers of waste and recycling management behaviours.
- Based on survey findings two of the three engagement activities were passive in nature seeing advertisements and TV shows. She also reported to have had a conversation with friends/family about recycling.
- The introduction of a new glass bin into the household has led to a new set of influencers information from a council (referred to as 'the manual' is not playing a large role in determining waste/recycling management, overseen by the mother).
- Another interesting influencer was bought into the household by the son, who took an interest in the climate change
  protests in the state and started asking more questions about correct recycling practice.

#### Waste information

- From the survey this low level of engagement is further demonstrated by the fact that Case Study 3 only seeks information about once a year.
- In a similar fashion to case Study 2, she may ask a friend or phone the city council. She may also refer to the council's website.
- o In the event of uncertainty, Case Study 3 would also use council websites and information from friends as a means to determine which bin an item goes in. She claims that she would not place an item in the recycle bin if she was not certain where it was supposed to go.
- In the online discussion, Case Study 3 also indicated that she would typically refer to food packaging or the new 'manual' as the first point of reference in the event of uncertainty.

#### Strong and weak influencers



"

Yes, we have completely changed the way we do our rubbish. It really started with our son asking questions.

Particularly, at the beginning of this year, there were LOTS of climate change protesters happening around our city. Then he started asking more questions... Asking what he could do.. So we began with changes at home versus changing the WHOLE world!!

"

Recently, since getting the new bin and the 'manual', as I call it, I've become the one in charge of telling the family what goes where!! Our council has just informed us of changes they've made and about new companies taking our waste, so we've become more aware of what to do as there are now new rules.





# Case Study 3: Waste behaviours – knowledge and practice

### Waste and recycling disposal behaviour

- Despite a self-described low level of knowledge from the survey, Case Study 3 actually demonstrated a good knowledge of correct disposal processes for many items, more than both Case Studies 1 and 2.
- Some confusion was seen for metal items such as aerosol cans and aluminium foil; as well as e-waste such
  as batteries, ink cartridges and household electrical items. Like many Victorians, Case Study 3 is not yet
  aware of the correct method of disposing e-waste.
- Correspondingly, contamination of Case Study 3's bin was very low. Only a small quantity of waxed cardboard (0.58 Kg) was detected in the bins; as noted, waxed cardboard is a major contaminant for many Victorians.

I think it's very important! We all need to do our part when it comes to looking after the environment. To me, sorting out our rubbish is just one thing we can ALL do and if everyone does it, things will improve!

The problem I find is that we are not getting taught properly what to put into what bin!!

#### In summary:

In some ways, Case Study 3 could be seen as the opposite of Case Studies 1 and 2. She perceives that she has a relatively low level of knowledge about waste and recycling management, and appears to doubt many of her decisions and past practices. The recent introduction of the new glass bin seems to have compounded these tendencies. However, under objective assessment, Case Study 3 is relatively knowledgeable about correct waste/recycling practices, and her bin is almost contaminant-free.

Case Study 3's needs will likely be met by providing clear reference material for the household that will empower her to engage with other on correct disposal of waste and recycling.

ltem	Correct knowledge?	Incorrect recycling?			
Paper and cardboard	Yes	-			
Aluminium and steel cans	Yes	-			
Aerosol cans	No	-			
Hard plastic containers	Yes	-			
Glass bottles and jars	Yes	-			
Milk and juice cartons	No	-			
Aluminium foil and trays	No	-			
Plastic toys	Yes	0			
Soft plastics	Yes	0			
Steel pots and pans	Yes	0			
Wood or timber	No	0			
Ink cartridges	No	0			
Plastic bags	Yes	0			
Disposable face masks	Yes	0			
Styrofoam or polystyrene	Yes	0			
Batteries	No	0			
Ceramics	No	0			
Glass from broken windows etc	No	0			
Waxed cardboard boxes	Yes	0.58			
Food scraps	Yes	0			
Nappies	Yes	0			
Light globes	Yes	0			
Household electrical items	No	0			
Clothing items or other textiles	Yes	0			





# Case Study 4: Introducing the household

#### The household

- This case study focuses on a separate or detached house, located in the regional northern suburbs of Melbourne.
- There is a married couple in the household in their 70s. The participant in the research was the husband.
- The house it is owned by the couple.

### Waste systems

- From the survey the household has access to a kerbside rubbish bin for general rubbish, a kerbside recycling bin that is only for cardboard, metals and hard plastics (no glass), a kerbside garden waste bin, a designated council drop-off point for glass, a council refuse station, transfer station or tip for disposing of e-waste, household chemicals and hard rubbish, and a soft plastics return point.
- Based on comments from the discussion board, the couple take equal responsibility for managing waste and recycling in the household.
   The arrangement is mostly harmonious, and correct practice is discussed and agreed on between the two residents.
- Case Study 4 is a firm believer in the 'multi-container' method of managing household waste. Multiple bins are used throughout the
  house to reduce the effort required to sort materials from a larger single container. Alterative arrangements are considered to be a waste
  of effort.
- Case Study 4 identified few rules of thumb outside of the 'consensus approach' he described with his wife. He does, however, describe
  rules which are followed relating to tasks such as washing items before disposal.
- Both of us contribute to the sorting we do discuss where some items should go if doubt exists. We both seem to agree on issues and have containers within the house for each type which I then empty into the bins for kerbside collection.

Not sure what is meant here by 'rules of thumb' - I prefer actual knowledge of the material. Clear marking like the recycle + numerical symbol is better than guessing.



Having multiple containers in the house for each type of item reduces the need to take multiple trips out to the larger bins. Sorting is normally done as the particular item is discarded. Double handling only wastes effort & time.





# Case Study 4: Waste knowledge

### Waste knowledge

- Case Study 4 showed a different self-reported knowledge profile again when compared to other Case Studies under examination. From the survey, Case Study 4 self-reported a very high level of knowledge for which items go in which bin. Middling levels of knowledge were reported around the processes by which items picked up from the kerbside are processed, and how items for disposal are supposed to be processed within the household.
- Case Study 4 demonstrated very good knowledge of most waste/recycling terms described in the online discussion board. The one exception – the sometimes subtle differences between rigid, soft, scrunchable and flexible' plastics did cause some minor hesitancy – differentiating plastics and their proper disposal is an issue for Case Study 4 (see below).
- The lowest levels of self-reported knowledge were seen for the proper disposal of e-waste; the impacts of contamination; and very specific information about Victoria's recycling system.
- While Case Study 4 self-reported a high level of knowledge of which item goes in which bin in the survey; more doubt was expressed in the online discussion boards. The biggest knowledge-based issue for Case Study 4 related to plastics (similar to other case studies). In particular, Case Study 4 expressed uncertainty about composite materials – plastic coated cardboard, labels on bottles etc.

The major difficulties are deciding on the type of plastic, and on what to do with items which consist of multiple types of materials – e.g. plastic coated cardboard, plastics with paper labels, bottles with plastic or metal pourers which cannot be detached.

#### Knowledge of waste systems



Based on a scale of zero (low) to ten (high)





### Case Study 4: Waste information and influencers

#### Waste influencers

- Case Study 4 stated that they had engaged with quite a few potential influencers based on the findings of the survey. In general, these engagements were passive in nature including receiving pamphlets; and seeing news and advertising about recycling. Overall, each of these forms of engagement were reported to have only moderate impact on Case Study 4's recycling practice. External sources of information such as pamphlets and advertising were seen to have a greater impact than closer-to-home engagement such as talking to family and friends.
- The most influential factors for Case Study 4 are independent, expert sources of information. Unlike other Case Studies, he far prefers the 'definitive answer' he can glean from these information sources over asking another person (with the possible exception of his wife).

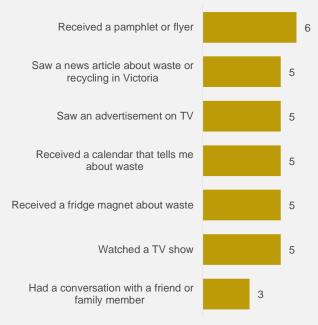
#### Waste information

- Case Study 4 indicated that they look for information about recycling every few weeks, far more than Case Study 3 and similar to Case Study 2.
- From the survey, Case Study 3 shows that he places a great deal of trust in his local council. He typically turns to the council's website and council newsletters for the information he needs.
- If Case Study 4 is uncertain where an item should be disposed, he also typically refers to his council's website; as well as referring to item packaging. This was confirmed in both the online survey and discussion boards.
- o If in doubt, he would typically place an item in the general waste bin rather than the recycle bin.

("

I would first try the local council website – otherwise probably Google each term.

#### Strong and weak influencers



Based on a scale of zero (low) to ten (high)

Usually err on the side of caution and place into garbage bin – rather than contaminate recycling bin. Clearer labelling of items would assist. e.g. What does one do with polystyrene trays?





# Case Study 4: Waste behaviours – knowledge and practice

### Waste and recycling disposal behaviour

- Despite Case Study 4's somewhat modest self-reporting of waste and recycling knowledge; he showed one
  of the highest awareness of correct items disposal in the survey.
- The only instances where he demonstrated incorrect knowledge were metal items such as aerosol cans and foil trays, soft plastics, and electrical items.
- Correspondingly, Case Study 4 was observed to have a very low rate of bin contamination, with only 0.12 Kg of waxed cardboard observed in his bin.

·"

To lessen the impact on the environment it is very important that we reduce the amount of waste being sent to landfill – sorting recycling into its component types assists with this – as does placing organic materials into compost or to green waste bins for bulk treatment. This is particularly important in cities where access to landfill sites is becoming more difficult.

### In summary:

Case Study 4 demonstrates a greater level of knowledge than most case studies, and a strong need to understand the technical details of correct practice and 'get it right'. He is, however, particularly frustrated that not all technically correct practices are adequately described – even though Case Study 4 is among the most dedicated and technically minded people out there, the information is still confusing.

Case Study 4 does not need his assumptions gently challenged as was the conclusion for others in this study. Rather, he will react well to concise, definitive and technical information which he *knows* he needs to gain satisfaction from good practice.

Item	Correct knowledge?	Incorrect recycling?				
Paper and cardboard	Yes	-				
Aluminium and steel cans	Yes	-				
Aerosol cans	No	-				
Hard plastic containers	Yes	-				
Glass bottles and jars	Yes	-				
Milk and juice cartons	Yes	-				
Aluminium foil and trays	No	-				
Plastic toys	Yes	0				
Soft plastics	No	0				
Steel pots and pans	Yes	0				
Wood or timber	Yes	0				
Ink cartridges	Yes	0				
Plastic bags	Yes	0				
Disposable face masks	Yes	0				
Styrofoam or polystyrene	Yes	0				
Batteries	Yes	0				
Ceramics	Yes	0				
Glass from broken windows etc	Yes	0				
Waxed cardboard boxes	Yes	0.12				
Food scraps	No	0				
Nappies	Yes	0				
Light globes	Yes	0				
Household electrical items	No	0				
Clothing items or other textiles	Yes	0				











- Detailed bin audit data was captured by EC Sustainable for both recycling and rubbish bins.
- Households were selected to represent different locations and housing types. A summary of household characteristics is presented in an appendix to this report.
- Fieldwork was conducted in December 2020.
- The initial data set used a comprehensive list of 168 individual items classified under the general headings of Aluminium, Glass, Hazardous, Organics, Paper and cardboard, Plastics, Steel, Other.
- o The full list of these items can be found in the appendices of this report.
- The detailed categories used in the bin audits were then re-classified to align with the items assessed in the survey, shown to the table on the right (as previously described in the survey findings). This table lists all items, and whether each is appropriate for disposal in a kerbside or communal recycling bin.
- This re-classification enabled the bin audit data to be directly linked to survey data.
- Findings from the detailed classification system are presented first, followed by analysis using the more general categories from the survey.
- Measurements from the bin audits are presented in Kilograms (Kg) i.e., the weight of materials observed in the bins.

Item	Recyclable?	Item	Recyclable?			
Paper and cardboard	✓	Disposable face masks	×			
Aluminium and steel cans	✓	Styrofoam or polystyrene	×			
Hard plastic containers and bottles	✓	Batteries	×			
Glass bottles and jars	✓	Ceramics	×			
Milk and juice cartons	✓	Broken glass	x			
Aluminium foil and trays	✓	Waxed cardboard boxes	×			
Aerosol cans	×	Food scraps	×			
Plastic toys	×	Nappies	ж			
Soft plastics	×	Light globes	×			
Steel pots and pans	×	Recycling in plastic bags	×			
Wood or timber	×	Rubbish in plastic bags	×			
Ink cartridges	×	Household electrical items	×			
Plastic bags	×	Clothing or textile items	ж			





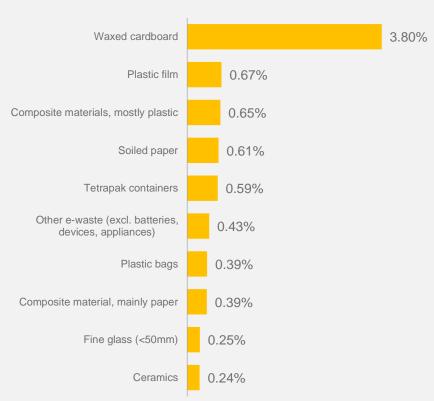






# Most common bin contaminants – detailed classification

- o Overall, 352.9 Kg of material was observed in the recycling bins that were audited.
- The chart to the right shows the top ten most common recycling contaminants observed in the recycling bin audits – i.e., items that were observed in the recycling bin that should be disposed in another manner.
- The figures show the proportional representation of each contaminant in relation to the total weight of all materials observed in the recycling bins.
- As can be seen, by far the most common contaminant is waxed cardboard at 3.8% of all materials.
   Waxed cardboard eclipses all other contaminants. Waxed cardboard has consistently been identified as a prominent source of contamination in previous self-report surveys.
  - Interrogation of the raw data confirms that contamination by waxed cardboard is common across households. This very high contamination weight for waxed cardboard is not due to very high volumes from a small number of households.
- A distant second to waxed cardboard is plastic film such as Glad Wrap (0.67) followed by composite materials that include unrecyclable plastic (0.65) and soiled paper (0.61%).
- o At the end of the list is fine glass (0.25%) and ceramics (0.24%).
- Other studies conducted for Sustainability Victoria concluded that the most common contaminants are those materials that have a close analogue to another material that is recyclable. For example, waxed cardboard vs. corrugated cardboard; thin plastics vs. thicker plastics; fine glass vs. glass used for food jars etc.
- This study, using direct observational methods rather than a self-report survey, supports this finding.



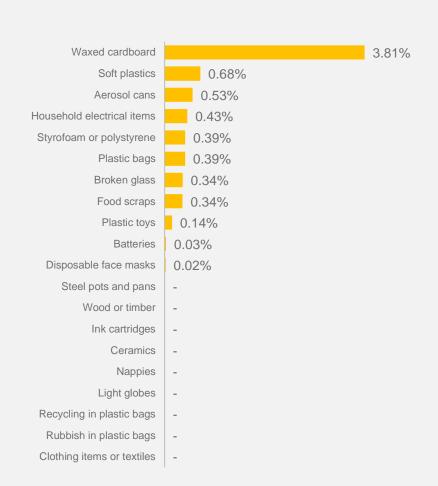


BASE: All participants in bin audit (n=52).



# Most common bin contaminants – classification from the survey

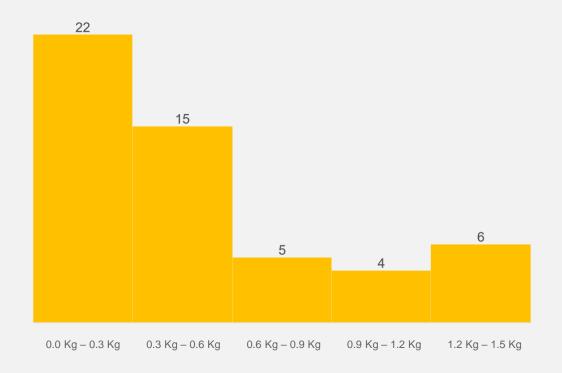
- The detailed categories from the bin audits were recoded into the 26-item list used in the survey. The list includes 20 items that should not be disposed of in the recycling bin.
- Re-coding in this way allows for more accessible analysis; and to cross-tabulate the data with items from the survey including demographics and self-reported recycling knowledge.
- As noted on the previous slide, waxed cardboard was shown to the most prevalent contaminant (3.81% of all materials observed).
- This was followed by soft plastics (0.68%), which includes the plastic film described on the previous page), Aerosol cans (0.53%) and household electrical items (0.43%).
- Again, the prevalence of waxed cardboard and soft plastics supports findings from many previous surveys conducted for Sustainability Victoria.
- A number of less common contaminants were not observed in the bins at all for example steel pots and pans, wood/timber and ink cartridges.
- This does not mean that these items are not an issue when it comes to contamination.
   Rather, that these items are less commonly disposed of, and that the bin audits for this project were conducted on a sample of n=52 bins over one week which represents a small proportion of the total bins in Victoria.





# Distribution of contamination

- The histogram to the right shows the distribution of contamination by weight. i.e., how many households had between X Kg and Y Kg of contamination in their bins based on the survey classification described on the previous page.
- Overall, it was somewhat rare for households to have absolutely no contamination in their bins. Only six households were observed to have zero contamination.
- However, where contamination occurred, it tended to be at fairly low levels. For example:
  - o n=22 the households had very small levels of contamination at 0.0-0.3 Kg;
  - o n=15 households had levels of contamination between 0.3-0.6 Kg.
- It was more rare for households to have contamination over 1 Kg, for example n=6 households were observed to have 1.2-1.6 Kg worth of contamination.







### Characteristics of the biggest contaminators

- Households with particularly high levels of contamination were identified households in the top quartile of contamination by weight were
  defined as 'high contaminators. This means an observed contamination weight of 0.72 Kg.
- o Household and personal characteristics were then compared by contamination level.
- Please note that the relatively small sample size for the bin audits (n=52) precludes significance testing. These findings are provided as indicative only.
- o 'High contaminators' appeared to be more common:
  - In metropolitan areas (28% vs. 11% in regional);
  - o In larger households (38% compared 19% of smaller households); and
  - For males (36% compared with 17% of females) noting that it may have been someone else in the household that contaminated the bin rather than the person answering the survey.
- Once again, these findings are congruent with previous findings from surveys using self-report methods. Metropolitan dwellers and men are consistently shown to have higher rates of self-reported contamination.
- However, not all findings from previous surveys were apparent in the bin audits. For example, it has often been shown that LOTE households and younger Victorians are more likely to be high contaminators; which does not appear to be the case here.

	Total	Metro/Regional		Household Size		Income		Owning vs. renting		LOTE		Gender		Age		
						Low	High				English					
	Total	Metro	Regional	1-3	4+	(<\$100K)	(>\$100K)	Own	Rent	LOTE	only	Male	Female	18-35	36-55	55+
n=	52	43	9	36	16	26	20	41	11	12	40	22	30	9	19	24
High contaminators	25%	28%	11%	19%	38%	27%	25%	24%	27%	25%	25%	36%	17%	33%	26%	21%
Low contaminators	75%	72%	89%	81%	63%	73%	75%	76%	73%	75%	75%	64%	83%	67%	74%	79%



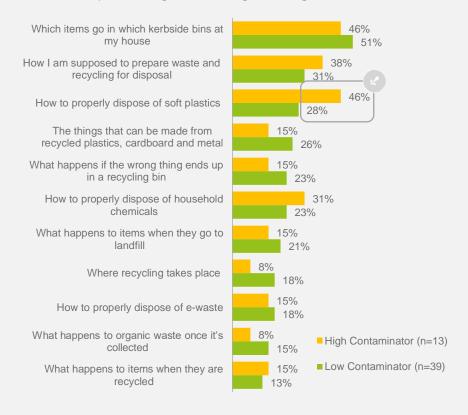
BASE: All participants in bin audit (n=52).



# Self-reported knowledge by bin contamination

- The chart to the right compares self-reported levels of knowledge (survey) to observed levels of contamination (bin audit). The bars represent very high levels of knowledge (a selfrated score of 9-10 on a 0-10 scale).
- Overall, there appears to be little difference between self-reported knowledge of appropriate recycling and actual practice; suggesting that poor recycling practitioners are either:
  - Unaware that their knowledge is low as reflected in their poor practice; and/or
  - o Do not care enough to apply the knowledge they have to their recycling practice.
  - One metric stood out as a curious anomaly. High contaminators reported a particularly high level of knowledge for how to dispose of soft plastics (46% compared with only 28% for low contaminators).
- Given the known prevalence of soft plastics as a contaminator, this suggests an overconfidence and/or incorrect knowledge for the disposal of soft plastics in particular for High Contaminators.
- As noted on the previous page, these findings are indicative only given the relative small sample of bin audits.

#### Self-reported high knowledge vs. high/low contamination

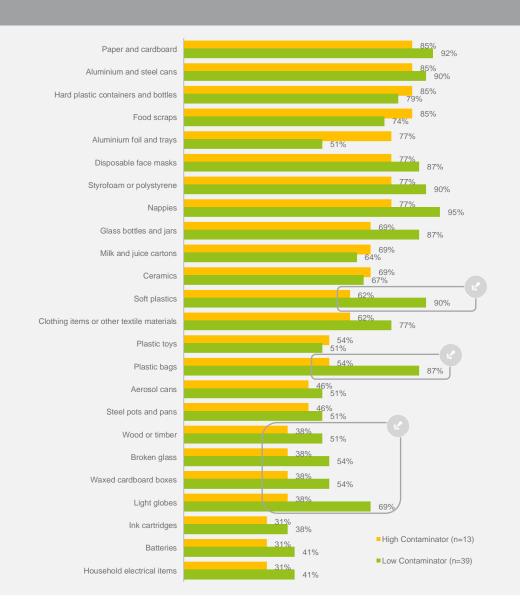






# Tested knowledge by bin contamination

- The survey also asked a series of questions that directly tested participants' knowledge of the correct disposal methods for different items (as opposed to simple self-reported measures shown on previous page).
- The chart to the right shows a comparison of this actual knowledge for high contaminators vs. low contaminators for each item in the survey.
- As can be seen, 'actual knowledge' is a far better determinant of practice than self-reported knowledge (as might be expected).
- o For example, for some of the most problematic items for recycling contamination:
  - 90% of low contaminators identified the correct disposal method for soft plastics compared with only 62% of high contaminators;
  - 87% of low contaminators identified the correct disposal method for plastic bags compared with only 54% of high contaminators; and
  - The same was true for waxed cardboard (54% vs. 38%), broken glass (also 54% vs. 38%) and light bulbs (69% vs. 38%).

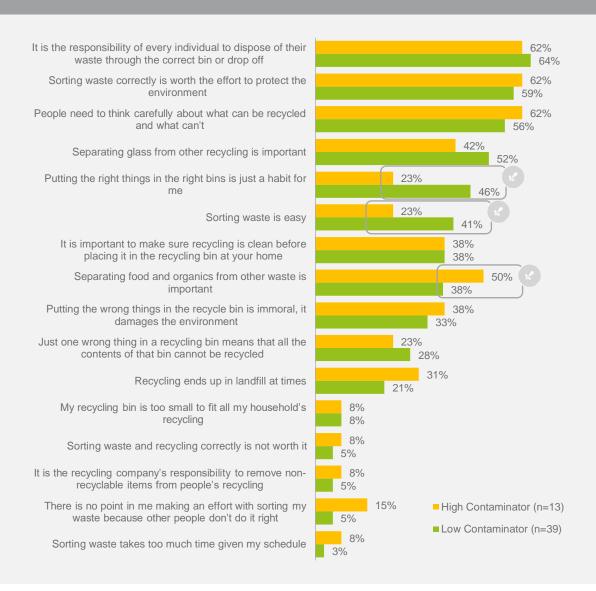






### Waste and recycling attitude by bin contamination

- In this instance, the chart to the right compares attitudes towards recycling from the survey to observed levels of contamination from the bin audits.
- Again, there appeared to be few notable differences in attitudes between high-level and low-level recyclers.
- o Two possible differences in attitude can, however, be seen.
  - Compared with Low Contaminators, High Contaminators are less inclined to see proper recycling as a habit (23% vs. 46%) or that recycling is easy (23% vs. 41%).
  - As such, recycling is likely to be seen as something difficult and not instinctual.
  - High Contaminators are, however, more likely to perceive importance in separating organics from waste compared with Low Contaminators 50% vs. 38%).
  - This finding is a little more difficult to interpret. It is possible that High Contaminators have priorities other than correct recycling sorting, i.e., they are more correct sorting of organic material.





ASE: All participants in bin audit (n=52).



#### Most common bin contaminants – detailed classification

- This chart shows four quadrants that contrast observed recycle bin contamination with demonstrated knowledge of which items should and should not go in the recycle bin. In order:
  - High knowledge, low contamination. i.e., participants show good knowledge of how to dispose of these items, and correspondingly, these items are not prevalent as contaminants in recycling bins. These items include plastic bags, ceramics and food scraps. Broken glass demonstrated lower levels of knowledge, though was still a relatively infrequent contaminant.
  - 2. High knowledge, high contamination. In this quadrant participants show good knowledge, though somehow the item still ends up in the recycling bin as a common contaminant. Soft plastics is the one item in this quadrant, suggesting that while people know that soft plastics do not go in the recycle bin, they do not always remember or cannot distinguish a soft plastic from one that can go in the recycle bin. It is also possible that the small number of people with incorrect knowledge are placing relatively large quantities of soft plastic in their bins.
  - 3. Low knowledge, low contamination. The only item in this quadrant was household electrical items. It is apparent that many are still unsure about the disposal of e-waste. However, as these items are disposed of relatively infrequently they do not make up the majority of bin contamination.
  - 4. Low knowledge, high contamination. Any item that fell in this quadrant would be the greatest cause for concern. An item in quadrant four would be one where people did not know how to dispose of it, and therefore makes up a high proportion of contamination. However, no items from the survey/bin audits fell into this category.
- Waxed cardboard has been omitted from this chart. As an outlier that represented the greatest proportion of all contamination, it sits very far to the right of the chart, making differentiation of the other items difficult.
- Waxed cardboard accounts for 56% of all contamination, and its correct disposal is correctly understood by only 55% of participants. As noted earlier, based on these data, waxed cardboard is of greatest concern as a contaminant.





ASE: All participants in bin audit (n=52).



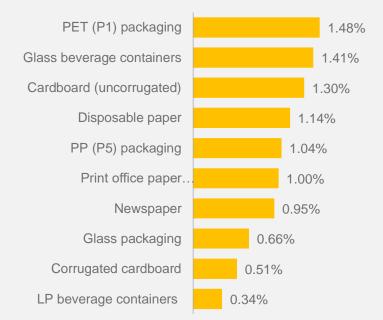
Recyclable and hazardous items in waste bin



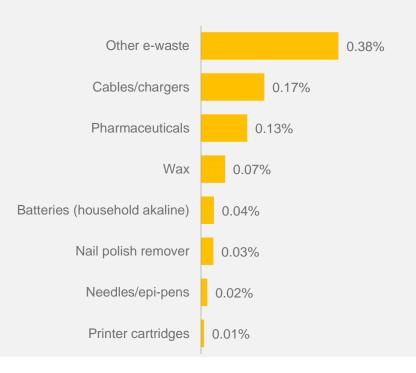


#### Most common recyclable and hazardous items placed in waste bin – detailed classification

- Waste bins were also subject to audits for the project. In total, 312.4 Kg of material
  was observed in the waste bins for the audit.
- The chart below shows the top 10 most common recyclable items that were placed in the waste bin using the detailed classification.
- In terms of a proportion of the total volume of materials observed, these most common items were:
  - PET, P1 packaging (1.48% of all materials);
  - Glass beverage containers (1.41%); and
  - Un-corrugated cardboard (1.3%).



- It is inadvisable to place recycling in the rubbish bin, it is downright hazardous to place other items in any domestic bin.
- By proportion of total materials, these most common hazardous items observed in the bin audits typically related to e-waste – such as cables and chargers (.017%), batteries (0.04%) and other e-waste (0.38%)
- Other item included medical waste such as pharmaceuticals and needles/epi-pens (0.13% and 0.02% respectively).

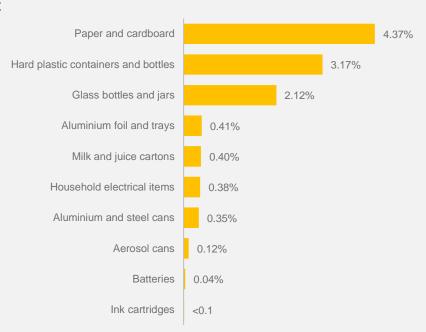






### Most common recyclable and hazardous items placed in waste bin - classification from the survey

- In terms of the shorter, simpler classification scheme used for the survey (though based on the audit data) the most common items incorrectly placed in the waste bin are:
  - o Paper and cardboard (4.37% of all materials observed);
  - o Hard plastic containers (3.17%); and
  - o Glass bottles and jars (2.12%).
- Participants were classified as 'High and Low Recyclable Wasters' of their waste bins, using a method where the top quartile of contaminators by weight was classified as being a 'high contaminator'.
- Some differences were noted by demography that were, in places, the opposite to findings for recycle bin contamination.
  - Regional dwellers were more likely to have placed recyclable items in their waste bin compared with metropolitan dwellers (44% vs. 21%), possibly showing a propensity to place a greater number of items in total in the waste bin leading to lower recycle bin contamination overall; and
  - Middle-aged Victorians were particularly likely to have placed recyclable items in their waste bin their waste bin compared with younger and older Victorians (42% vs 11% and 17% respectively).



	Total	Metro/Regional		Household Size		Income		Owning vs. renting		LOTE		Gender		Age		
						Low	High				English					
		Metro	Regional	1-3	4+	(<\$100K)	(>\$100K)	Own	Rent	LOTE	only	Male	Female	18-35	36-55	55+
n=	52	43	9	36	16	26	20	41	11	12	40	22	30	9	19	24
High recyclable wasters	25%	21%	44%	22%	31%	27%	25%	24%	27%	17%	28%	27%	23%	11%	42%	17%
Low recyclable wasters	75%	79%	56%	78%	69%	73%	75%	76%	73%	83%	73%	73%	77%	89%	58%	83%





### Waste bin contaminators vs. recycle bin contaminators

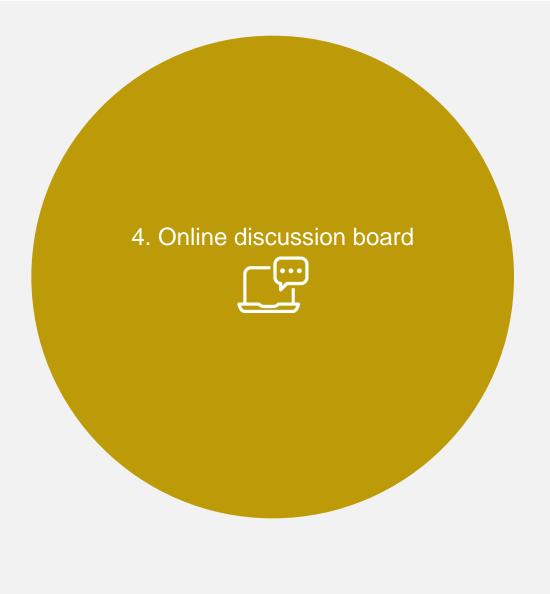
- The people who contaminate their recycling bins are not necessarily the same as those who contaminate their waste bins.
- Specifically, 31% of high contaminators of waste bins are also high contaminators of their recycle bins.
  - This means that 69% of high waste contaminators are actually low contaminators of their recycling bin.
  - Similar to the comment on the previous page, this suggests a propensity for this group to place a greater number of items in the waste bin overall leading to lower levels of recycling contamination.
- Conversely, 23% of low contaminators of their waste bins are high contaminators of their recycle bin. This suggests a propensity for this group to place a greater number of items (recyclable or not) in their recycle bin.

	High contaminators, waste	Low contaminators, waste
n=	13	39
High contaminators, recycling	31%	23%
Low contaminators, recycling	69%	77%







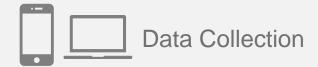








### Online discussion board design



- The qualitative research was conducted via a 7-day online discussion board in December 2020.
- Participants were recruited using Q&A's online panel and were given an incentive payment as a thank you for their time.



#### Sample

- o In total, 35 participants were involved in the online discussion board.
- All participants lived in Victoria and were recruited to include mixed representation from:
  - o Ratepayers and renters
  - o Living in units/apartments and standalone houses
  - o Gender
  - o Age
  - Household types
  - Location (regional and metro)
  - o CALD and non CALD











#### Responsibility for recycling within a household

Three types of responsibility arrangements for recycling in multi-person households were described.

The benevolent dictatorship.
 Under this arrangement, one person, typically a parent, took sole responsibility for waste and recycling management such as sorting, bin purchase and labelling and taking out the bins. At times, there was a feeling of mistrust that others may fail to recycle properly.

2. A team with a leader.

A model whereby one person is appointed ultimate responsibility for waste and recycling management, however responsibility for this household function was also delegated in part to others. This arrangement was sometimes seen as a way to teach good habits to younger members of families. In one instance, a daughter had taken on the responsibility since her parent had not grown up recycling and wasn't 'raised with this new stuff'.

3. A shared responsibility. In some households, ultimate responsibility for waste and recycling management was not seen to have an appointed 'leader'. Rather, the smooth running of this household function was equally shared amongst members of the household.

Regardless of whether there was a person responsible for recycling, reference was often made to a third-party 'source of truth' that was maintained in the household.

This could take the form of a fridge magnet or website which was used either as a reference by the appointed 'leader' of recycling and waste management, an instructional tool for guiding others on correct recycling practice, or as a means to settle disputes over how recycling and waste management should be handled.

I am the one responsible for this. I have designated bins to make it easier when taking it out to the kerbside bins. I consult the council website for advice on disposal of household items. (Woman, 18-35, Metro, Segment: Gen Pop)

Myself and my wife share this role. We have a reference point from our council on our fridge that we refer to if we are unsure. (Man, 18-35, Metro, Segment: Glass or FOGO)

Everyone in the family is responsible for sorting rubbish into its particular place... but I tend to "oversee" it. I try and make sure that all recyclables have had lids removed and rinsed if need be. (Man, 36-55, Regional, Segment: Regional)

Everyone in my household takes equal responsibility for ensuring that things are properly recycled, and this is usually done as we are throwing the object out. (Man, 18-35, Metro, Segment: 18-30)





#### Guiding principles for recycling

Several participants reported they had good understanding of which items they should put in the comingled recycling bin, which was from their own research or information provided from their local council. However, while many correctly identified that cardboard could be recycled, there was a couple of participants who were not recycling glass and/or hard plastic. Overall most participants had an overriding rule that they weren't sure they would prefer to place the item in the waste bin rather than put it in the recycle bin incorrectly

The participants reported a range of guiding principles that they used to determine whether an item should go in the recycling bin or the waste bin.

In approximate order of prevalence:

- Blanket rules applied by material. E.g., 'all paper is recyclable; all metal is recyclable.' Most participants felt confident using categories of materials that could be recycled as it made it easy to quickly identify what could be recycled without too much cognitive effort. However, this was made difficult by the anomalies which could not be recycled (e.g. coffee cups).
- The presence or absence of the recycling symbol as a general guide. Most participants were familiar with the recycling symbol and its meaning, though few were familiar with the meaning of the plastic codes and some said they recycle any item that contained the recycling symbol and any plastic code.
- Using thickness of materials as a guide to which bin items should go in, especially plastics. Most participants seemed to be familiar that thick and thin plastics needed to be treated differently, with only thicker plastic being appropriate for the recycling bin.
- Judging the recyclability based on appearance of materials, e.g., 'shiny plastic is recyclable.'
- The crunch/scrunch test was familiar to some participants, though their interpretation of the test was not always easy to follow and was perhaps not a perfect test of recyclability.

But in general I think the thicker something is, the more likely it is to be recyclable. Thicker plastic, cardboard, that kind of thing. The thin stuff, like plastic wrap, just goes in the general waste.

(Woman, 18-35, Metro, Segment: Glass or FOGO)

Hard plastics and cardboard or paper in recycling. Shiny plastic in the rubbish I.e. 1 litre milk cartons or some ice cream containers. (Man, 18-35, Metro, Segment: Glass or FOGO)

Separate soft plastic to be taken to my local Recycle bin at Coles. Meat trays get rinsed and if non crunchable, they go in the container for the recycle bin, if not - they go in the normal rubbish.

(Woman, 55+, Metro, Segment: MUD)

Some plastics that are not hard plastics and not scrunchable. E.g. thin plastic trays.

Some cardboard that may be soiled eg pizza box.

If it is too soiled I put it in the rubbish bin.

(Woman, 36-55, Regional, Segment: Glass or FOGO)





### Guiding principles for recycling (cont.)

- o 'Trusting one's gut feelings'; AKA, no guiding principles at all, just intuition. This was a relatively uncommon point of view. These participants either mentioned they 'tried their best' and felt it was not the 'end of the world' if they recycled incorrectly. Some mentioned it was a 'hassle' to look up how to correctly recycle items, or it still wasn't clear if an could be recycled from the information provided.
- Another hurdle to recycling correctly was mixed material items, and in this situation, several participants mentioned that they 'do their best' to separate out mixed items into comingled and waste. One participant mentioned they put the item into the bin that comprised 80% of the item (e.g. cardboard with soft plastic would go into the comingled recycling) whereas another mentioned that he could not always 'be bothered' to sort a mixed item, or others said they would put them in the recycled bin.
  - I just trust my guts to decide which bin to go. As I said before, if I make a mistake its not the end of world and I won't be punished. (Man, 36-55, Metro, Segment: Gen Pop)
- Main rule is to check for a recycling logo on the biggest part of the item. Anything that is a hard plastic or like Styrofoam goes in the rubbish. Any paper or cardboard goes in recycling. (Woman, 18-35, Metro, Segment: Glass or FOGO)
- It depends how I am feeling. Sometimes I separate and dispose of correctly in waste and recycling. Other times I can't be bothered and put it in the rubbish. (Man, 18-35, Metro, Segment: 18-30)
- I separate them if possible or else I dispose them into the bin based on the product's majority material (e.g. 80% cardboard, 20% plastic). (Woman, 18-35, Metro, Segment: 18-30)





# In the event of uncertainty

In the event of any doubt about what should go in which bin, the general chain of enquiry tended to include the following.

- Deduction of which bin is appropriate based on past experience with similar items.
- Checking of packaging for the recycle symbol or other instructions for disposal.
- Consulting with a friend or family member who may provide guidance.
- Referral to the 'source of truth' mentioned at the start of this report (this source of truth was
  mentioned several times in different parts of the discussion and is likely to be an important touchpoint for communicating with Victorians).
- Using the internet to find an answer, typically Google and/or council websites.

It is worth noting here that previous surveys on this topic have repeatedly found that council websites are a source of information about recycling.

This research supports this finding. However, it is also apparent that Victorians go through several stages involving multiple touch-points before they make the effort to consult a council website. As mentioned, these can include food packaging and the source of truth.

I tend to rely on past experience, and information that I've gathered from the council website. If I'm very lost on what to do with a particular item, and the label doesn't give any indication, I'll look it up on the internet. (Man, 18-35, Metro, Segment: 18-30)

Look for the universal recycle symbol, all the metal is recyclable (Man, 36-55, Metro, Segment: MUD)

Yes there are times when I don't know which bin should I throw the item in. I then ask my wife then we reach out an agreement, which may not always right. But we have done our best. (Man, 36-55, Metro, Segment: Gen Pop)

If I need help I look at my reference on the fridge or on the google website if I am still unsure. (Man, 18-35, Metro, Segment: Glass or FOGO)



### Understanding and behaviours in recycling glass

Participants with a glass kerbside bin didn't note any significant barriers to the process of recycling glass using the specific bin instead of the comingled bin, and they had adapted to including the additional bin. Some noted that they carefully placed glass in the glass bin so that it did not smash. Participants said that their sorting system in the home usually included adding a glass bin next to their comingled recycling bin or continuing to keep glass with the comingled recycling but sorting it at the kerbside bin.

However, participants with council glass deposit locations found it doubly inconvenient to drive to the deposit locations and to store the glass until they dropped it off.

Participants with a glass kerbside bin found it helpful that the Council had placed a 'no glass' sticker on their comingled bin to remind them that it was no longer used for recycling glass, and the information pamphlet supplied from the council was also helpful in determining what glass items go in their new bin. The specific advice they found useful was about not recycling broken glassware, and whether to keep lids on glassware. Having regular checks by council on recycling was deemed useful in providing feedback to help recycle glass correctly.

Most participants without a glass bin were positive about having a separate bin for glass as long as it improved recycling overall. Their main concerns were if the bins could be padded to stop the glass from shattering. Those who were less supportive felt they did not produce a lot of glass to warrant a kerbside glass bin, did not want to pay for additional waste collection service or did not believe that separating out the glass resulted in efficiencies in recycling.

Participants without a glass kerbside bin required clarification on the following aspects of recycling glass:

- · Whether labels needed to be removed;
- If the glass container needs to be cleaned of food;
- · If glass containers were recycled with or without lids;
- If the colour or type of the glass needs to be considered;
- · Whether ceramics or china could be placed in the glass bin; and
- If they could recycle mirrors in the glass bin.

We got some brochures before all the bins were delivered explaining everything and why. Then when they were delivered we got a 'NO GLASS' sticker to put on top of the recycle bin so people know that glass goes separately. We also got information about an app that can be downloaded to see what can and can't be put into the bins as well as a calendar for what bins go out what week

(It can be more confusing now with 4 different bins).

We also got a calendar with a magnet on it to put on the fridge that we can also refer to see what bins go out on what dates.

There were options to go to information sessions in person when the new bins were rolled out, however we did not attend those. I think that the council provided enough information and don't think there is much more that they could have done.

(Woman, 18-35, Metro, Segment: Glass or FOGO)

"





### Understanding and behaviours in recycling FOGO

Participants with a FOGO bin found out about their FOGO service either from their local council or word of mouth. Participants whose councils had proactively provided information (e.g. fridge magnet and pamphlets) and a kitchen caddy were highly satisfied with this service.

The main concerns about a FOGO bin was a bad smell due to fortnightly collection. Participants prefer weekly collection of FOGO however not all participants produce a great deal of organic recycling.

The preference for weekly collection is mainly associated with the concern about putting animal products (meat and bones) in the FOGO bin. Several participants (with and without a FOGO bin) note their concern about animal products attracting pests and the smell of the bin from decomposing animal products.

For the participants without a FOGO bin, most were very enthusiastic about having a FOGO bin to reduce their landfill waste, especially for those in apartments who don't have an outside space to compost. Participants identified a need for information to specify what would go into the FOGO bin to enable them to confidently and correctly use the FOGO bin.

Most felt that they would easily be able to integrate a FOGO bin for their disposal of kitchen organics and only a couple raised concern about finding space for kitchen organics container in their kitchen.

Several participants were concerned about the perceived barriers, namely the smell of the FOGO bin, attracting flies and rodents, if food organics will stick to the bin and the need to regularly wash the bin.

It is helpful having the small caddy on the bench with the sticker on it saying what can/can't go in it.
I have no real difficulties using it. (Woman, 18-35, Metro, Segment: Glass or FOGO)

I read about this bin on my council's Facebook page. Previously our FOGO bin was only for garden waste and didn't include food scraps.

We then received a kitchen caddy and information regarding what to place in our garden waste bin which was now able to be used for food scraps. It was the same bin that we already had, we were just able to put food scraps in it from a certain date. (Woman, 18-35, Metro, Segment: Glass or FOGO)

I know everything that goes in there. I wonder if meat really composts? (Man, 18-35, Metro, Segment: Glass or FOGO)





### In the event of uncertainty – mapping out the chain of enquiry

Items where uncertainty lies include:

- Meat trays;
- Shiny, waxy cardboard;
- UHT milk or juice containers;
- Plastics for food storage;
- The nozzle from a spray container;
- Yoghurt tubs; and
- Glossy paper.

Participants will firstly use previous experience to guide their decision.

#### **Previous experience**

#### **Decision enablers**

- Generally in first instance, the decision to recycle is based on participants own knowledge based on past experience and research.
- Some have an understanding based on a category (cardboard is recycled, soft plastics in rubbish etc) how the item feels (soft vs. hard plastic) and/or what it is made from.

#### Risks to recycling correctly

- Incorrect understanding of a category (e.g. hard plastic goes in the waste).
- Incorrect rules of thumbs (e.g. meat trays can't be recycled).
- Item is mixed materials and they recycle based on majority material or dispose in the waste.

If not certain, participants may take the next steps of checking packaging, the source of truth or consulting friends or the internet.

Others will dispose in the waste so as not to contaminate the recycling.

#### **Check packaging**

#### **Decision enablers**

- If an item has recycling symbol and/or instructions on how to correctly dispose.
- If plastic has recycle symbol and a number, some still recycle (and ignore the number). Others check the number and dispose appropriately.
- Try to buy items that can be recycled (check label before buying).

#### Risks to recycling correctly

- Recycling labelling difficult to understand.
- Mixed understanding of the recycling logo and number
- Some recycle any plastic item with a number.
- If recycling labelling was clearer it would support the community to recycle correctly.
- Council rules may be different from packaging instructions.
- Don't notice the instructions.

#### Source of truth

#### **Decision enablers**

 Reference point (e.g. on the fridge or recycle bin) was mentioned as an easy way to quickly identify how to dispose of an item.

#### Risks to recycling correctly

· Item is not listed

#### Internet

#### **Decision enablers**

- · Council websites
- Googling as usually someone else has asked the question

#### Risks to recycling correctly

Item is not listed

#### **Consult with others**

#### **Decision enablers**

Ask a family member or friend who may have more knowledge

#### Risks to recycling correctly

 Information is not correct or relevant for the specific council









### Understanding recycling terminology and labels

Participants had a reasonable understanding of recycling terminology and labels. There are a couple of areas of confusion which do not support the community to recycle correctly. The main issues being the plastic codes (plastic ID number) on plastic items and insufficient guidelines on mixed material items on how to recycle the components.

Term	Understanding of term
Recycling symbol	Participants correctly identified the recycling symbol as the three folded arrow triangle and said it enabled them to identify what could be recycled. Many found this to provide easy guidance on recycling. However, some identified that there were too many variations of this symbol which made them difficult to understand. One participant spontaneously mentioned that some items have this symbol and instructions on how to recycle the components of the item that could not be put in the recycle bin (e.g. soft plastic component). A couple mentioned that the symbol with the plastic codes meant that recycling depended on the number. However, overall most participants identified that the recycling symbol means the item can be recycled.
Plastic resin symbol and number Plastic ID number	Participants understanding of the 'plastic resin symbol and number' and 'plastic ID number' was the same. Overall both were seen as not providing clear guidance for which plastic items could be recycled. While most understood it to mean the type of plastic used and whether it was recyclable, they did not know which numbers corresponded to being recyclable. Most felt that it was not realistic to expect the community to identify the numbers and if that number (type of plastic) could be recycled. While a couple had researched the numbers, most felt that more information on the label was required rather than expecting people to undertake their own research.
PET HOPE PVC  LOPE PP PS  OTHER	Again, participants identified the image of plastic codes as showing the types plastic and if they can be recycled. While the recycling symbol suggested the item could be recycled, participants were confused by the number and text and had little understanding about their meaning. One participant mentioned they had a sticker on their fridge which identified the meaning of the plastic numbers. Again participants identified the need for easier to follow easy instructions to help the recycle plastic correctly.
Defining soft plastic	Most participants preferred the use of 'scrunch test' to identify soft plastic. This is because soft plastic could be 'scrunched' but harder plastics (e.g. milk containers, meat trays) can't be scrunched although they can be 'crushed' and are 'flexible'. Some found the word 'scrunch' difficult to understand and felt that some people in the community may have difficulty with this word as it is not commonly used.





### Understanding recycling terminology and labels (cont.)

Term	Understanding of term
Description of four- bin system	Generally participants think that each bin should be described by the colour AND what is placed in the bin. There was a fairly even split of those who through either the colour or category, however on the whole using both was seen as most sensible. Some suggested including an image to aid understanding.  Some examples of categories suggested to describe the type of waste and recycling were:  Glass; Recycling; Compostable/ Organic/ FOGO; and General.  Red lid: General waste; Yellow lid: Recyclables; Green lid: Garden offcuts, fruit and vegetables; and Purple lid: Glass.
Recyclable	Most found the term 'recyclable' to be clear and defined it as items that could be 100% recycled and repurposed. Many defined recyclable as the items that could be put in the comingled bin (e.g. cardboard, hard plastic & metal). Some suggested that a list of items and pictures would be a good reminder. One participant also identified that there was confusion in the community over what can be recycled because of the different council guidelines.
Recyclable via kerbside	Although most understood this to mean the recycling bin which was collected by council or the bins collected at the kerb/nature strip, some questioned how this term would be used and found it unnecessary to add 'at the kerbside'.
Recyclable via drop off	Most understood this to mean at a designated drop-off or collection point. Some identified this as including the supermarket drop-off for soft plastics or e-waste.
Compostable	Participants identified this as organic matter (garden and food scraps) or by the fact that it decomposes over time and can be used in the garden.
Biodegradable	Participants had a mixed understanding of this term. Some identified it as being confusing. Many identified that biodegradable breaks down over time biologically (e.g. with help of worms) and ends up to soil or can be turned into other items. A couple of participants noted that some items were claimed to biodegradable but didn't fully break down (e.g. 50% biodegradable contains plastic that does not biodegrade)





### Understanding of general waste and recycling terminology

Participants had a solid understanding of familiar terms used for waste – landfill, garbage, rubbish etc. There was considerably less understanding of newer terms for recycling such as 'comingled, FOGO and caddy' and these would require clear explanations until they became mainstream. While most could use commonsense to identify 'hard and soft plastic' items this cannot be assumed to be correctly understood and detailed explanation is required to support the community to recycle these items correctly.

Term	Understanding of term
FOGO	Many participants had not heard of the acronym FOGO before and had no idea what it meant. Some correctly identified it as including food and garden organics waste and they were more likely to be participants with a FOGO bin. A couple incorrectly defined it as not including meat, and one person defined it as a 'fear of growing older'!
Landfill	All participants were familiar with the term landfill. They defined it as the tip, 'a dumping ground' and where general waste was buried underground at massive rubbish sites.
Garbage	Garbage was generally defined as rubbish or waste that are no longer used and cannot be reused. It is the items thrown away into landfill.
Rubbish	Rubbish closely associated with the terms garbage and waste. A couple defined rubbish more narrowly to only include specific materials such as hard rubbish, or 'dry materials such as glass, paper etc.
Residual	Participants were uncertain about what this word referred to in the context of waste. Most defined it as the word – the leftover part after the greater part has gone.
Caddy	Most participants were unsure about the meaning of the word caddy in the context of waste and recycling. Several guessed it was a container of some description and a couple identified it was used for organic waste.
Comingled	Around one third correctly understood the term to mean mixed recycling, one third understood it to mean blending items (not necessarily recycling) and others were unsure about the meaning of the word altogether.





### Understanding of general waste and recycling terminology (cont'd)

Term	Understanding of term
Hard plastic	Many defined it as plastic that cannot be scrunched, rigid or tough. There was a couple with mixed views about whether hard plastic could recycled. Many also defined it by a type of product it was used for and this included a wide variety of items including: chairs, food containers, drink bottles, PVC, PET bottles, children's toys, milk and soft drink bottles.
Rigid plastics	Most felt this was the same as hard plastics. Some defined it by the meaning – plastic that could not be bent. Several defined it as the product it was used for including industrial settings, toys, food tubs. Some identified rigid plastics as recyclable.
Soft plastics	Most understood the term soft plastics to mean plastics that can be squashed or scrunched up. They identified items that are soft plastics including: plastic bags, chocolate & biscuit wrappers and clingwrap. Some participants said soft plastic could not be recycled and others said it could only be recycled at supermarkets.
Scrunchable plastic	Most saw it as the same as soft plastics. Several were confused about whether it could be different to soft plastics. It did seem that soft plastics was more widely used, but 'scrunching' was used to describe the malleability of soft plastics.
Flexible plastic	Many saw it as the same as soft plastics. Others identified it as other products such as shampoo bottles or packaging that berries are packaged in.
Food organics	This was seen as a clear term, and defined as food scraps. Some defined it more narrowly as fruit and vegetable scraps, whereas others included leftover food such as bread and pasta. Some were unsure about meat.
Garden organics	This was seen as a clear term. Most identified it as garden recycling including grass clippings, leaves, weeds, tree pruning.
Hard rubbish	Most defined this correctly as the large household items and furniture that is taken to landfill. Many defined the types of items that would go in hard rubbish including sofas, beds, tables, electrical goods. Most identified that there is a council service to collect these items.





### Placement of bins and waste/recycling sorting.

Two models of bin placement were apparent from the discussion boards.

- A centralised system, typically involving two or more bins. Under this model, a general waste bin and a recycling bin were maintained, most commonly in the kitchen.
- A decentralised system where bins were placed throughout the house for everyday use. This may include a general waste and/or recycling bin. This second system appeared to be more common.
- The different systems do not appear to impact the overall outcome of sorting waste and recycling but rather reflect circumstance or preference for organising a household. In one example, a participant's son was provided with a bin for paper but another participant's preference was for their children to bring their waste / recycling downstairs and recycle at a centralised location
- Several participants mentioned that convenience was aided by having appropriately sized bins in the house so they did not need to take the bins outside too frequently. The other factor was having bins close together so the decision could be made at the point of sorting the bin inside.

Three models of sorting were apparent from the discussions.

- O Sorting of materials in one go, typically on the day of recycling. This 'one-hit' approach was relatively uncommon.
- Sort-as-you-go. I.e., sorting of waste and recycle materials as they are disposed of either in the decentralised bins throughout the house or the centralised disposal point. This was by far the most common approach.
- A hybrid model whereby waste/recycle items are collected throughout a day or other short period in some form of holding area for routine sorting throughout the week.

The most cited reason for making changes to sorting waste/recycling was the introduction of the FOGO bin which enabled participants to recycle their organic waste. Some participants also mentioned starting to recycle soft plastics, and others mentioned the hassle of having to take their glass to a collection point rather than putting in their comingled bin.

We have a multiple bin system built into our kitchen where we separate rubbish from recyclables. It makes it much easier to sort as we go. (Man, 55+, Metro, Segment: Glass or FOGO)

We have multiple "general" rubbish bins throughout the house (bedrooms, bathroom, living room) to help people actually throw their rubbish out rather than leave it lying around the house (that's the idea anyway). (Man, 36-55, Regional, Segment: Regional)

In the house we have two bins for general garbage and for recycling. ... we have a separate food/organic matter bin that is usually kept outside, as we generate a lot of organic waste in the garden. (Man, 18-35, Metro, Segment: 18-30)

Inside the house, we have 2 bins. One for household waste & one for recycle. During the week we use those bins to put stuff. Once or twice a week we empty indoor bins into outside bins. (Woman, 18-35, Metro, Segment: Glass or FOGO)





### Waste/recycling sorting (cont'd)

Varying levels of strictness and structure for sorting procedures were described by different participants. Some described very systematised, periodic and structured approaches to sorting. For example in the quote bottom right where multiple parts of packaging are sorted and disposed of in a very structured way. Others described a far more laissez-faire approach with no particular rules. Waste/recycling sorting and disposal just happens organically throughout the week.

Participants generally described all of these processes as happening inside the house, with only the final sorted product being taken outside for kerbside pickup.

The main differences in recycling behaviours mentioned by participants in multi-unit dwellings was the hassle of taking their recycling and waste to the kerbside bins (usually downstairs) and to minimise the number of dedicated trips, they try to dispose of it as part of other trips. Several also mentioned that they could not compost because they lived in an apartment which they found limiting.

Enablers and barriers to effective waste management systems included the following.

- Those who maintained a combination of multiple bins and a systematic sort-as-you-go approach explained how these methods made recycling less of a chore and allowed for efficient disposal of items in the correct bins. In their opinion, these approaches enable an organised well-run disposal system.
- The 'source of truth' was again raised as an enabler of a good waste management system. In this instance, the participant described printed material stuck on the fridge.
- Uncertainty over which items can and cannot go in the recycle bin remains the most pressing barrier to good recycling systems for most participants.
- A small number mentioned logistical issues such as having a small property.

We usually start the process inside then when its generally taken out to the kerbside bin its easy to dispose off. I usually do it when its time to sort and take out, (Man, 36-55, Regional, Segment: MUD)

I sort inside the house.

I have small rubbish bin that takes left over food scraps or garbage for 2 days until it goes to the green bin. (Man, 36-55, Metro, Segment: Gen Pop)

There is no set rules in terms of sorting. I may sort and throw whenever I have rubbish, or I may accumulate rubbish and dispose them at the end of day. (Man, 36-55, Metro, Segment: Gen Pop)

As the item is being used it is sorted so if we open a box of crackers - the box would go on the pile on the bench and the foil packaging would go in the household waste bin once the crackers have been consumed. (Woman, 18-35, Metro, Segment: Glass or FOGO)





### Waste/recycling sorting – a case study in sorting and disposing of household recycling and waste

To illustrate the typical method of sorting and disposing of recycling and waste, a vignette is provided based on participant responses and is focussed on the most common practice of having multiple bins and sorting recycling and waste immediately.

#### A vignette depicting a typical household with multiple bins and immediate sorting

Sam lives in a small standalone house in Melbourne with her family. To make their recycling and waste sorting straightforward they locate their three bins in one location. They have two big bins for waste and comingled recycling and a smaller FOGO caddy on the benchtop for food scraps. Sam feels they have a pretty good knowledge of what items can be recycled, but she still gets very confused about the numbers on plastic items. She has found a council pamphlet with information about recycling and the plastic codes really helpful to guide their decision on recycling. With any items of mixed materials, they will try to separate them and put them in the right bin, but only as long as it is practical to do so.

Sam recently received their FOGO caddy and feels positive about the reduction in the waste going to landfill. She is looking for other ways to reduce her waste and is thinking about setting up another bin to store her soft plastic but needs to find space for this bin, and needs to convince her family that it is worth the effort to make this change.

She finds accumulating too much rubbish makes the sorting overwhelming so they sort as they go by placing the waste and recycling immediately in their respective bins and this means no double handling. Sam doesn't like putting spicy food, meat and bones FOGO caddy because she worries it will smell, so sometimes she'll take them directly to the FOGO kerbside bin outside. Her husband is still reluctant to put these items in the FOGO kerbside bin because he is concerned about attracting rats.

She does have multiple waste bins in the house (bedrooms, bathrooms) to encourage her children to throw away their waste but they are expected to take their recycled items (e.g. shampoo bottles) to the kitchen recycling bins.

Sam feels strongly about recycling correctly and recognises it is important initiative for the environment. Her main barrier to recycling properly is labelling on plastic items that is confusing, and when the item isn't listed on the council pamphlet. She will try to do a quick google search for the item but sometimes if she is feeling rushed she will put it in the waste bin because that that's better than contaminating the recycling.











### How the challenge worked.



- All participants were set a challenge set up a FOGO bin and glass bin (with variants for those that already had those bins).
- The challenge was explained to participants as follows.

Set up a FOGO bin	On average think about how much food and organic waste is put into landfill. Your challenge is to sort and dispose of your food and organic waste in your NEW FOGO bin. You'll need to use your imagination since you've haven't received your FOGO bin yet (so after the challenge it will need to go in your rubbish bin unless a neighbour can compost it for you!).
	So we want to find out what challenges you have in setting up your FOGO bin for the days of the challenge. And what items are you unsure about? Where do you get information to help you work out what can go in your FOGO bin? What support do you think your household would need to do this?
Use your FOGO bin better!	So you've got a green bin where you can dispose of your FOGO. But are there some times when you don't really know what can go in your FOGO binor it's just easier to put it in your rubbish bin or maybe the kids sneak in their veggies in the regular bin!

So the challenge for you is to search for information on how you can use your FOGO bin better! And then over the days of the challenge, do your best to correctly use the FOGO bin.

Set up a glass bin

In preparation for the roll out of the new glass bin across Victoria, we'd like you to set up your own 'glass bin' for the challenge to find out what is easy and not so easy to do in recycling your glass. After the challenge your glass can be disposed of in your recycle bin. So set it up...and tell us what is easy and not so easy to change?

Are there any glass items you are not sure about....did you need to look up any additional information to help?

Now you've got your glass bin...are you recycling anything differently? We'd like you to do a search on how to use Use your glass bin better! your glass bin better...and tell us what you find. And then we'd like you to use this new information to make changes to the way you use your glass bin.





### Overall outcomes of the challenge – overall impressions

Overall, most participants were very positive about their experience of the challenge.

- Most stated that the additional work required for the challenge was not overly burdensome. Indeed, some expressed pleasant surprise at how easy new approaches to recycling/waste management were.
- Some took pleasure in the challenge stating that they found it interesting and/or fulfilling engaging in new and enhanced waste/recycling practices.
- As has been shown in multiple research projects, the primary reason for this source of pleasure is a feeling of doing good for the environment.

This reported level of ease in managing new waste/recycling requirements will be an important talking point for messaging as new bins and processes are rolled out across Victoria.

I found it a great experience, it forced me to look up the information( about waste disposal) that I've been wondering about. I feel good knowing that I am recycling properly now.. (Woman, 18-35, Metro, Segment: Glass or FOGO)

I find it quite interesting as I thought before it will be bit hectic and time taking but I was wrong I really enjoyed it and this activity helped me to find why my regular bin is so stinky. (Woman, 18-35, Metro, Segment: 18-30)

Ok. I didn't feel like I was being asked to do much, and it was good to give something new a try. If I can contribute to better recycling in future then all the better. (Woman, 36-55, Regional, Segment: Regional)

I enjoyed the challenge, it made me see more than anything that apartment buildings/body corporations could do more to help with recycling. (Man, 36-55, Metro, Segment: MUD)







### Overall outcomes of the challenge – recycling glass separately

The majority of participants did not have a separate glass kerbside bin and therefore were asked to set up this system as their challenge. Those who did have a glass bin were asked to identify and implement improvements in the way they sorted glass.

#### Setting up a glass bin

- Typically participants found they did not generate large amounts of glass recycling on a daily basis (shown in the photos to the right), and therefore did not find it onerous to separate out their glass from comingled recycling.
- There were a couple of questions around removing labels from jars, whether lids needed to be removed and how clean the glass needed to be in order to effectively be recycling. A participant with a broken vase (shown in picture) did some research about whether she could put the broken glass into her glass bin to be recycled, and correctly identified that she couldn't and felt proud that she had spent the time identifying this.
- Participants in apartments found there was an additional effort in carrying another bin downstairs, and it was inconvenient to carry recycling and a glass bin downstairs together.

#### Improving glass recycling practice

• The participants who currently had a glass bin improved their practice by being more conscientious with their disposal of glass jars. This included washing out glass jars with mouldy food instead of just throwing away the glass jar with the mouldy food in the waste bin.

#### Photos from the challenge











### Overall outcomes of the challenge – recycling FOGO

The majority of participants did not currently recycle FOGO and therefore were asked to set up this system as their challenge. Those who already had a FOGO recycling bin were asked to identify and implement improvements in the way they recycled their FOGO.

#### Setting up a FOGO bin

- Typically participants found recycling FOGO to require more consideration than separating out their glass, but were more
  enthusiastic about this challenge and greatly appreciated reducing their landfill. This is a consistent finding with previous
  research and suggests that FOGO recycling requires more detailed communications to increase the capability required
  to change behaviour.
- The amount of FOGO created varied by household- with some participants feeling like they did not create much FOGO and others calculating the amount of FOGO to be significant.
- Most did not consider the challenge to be difficult and recognised that while it may take some time to adjust to remember
  to put food organics into a separate bin instead of their general waste bin, that it would be an easy change to adopt. The
  concerns with a FOGO bin are well known and were mentioned by several participants: that the bin would smell,
  especially with meat, bones and spicy food, and that food organics would stick to the side of the bin. A couple of
  participants mentioned they were surprised that their FOGO bin inside did not deteriorate and smell as quickly as they
  anticipated.
- Some participants found there was a need to educate others in the family to remember to put their food organics in the FOGO bin. One participant found there was need for visual cues, and labelled the inside bins (as shown in the photos) to remind family members to recycle correctly. Another mentioned a need to educate their children on not putting food organics in plastic bags in the FOGO bin.

#### Improving FOGO recycling practice

• Participants who already had a FOGO bin were asked to make improvements. They generally felt they only needed to make small adjustments. This including actually putting in leftovers into the FOGO bin whereas in the past they would have put in the waste bin to avoid having a smelly FOGO bin. Another change was to not put teabags or paper towels in their FOGO bin (as identified by their own research) and generally found this an easy change to make.

#### Photos from the challenge















### Overall outcomes of the challenge – enablers and barriers

The key enablers of successful completion of the challenge were similar to the features of a well-run waste/recycling management system overall.

- The use of multiple bins, in particular the use of a kitchen caddy in the kitchen near food prep areas.
- O Clear rules, schedules and procedures for what goes where and when.
- The use of labelling and other written or pictorial guides to help all in the household to comply with new requirements (more sources of truth).

It was easy to setup and use the system for FOGO as from past experience I know how much food waste I produce. Having a small container that I could place on the counter when preparing food helps as it is in sight and prompts me to use it. (Woman, 18-35, Metro, Segment: Gen Pop)

By putting pictures on the bins for my husband it worked great. It has made such a differences to how we recycle our waste. (Woman, 36-55, Regional, Segment: Regional)

Have the rules clear about what is going to be in each bin make the activity more easy. What in particular? Label the bins, have standard colours, Stickers with a list of the allow rubbish in the bin.

(Man, 36-55, Metro, Segment: MUD)

However, some participants experienced barriers to implementing new routines.

- Some perceived that the challenge was more time consuming, though assumed that the new requirements would become habit and thus less onerous over time.
- As is the case with any sorting process, some were unclear about which materials should go in different bins (e.g., types of glass).
- Some complained about a lack of space in smaller homes.
- Others were concerned about odours resulting from kitchen waste,

Only thing I found sort of hard was finding space to sort the glass inside and store it in bulk so we didn't need to carry them to the bin outside when we emptied it. (Man, 18-35, Metro, Segment: 18-30)

To manage 4 bins it's a bit tough right now. More time-consuming as well but once we are used to it things will be easier. (Woman, 18-35, Metro, Segment: Glass or FOGO)

Was there anything you found hard? There was some confusion about what to do with the glass that have the lids attached and impossible to be removed. (Man, 36-55, Metro, Segment: MUD)





### Overall outcomes of the challenge – talkability



- The majority of participants simply stated that they had not discussed the challenge with others (quotes that simply stated 'no discussion' are not shown here, the emphasis being on those that did engage in discussion).
- This finding suggests that Victorian Government cannot rely on word-of-mouth or 'buzz' as a means to disseminate messaging about new waste/recycling requirements. Even under the relatively novel circumstances of the challenge, few participants felt the need to discuss what they were doing with others.
- Where discussions were held, participants described an opportunity to provide information about good practice and breaking bad habits to others (some participants appeared to derive pleasure in instructing others) and/or to inform others in the household about the new procedures.

No I did not, work colleagues never really bring up recycling unless they have to, so I usually do not bring it up in conversation. (Man, 36-55, Regional, Segment: MUD)

I told one of my friends about it ... It was an opportunity for me to give her information about why it is bad to do this and the impacts it can have. (Woman, 18-35, Metro, Segment: Glass or FOGO)

I did talk to friends and family, mostly about the uneaten dog food and where would they put it!! Mostly though, they were supportive of what I was doing and they did become more interested in talking about their own 'bad habits' when it comes to recycling and food waste, in particular. (Woman, 36-55, Metro, Segment: Gen Pop)





#### Overall outcomes of the challenge – stickability

Most participants felt that the new habits they had developed during the challenge would 'stick'. As noted, most felt that the challenge was:

- Minimum effort either because they were already engaging with some of the behaviours and/or that the new components of the routine represented minimal extra effort; and
- o rewarding for engaging in the behaviours as doing their bit for the environment.

The continuation of new habits/behaviours was therefore a likely outcome. Note that this is a self-reported finding, the actual stickiness of the behaviour would need to be tested in follow-up research.

However, not all participants were intending to continue this change in the short term. Some predicted that they would continue with their old routines until a change is forced when new bins/requirements are introduced. However, positively they would be willing to adopt these changes with the arrival of the new bins. Essentially, the new bins would enable participants to adopt these positive recycling behaviours. As noted previously, the main enablers to recycling correctly (with the correct bins) include:

- Detailed and accessible information about what can / cannot be recycled. It was noted that this would be better if it was consistent state wide, and not different at a council level.
- Visual aids that are placed on inside and outside bins to educate and remind everyone on what items belong in which bin.
- Providing a kitchen caddy to households so they can easily set up their kitchen.
- For some concerned about the smell and cleanliness of the bin, they may need information on how to regularly clean their bin to avoid it smelling and/or attracting rodents.
- Reminding the community about the benefits of recycling glass and FOGO to compound the positive feelings they have about making a difference in their recycling behaviours.

I am going to continue forever in my house now.
We will try to dispose of items correctly as much
as we can. (Woman, 18-35, Metro, Segment: Glass or FOGO)

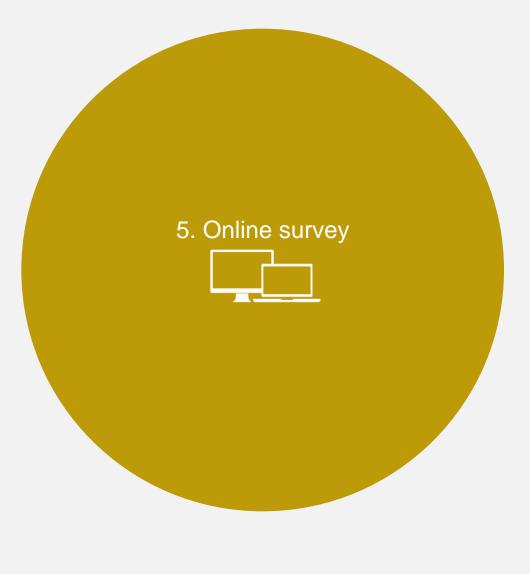
Most of it I will keep. I'm not to sure about the compost bin. (Man, 18-35, Metro, Segment: Glass or FOGO)

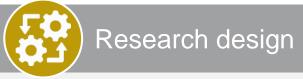
I think I will be more aware of how I am recycling and ensuring I create better recycling practices. I already want to continue using the FOGO bin, it would be good if I could find somewhere where this could be easily composted. (Man, 36-55, Metro, Segment: MUD)

I think it will have little to no impact as we'll still recycle and compost and throw into rubbish what doesn't fit in either. I think this is because this new proposed bins are not out yet and the inconvenience for us doesn't justify the space and effort required. (Man, 18-35, Metro, Segment: 18-30)











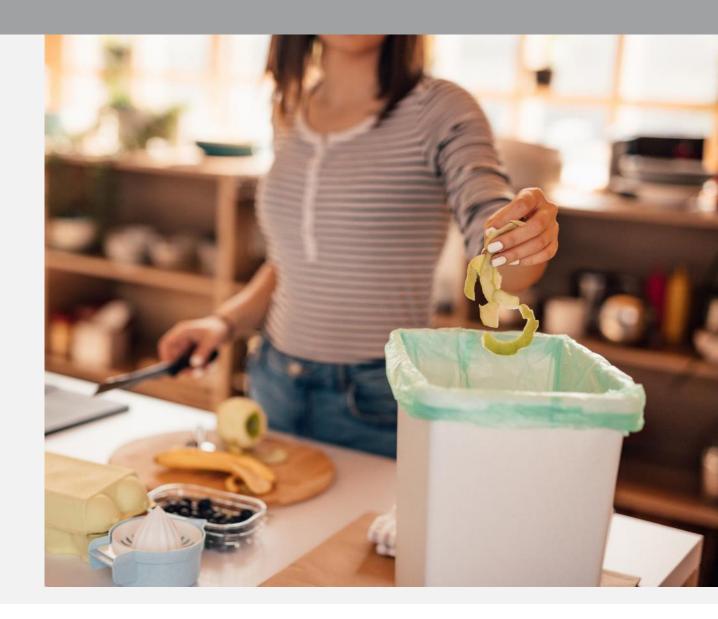
### **Data Collection**

- Data was captured online via Dynata's panel of research participants.
- Data has been weighted by age, gender, and location to reflect the states' population (based on ABS statistics).
- o Fieldwork dates: 29th October 17th November 2020.



### Sample

- All participants were Victorian residents.
- o Total sample was n=2,016.
- o To ensure representativeness, quotas were set based on:
  - o Age
  - o Gender
  - Location
  - Specific postcodes (LGAs with four-bins; LGAs where bin audits were recruited from).





## Reading this report



- o This chapter contains findings from the online survey of Victorians.
- o This chapter contains eight sections of findings relating to:
  - 1. Waste service configuration the availability and usage of different types of bins in the home;
  - 2. Waste service configuration methods of disposing of waste outside of the home;
  - 3. Levels of knowledge of and trust in recycling in Victoria;
  - Assessment of attitudes towards the new glass bin system being introduced in Victoria;
  - 5. Assessment of attitudes towards the new FOGO bin system that is also being rolled out;
  - 6. Assessment of good and poor recycling behaviours including contamination of bins;
  - 7. Assessment of attitudes, barriers and enablers of waste sorting; and
  - 8. Information sources used to inform Victorians of correct recycling practice.

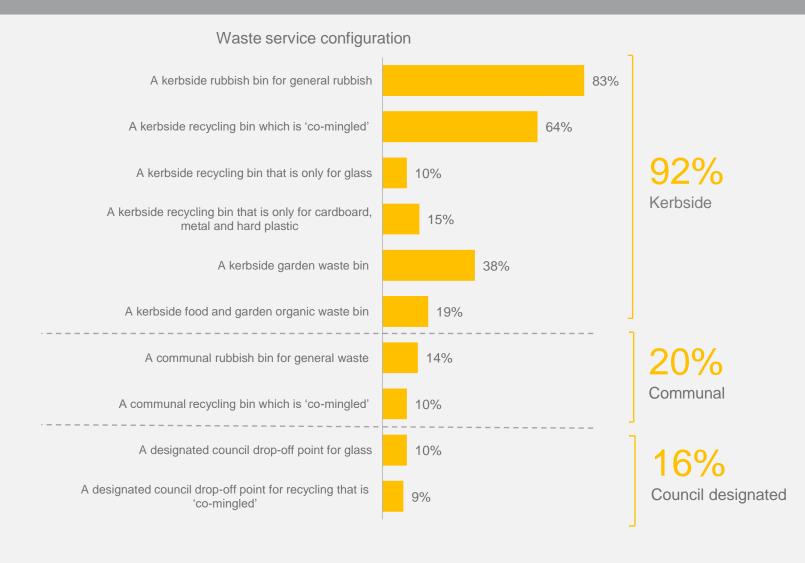






### Bins and other disposal services – in home

- 92% of all participants had some form of kerbside waste services, most commonly a general waste pickup (83%).
- 64% had a co-mingled service, 38% had a green waste bin.
- 10% reported having a glass-only collection and 19% reported having a Food Organics Garden Organics (FOGO) bin.
- 20% reported that they used a communal waste system such as those at Multi-Unit Dwellings (MUDs).
- 16% have access to council designated dropoff services for glass or recycling.



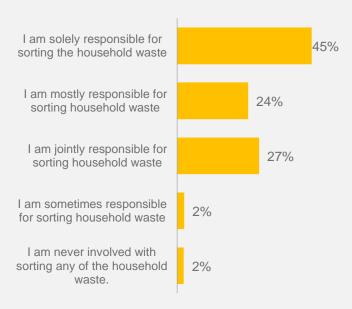




### Responsibility for waste and recycling

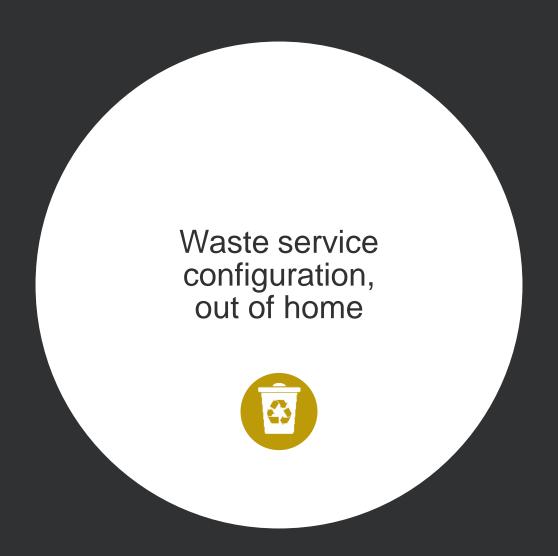
- All participants were asked about the level of responsibility they held in relation to management of waste in the household.
   Overall:
  - Nearly one half were 'solely responsible' (45%), similar to the 'benevolent dictatorship' model described in the qualitative research;
  - A quarter were 'mostly responsible' (24%) similar to the 'team with leader' model from the qualitative research;
  - A further quarter were 'jointly responsible (27%) similar to the 'joint responsibility' model described in the qualitative research; and
  - The small remainder had little-to-no responsibility for waste and recycling management, suggesting that there are very few Victorians that have no contact or responsibility with waste/recycling processes at all.
- o No differences were seen by age or gender, in terms of individual demographic differences.
- However, differences were seen by household type. MUDs were more likely to have one person responsible for waste management (presumably due to the higher prevalence of single-occupant home). The same is true of renters vs. home owners, households where only English is spoken and lower income households.

#### Responsibility for sorting waste



	Total	Metro/F	Metro/Regional		MUD		Household Size		Income		Owning vs. renting		LOTE		Gender		Age	
		Metro	Regional	Detached	MUD	1-3	4+	Low (<\$100K)	High (>\$100K)	Own	Rent	LOTE	English only	Male	Female	18-35	36-55	55+
n=	2016	1540	476	1596	420	1524	492	1188	625	1368	603	244	1751	976	1038	615	756	644
Solely responsible (benevolent dictatorship)	45%	44%	47%	41%	60%	48%	34%	48%	43%	41%	53%	39%	46%	44%	45%	42%	52%	39%
Mostly responsible (team with leader)	24%	25%	20%	25%	19%	22%	29%	22%	26%	25%	20%	25%	23%	25%	22%	22%	22%	27%
Jointly responsible (shared responsibility)	27%	27%	29%	30%	16%	26%	31%	26%	27%	29%	23%	31%	27%	27%	28%	28%	22%	32%









#### Other disposal services – out of home home

- Many Victorians claim to not have access to services such as soft plastics return points (83%) council refuse stations (75%) or privately run drop-off points (88%).
- Overall, 14% Victorians had used soft plastic drop-off points such as those at supermarkets at some stage in the last 12 months; 7% had used them frequently (8+ times in the last year).
- o 18% had used a council refuse station in the past, though only 2% used them frequently.
- o 8% had used privately run drop off points in the past, again with only 1% having used them frequently.

Waste service use (%) Used in the last 12 months A soft plastics return point (e.g. REDcycle at supermarkets) 83% 14% A council refuse station, transfer station or tip for disposing of e-waste, 75% 18% household chemicals and hard rubbish Privately run drop off points for e-waste such as electronic devices and 88% batteries - for example, a store like Officeworks ■ Don't know Do not have access and never used Have access but never used ■ 1 - 3 times 4 - 6 times ■ 6 - 8 times 8+ times









## Levels of knowledge of recycling systems



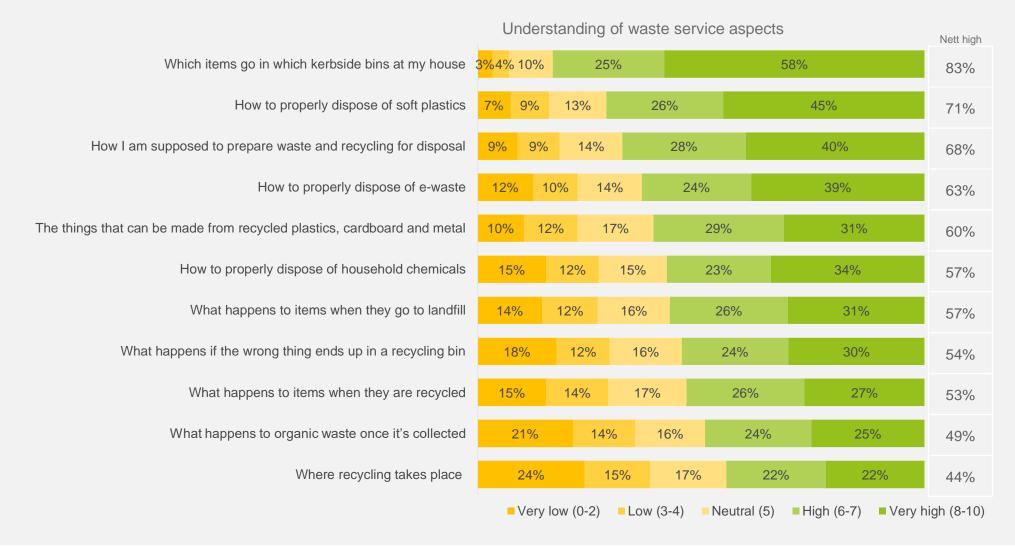
- Respondents demonstrated high levels of knowledge relating to systems and processes that happen in the home, and for relatively common household items. For example:
  - Which items go in which kerbside bins at my house (83% high/very high knowledge);
  - How to properly dispose of soft plastics (71%); and
  - How to prepare waste and recycling for disposal (68%).
- Knowledge was moderate to low for less common household item disposal, for example chemicals (57%).
- Knowledge was lowest for processes that happen away from the home.
   For example:
  - What happens to organic waste once it's collected (49%); and
  - Where recycling takes place (44%).



Please refer to the chart on the next page for all data relating to this set of questions.



## Levels of knowledge of recycling systems (continued)







# Levels of knowledge of recycling systems by key demographics

	Total	Total Metro/Regional		Gender		Age		Household Size		Income		MUD		Owning vs. renting		LOTE		
		Metro	Regional	Male	Female	18-35	36-55	55+	1-3	4+	Low (<\$100K)	High (>\$100K)	Semi / detached	Unit / apartment	Own	Rent	LOTE	English only
n=	2016	1527	489	953	1061	634	736	646	1523	493	1193	619	1602	414	1366	604	248	1747
Which items go in which kerbside bins at my house	58%	57%	63%	57%	60%	51%	54%	70%	59%	55%	59%	60%	60%	53%	60%	55%	49%	60%
How I am supposed to prepare waste and recycling for disposal	40%	39%	43%	43%	38%	36%	39%	45%	39%	42%	39%	44%	40%	39%	40%	40%	32%	41%
What happens to items when they are recycled	27%	27%	26%	32%	22%	29%	28%	23%	26%	30%	23%	36%	25%	32%	26%	29%	29%	27%
What happens to items when they go to landfill	31%	30%	34%	37%	25%	29%	29%	34%	31%	30%	28%	39%	30%	33%	31%	31%	26%	31%
What happens to organic waste once it's collected	25%	25%	26%	30%	21%	26%	24%	26%	25%	26%	23%	33%	24%	29%	25%	27%	23%	26%
What happens if the wrong thing ends up in a recycling bin	30%	29%	34%	35%	26%	29%	30%	32%	30%	30%	29%	37%	30%	34%	30%	31%	24%	31%
The things that can be made from recycled plastics, cardboard and metal	31%	31%	31%	36%	27%	32%	33%	29%	30%	35%	29%	39%	30%	36%	30%	35%	29%	32%
Where recycling takes place	22%	22%	21%	28%	17%	26%	24%	16%	21%	25%	19%	31%	21%	28%	20%	27%	19%	23%
How to properly dispose of e-waste	39%	37%	43%	44%	34%	32%	37%	48%	40%	36%	38%	43%	39%	39%	41%	35%	31%	40%
How to properly dispose of household chemicals	34%	34%	36%	38%	31%	27%	33%	43%	35%	34%	33%	39%	34%	34%	36%	31%	26%	35%
How to properly dispose of soft plastics	45%	45%	45%	45%	45%	40%	43%	52%	46%	43%	44%	50%	45%	46%	46%	44%	37%	46%





### Levels of knowledge of recycling system by key demographics

#### Gender



- o Compared with women, men were more likely to have a high level of understanding of:
  - What happens to items when they are recycled (32% vs. 22%)
  - What happens to items when they go to landfill (37% vs. 25%)
  - What happens to items where recycling takes place (28% vs. 17%)
  - How to properly dispose of e-waste (44% vs. 34%).

#### Income (\$100K-, \$100K+)



- Higher income Victorians were more likely to have a greater level of understanding of what happens to items when they are recycled compared with lower income Victorians (36% vs. 23%)
- They were also more likely to have a high level of understanding of what happens to items when they go to landfill (39% vs. 28%), and where recycling takes place (31% vs. 19%).

#### Age (18-35, 36-55, 55+)

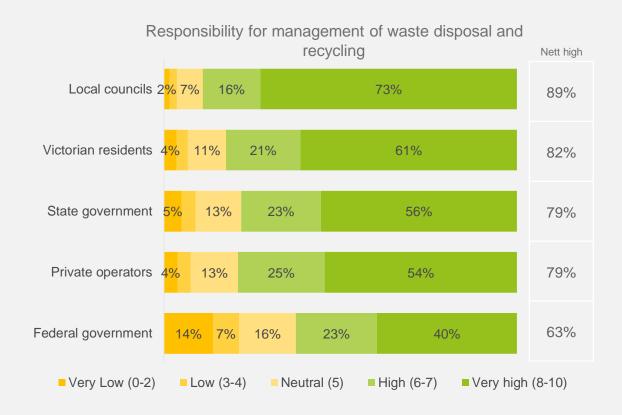


- Older Victorians were more likely to have a high level of understanding of which items can go in which kerbside bin as home compared with younger Victorians (70% vs. 51%)
- They were also more likely to have a high level of understanding of how to dispose of ewaste (48% vs. 32%), and of how to dispose of household chemicals (43% vs. 27%).





- Victorians perceive that local councils are most responsible for the handling of waste (89%).
- A similar proportion believe that residents themselves are responsible (82%).
- Almost equal proportions of Victorians perceive that state government and private operators are responsible (each 79%).
- o Relatively few perceive that federal government plays a role (63%).







### Perceptions of responsibility by key demographics

	Total	Metro/F	Metro/Regional		Gender		Age		Household Size		Income		MUD		Owning vs. renting		LOTE	
		Metro	Regional	Male	Female	18-35	36-55	55+	1-3	4+	Low (<\$100K)	High (>\$100K)	Semi / detached	Unit / apartment	Own	Rent	LOTE	English only
n=	2016	1527	489	953	1061	634	736	646	1523	493	1193	619	1602	414	1366	604	248	1747
Victorian residents	61%	61%	62%	58%	65%	58%	60%	67%	61%	63%	61%	64%	62%	61%	62%	59%	60%	62%
Local councils	73%	72%	73%	71%	75%	65%	71%	82%	73%	70%	72%	75%	74%	69%	76%	66%	66%	74%
Private operators	54%	54%	55%	53%	56%	48%	52%	63%	56%	51%	53%	58%	54%	55%	56%	50%	48%	55%
State government	56%	56%	55%	55%	57%	55%	54%	58%	55%	57%	55%	59%	56%	55%	57%	54%	54%	56%
Federal government	40%	40%	40%	39%	41%	46%	42%	31%	38%	44%	37%	47%	38%	46%	39%	43%	39%	40%

#### Age (18-35, 36-55, 55+)



- Older Victorians were more likely than younger Victorians to think responsibility for managing waste falls on:
  - Victorian residents (67% vs. 58%)
  - Local councils (82% vs. 65%)
  - Private operators (63% vs. 48%).
- On the other hand, younger people felt more strongly that responsibility for managing waste falls on the federal government (46% vs. 31%).

#### Income (\$100K-, \$100K+)



 In contrast to lower income Victorians, higher income Victorians felt more strongly that responsibility for managing waste falls on the federal government (47% vs. 37%).

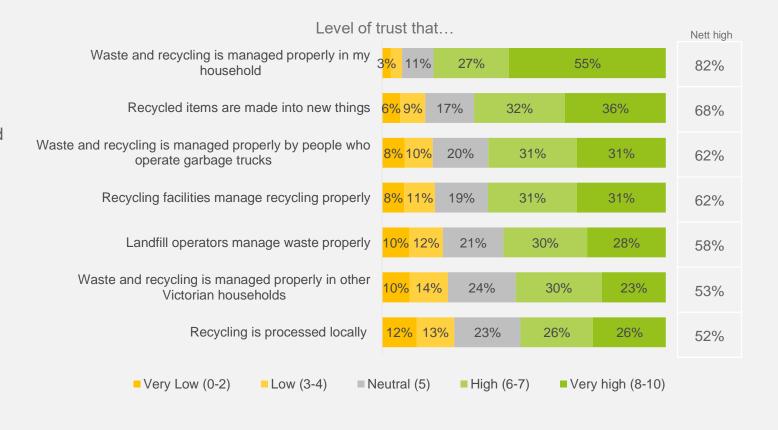
#### Owning / renting (house owners, renters)



 House owners were more likely to think responsibility for managing waste falls on local councils compared with renters (76% vs. 66%).



- In general, most Victorians place a high degree of trust in their household's waste and recycling capacity, however trust in higher-order systems is lower.
- For example: 82% of Victorians trust that waste and recycling is managed well in their households.
   However, smaller proportions trust that:
  - Waste and recycling is managed properly by people who operate garbage trucks (62%);
  - Recycling facilities manage recycling properly (62%); and
  - Landfill operators manage waste properly (58%).
- Victorians are relatively untrusting in the ability of other households to manage their waste and recycling (53%).





# Trust in the recycling system by key demographics

	Total	Total Metro/Regional		Gender		Age		Household Size		Income		MUD		Owning vs. renting		LOTE		
		Metro	Regional	Male	Female	18-35	36-55	55+	1-3	4+	Low (<\$100K)	High (>\$100K)	Semi / detached	Unit / apartment	Own	Rent	LOTE	English only
n=	2016	1527	489	953	1061	634	736	646	1523	493	1193	619	1602	414	1366	604	248	1747
Waste and recycling is managed properly in my household	55%	54%	60%	56%	55%	48%	52%	65%	56%	54%	54%	59%	56%	52%	58%	50%	49%	56%
Waste and recycling is managed properly in other Victorian households	23%	23%	20%	29%	17%	29%	26%	13%	20%	30%	19%	31%	21%	28%	21%	26%	23%	22%
Waste and recycling is managed properly by people who operate garbage trucks	31%	32%	30%	34%	29%	38%	32%	25%	29%	38%	29%	39%	30%	36%	29%	36%	33%	31%
Recycling facilities manage recycling properly	31%	31%	32%	35%	28%	36%	33%	26%	29%	38%	29%	38%	30%	37%	30%	35%	28%	32%
Landfill operators manage waste properly	28%	28%	26%	32%	24%	34%	29%	21%	25%	35%	26%	35%	27%	33%	26%	32%	30%	28%
Recycling is processed locally	26%	26%	24%	31%	21%	32%	27%	18%	23%	34%	23%	34%	24%	30%	23%	32%	27%	25%
Recycled items are made into new things	36%	36%	35%	38%	33%	40%	35%	32%	34%	40%	33%	42%	34%	41%	34%	38%	33%	36%



### Trust in the recycling system by key demographics

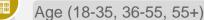


#### Household size (1-3 people, 4+ people)

- Larger households were more likely than smaller households to have a high level of trust in:
  - Waste and recycling being managed properly in other Victorian households (30% vs. 20%).
  - Waste being managed properly by landfill operators (35% vs. 25%).
  - Recycling being processed locally (34% vs. 23%).

#### Income (\$100K-, \$100K+)

- Compared with lower income Victorians, higher income Victorians were more likely to have a high level of trust in:
  - Waste and recycling being managed properly in other Victorian households (31% vs. 19%).
  - Recycling being processed locally (34% vs. 23%).
  - Waste and recycling being managed properly by people who operate garbage trucks (39% vs. 29%).





Older Victorians tend to have high levels of trust in the management of recycling in their own households. Younger Victorians have greater trust in recycling systems beyond the household. For example:

- Older Victorians were more likely to have a high level of trust in waste and recycling being managed properly in their household compared with younger Victorians (65% vs. 48%).
- Younger Victorians were more likely to have a high level of trust in waste and recycling being managed properly in other Victorian households compared with older Victorians (29% vs. 13%).
- A greater proportion of Younger Victorians had a high level of trust in waste and recycling being managed properly by people who operate garbage trucks compared with older Victorians (38% vs. 25%) and by landfill operators (34% vs. 21%).

#### Gender



- Men were more likely to have a high level of trust in waste and recycling being managed properly in other Victorian households compared with women (29% vs. 17%)
- In addition, men were also more likely to have a high level of trust in recycling being processed locally (31% vs. 21%).









### Perceptions of new glass bins for those that already have one

- Overall, Victorians who have a glass bin are relatively positive about its benefits and use.
- For example:
  - 90% agree that they understand why they need to separate glass from other waste and recycling;
  - Similarly, 90% agree that sorting glass separately is the right thing to do;
  - Again, 90% agree that they consistently sort their glass separately from my other waste and recycling; and
  - 88% agree that having an additional bin is good for Victoria's recycling system.
- Most Victorians are also concerned about being seen to do the wrong thing. 74% would feel embarrassed if their neighbour perceived them to be sorting their glass incorrectly.

Only one significant difference was observed for this measure – a higher proportion of house owners were more likely to agree that having an additional bin like this is good for Victoria's recycling system compared with renters (78% vs. 50%).



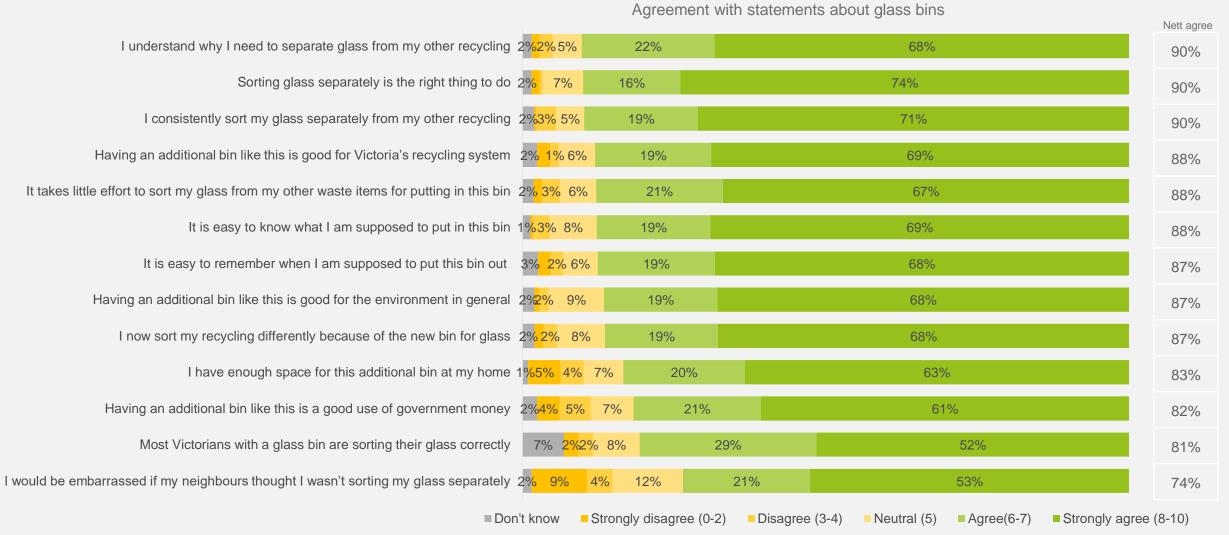
Please refer to the chart on the next page for all data relating to this set of questions.







### Perceptions of new glass bins for those that already have one (continued)

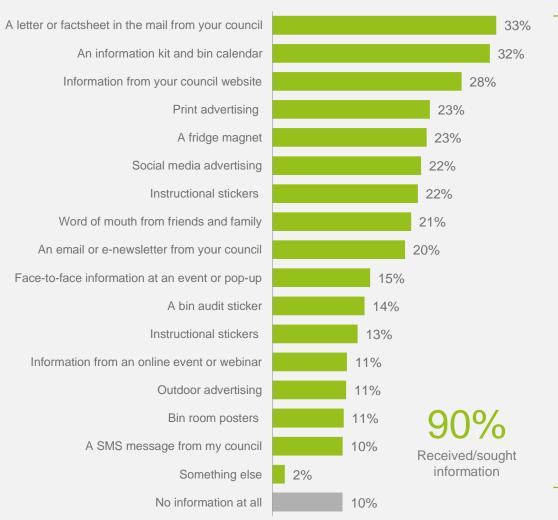






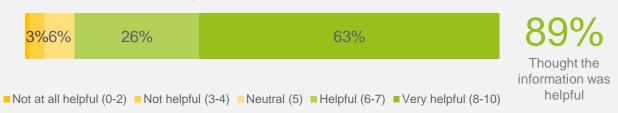
#### Information received about glass bin

#### Information received about new glass bin



- Victorians with a glass bin most commonly recall receiving information about it in the form of a letter/factsheet (33%) and/or an information kit (32%).
- Some actively went to their Council's website to seek information (28%).
- However, fewer passively received electronic forms of information such as emails (20%) or an SMS (10%).
- o Overall, 90% received or sourced some form of information.
- o Of these, 89% thought the information was helpful.
- No notable significant differences by key demographics were observed for these measures (most likely due to low sample sizes)

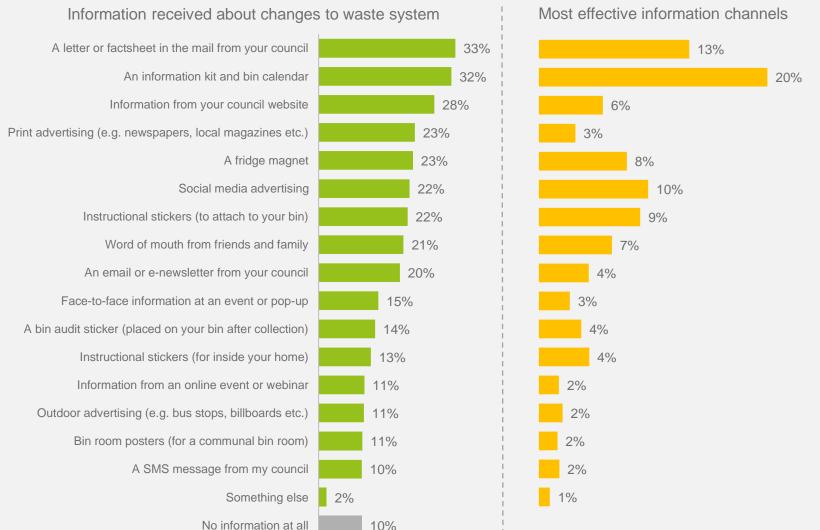
How helpful was the information?







### Rating of effectiveness of glass bin information received

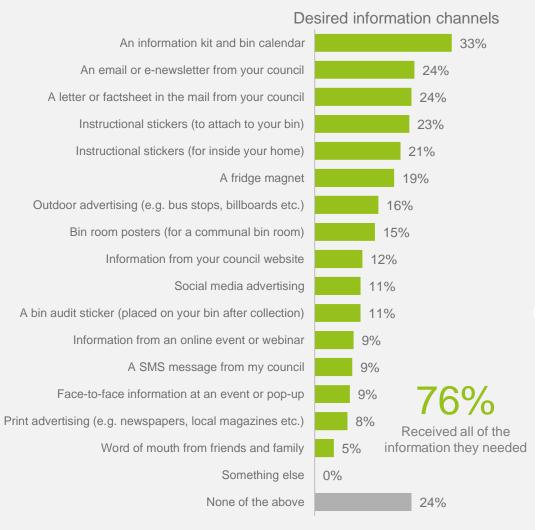


- The various sources of information received were contrasted with perceptions of their effectiveness.
- While letters and factsheets were relatively commonly received (33%) they were not necessarily seen to be the most effective means of communicating the required information (13% perceived the materials to be 'most effective').
- The information kit was also commonly received, and was more widely regarded as being most effective (20%).
- Some of the least effective communications were perceived to be SMS, bin room posters and outdoor advertising (though these were rarely received/recalled).
- Again, no notable demographic differences were observed for these measures.





### Types of information about glass bin most desired by Victorians



- Participants were asked how they would have liked to receive information about the new glass bin.
- The idea of an information kit including a calendar was again strongly preferred (33%).
- The popularity of collateral such as calendars and fridge magnets was confirmed in qualitative comments in the survey.
- Electronic communication in the form of an e-newsletter was also a popular option (24%) as was a hard copy factsheet (24%).
- Few were interested in webinars, SMS, pop-up events, or print advertising (each less than 10%).
- No notable demographic differences were observed for this measure.
- Of those who didn't receive all the information they needed...

"A calendar telling which week we put out which bin with information on it as to what is or isn't recycled"

"Fridge magnet with information about how to correctly sort the rubbish would greatly helps me as I often forgot about it."

"A lot more instructions would have been helpful."

"Anything. I know nothing about it."

"How they are reducing my rates."

"We received no information as we moved into a property with the bin system in place, we've had to figure out the system on our own and have since had warnings for doing things wrong, which previously would have been the right way to recycle which is really belittling when you take an extra 15-20 minutes out of your day to sort your rubbish and think you are doing the right thing."

"Information leaflet and how it benefits recycling properly."









### Perceptions of FOGO bin for those who already own one



- Similar to attitudes towards glass bins, those with a FOGO bin tended to be very positive about the bin's ease-of-use and value. For example:
  - 90% agree that sorting out food and garden organics waste for this bin is the right thing to do;
  - 87% agree that they consistently sort food and garden organics from other waste;
  - 86% agree that having an additional food and garden organics bin like this is good for Victoria's waste and recycling system;
  - 86% agree that it is easy to know what they're supposed to put in this bin; and
  - 86% agree that having an additional food and garden organics bin like this is good for the environment in general.
  - Again like the findings for glass bins, the opinions of peers is a potential driver of good practice -55% of those with a FOGO bin would feel embarrassed if their neighbours thought they were not using it properly.
  - Encouragingly, relatively few perceive that their FOGO gets sent to landfill (38%), however many simply do not know (30%).

Only one significant difference was observed for this measure – Older Victorians were more likely to indicate that it is easy to remember when to put the FOG O bin out (82% vs. 62% and 63% of mid aged and younger Victorians).

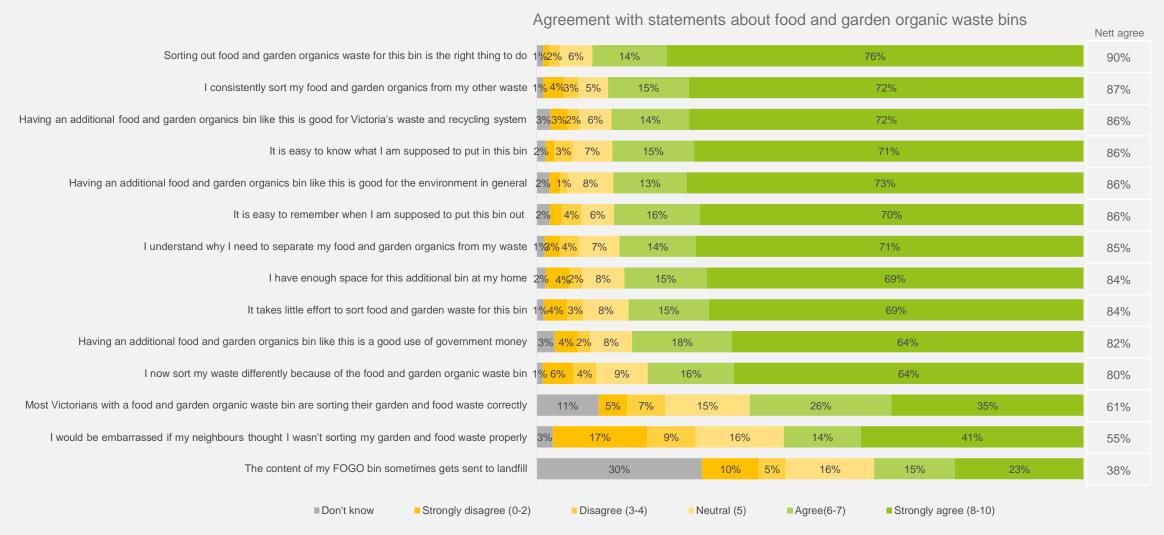


Please refer to the chart on the next page for all data relating to this set of questions.





### Perceptions of FOGO bin for those who already own one (continued)

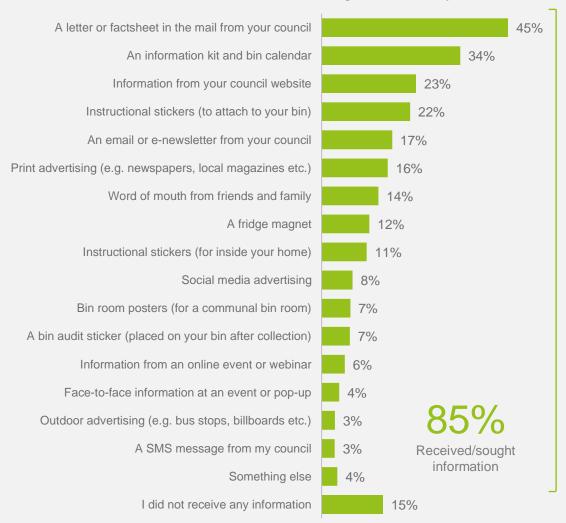






#### Receiving information about the new FOGO bin

#### Information received about changes to waste system



- Overall seeking or receiving of information during the introduction of FOGO bins is similar to that for information about glass bins (total 85% for FOGO, 90% for glass).
- Again, letters and factsheets from Council are most commonly received (45%) followed by information kits with calendars (34%).
- Similar to glass bins, electronic media such as email (17%) and SMS (3%) were less commonly received.
- Of the 85% who received or sought any form of information,
   90% thought that the information was helpful.
- As was the case for measures relating to the glass bin, no notable significant differences were observed for these measures, most likely due to a lower sample size.

How helpful was the information?

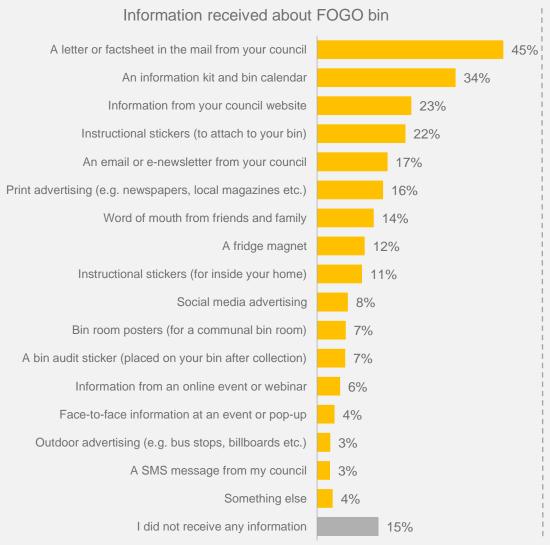


90% Thought the information was helpful

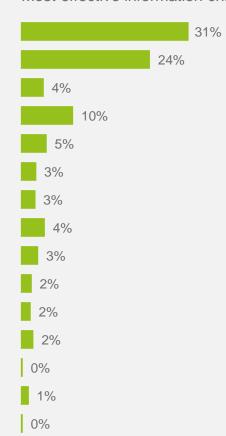




#### Receiving information about the new FOGO bin







- Again, the various sources of information received were contrasted with perceptions of their effectiveness.
- For FOGO, the factsheet from Council was most frequently received and most commonly perceived to be most effective (45% and 31% respectively).
- The information kit plus calendar was also frequently received and seen to be effective (34%, 24%).
- Outdoor advertising and SMS communication were again perceived to be least effective.

One significant difference was observed for this measure: Older Victorians were more likely to perceive that a calendar/fridge magnet was useful (38% vs. 16% of younger Victorians).

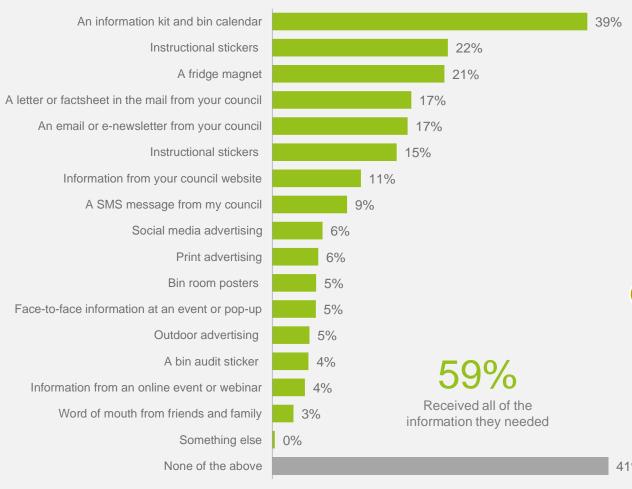


3%



### Types of information about FOGO bin most desired by Victorians

#### Desired information channels



- Like the findings for glass bins information kits with calendars were most desired by Victorians during the roll-out of FOGO bins (39%).
- Instructional stickers were also popular (22%) presumably to place on the FOGO bin itself to provide guidance.
- Online webinars and outdoor advertising were again less popular choices for these Victorians.

"Of those who didn't receive all the information they needed...

"If I knew what the information was. I'd ask for it. I do not know what I do not know as it were."

"I need a yearly calendar sent to me which week is for recycle bin and which is for organic waste. Council should "educate" by sending more info about proper recycling and what happens if we don't do it properly. I am glad you have this survey this matter is important."

"How to correctly use the compostable bags supplied for kitchen waste. Initially, they were too tightly rolled, and did not readily open."

"A booklet on its care, what goes in and time to put out."

"More needs to be done in education of people on what to place in bins, may even need to put warning stickers on bins that do not comply."





# Types of information about FOGO bin most desired by Victorians by key demographic

#### Age (18-35, 36-55, 55+)

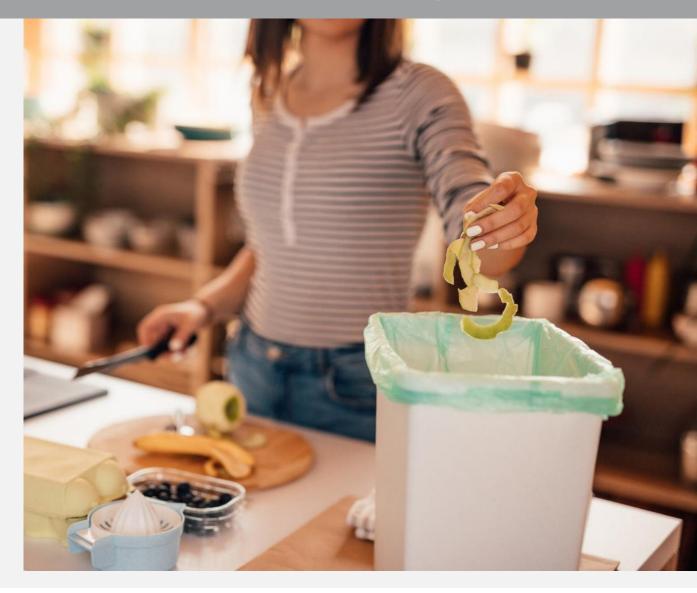


- Middle-aged Victorians were more likely to desire more social media advertising compared with older Victorians (12% vs. 1%).
- In addition, younger Victorians were more likely to desire instructional stickers than older Victorians (22% vs. 6%)

#### Income (\$100K-, \$100K+)



 Compared with lower income Victorians, higher income Victorians were more likely to desire an information session or pop-up event (13% vs. 2%).





# Recycling behaviours and contamination

Victorians were asked a series of questions to assess how they would dispose of a range of items. Specifically ...

... Thinking about the current waste disposal options you have available to you, how would you dispose of each of these items?

<LIST OF DISPOSAL OPTIONS>







### Placement of waste items in different bins, introduction

- o In total, there were 26 waste/recycling items used for this part of the survey. These are shown in the table below, including an indication as to whether they should be placed in the recycle bin.
- A 'best fit' model was used. While different councils can accept different types of recycling, the recyclability of each item was specified based on items which are accepted by a large majority of councils.
- o 13 different disposal options were provided, of which only some were correct for each item.
  - 1. A kerbside rubbish bin for general rubbish;
  - 2. A kerbside recycling bin which is 'co-mingled';
  - 3. A kerbside recycling bin that is only for glass;
  - 4. A kerbside recycling bin that is only for cardboard, metal and hard plastic (no glass);
  - 5. A kerbside garden waste bin a bin where you can put your garden waste for collection;
  - 6. A kerbside food and garden organic waste bin;
  - 7. A communal rubbish bin for general waste;
  - 8. A communal recycling bin which is 'co-mingled';
  - 9. A designated council drop-off point for glass;
  - 10. A designated council drop-off point for recycling that is 'co-mingled';
  - 11. A council refuse station, transfer station or tip for disposing of e-waste, household chemicals and hard rubbish;
  - 12. A soft plastics return point (e.g. REDcycle at supermarkets); and
  - 13. Privately run drop off points for e-waste such as electronic devices and batteries.
- The data from these questions was aggregated to determine when a participant made a correct selection for disposal of each item, and when they made an incorrect one.
- o The table on the following page shows the correct disposal options for each item (green shading).

Item	Recyclable?	Item	Recyclable?
Paper and cardboard	✓	Disposable face masks	×
Aluminium and steel cans	✓	Styrofoam or polystyrene	ж
Hard plastic containers and bottles	✓	Batteries	×
Glass bottles and jars	✓	Ceramics	×
Milk and juice cartons	✓	Broken glass	×
Aluminium foil and trays	✓	Waxed cardboard boxes	×
Aerosol cans	×	Food scraps	x
Plastic toys	×	Nappies	×
Soft plastics	×	Light globes	×
Steel pots and pans	×	Recycling in plastic bags	×
Wood or timber	×	Rubbish in plastic bags	×
Ink cartridges	×	Household electrical items	×
Plastic bags	×	Clothing or textile items	×





# Placement of waste items in different bins, introduction

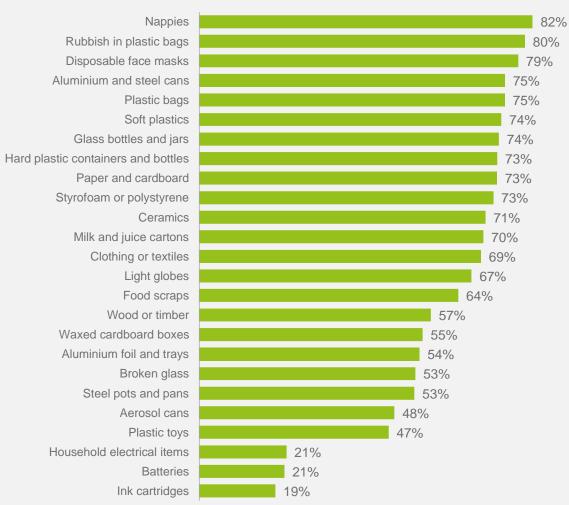
	A kerbside rubbish bin for general rubbish	A kerbside recycling bin which is 'co- mingled'	A kerbside recycling bin that is only for glass	metal and hard	where you can put your	food and garden organic	A communal rubbish bin for general waste	A designated council drop-off point for glass	council drop-off point for recycling that	household	A soft plastics return point (e.g. REDcycle at	Privately run drop off points for e-waste such as electronic devices and batteries
Paper and cardboard												
Aluminium and steel cans												
Aerosol cans												
Hard plastic containers and bottles												
Glass bottles and jars												
Milk and juice cartons												
Aluminium foil and trays												
Plastic toys												
Soft plastics												
Steel pots and pans												
Wood or timber												
Ink cartridges												
Plastic bags												
Disposable face masks												
Styrofoam or polystyrene												
Batteries												
Ceramics												
Broken glass												
Waxed cardboard boxes												
Food scraps												
Nappies												
Light globes												
Recycling in plastic bags												
Rubbish in plastic bags												
Household electrical items												
Clothing items or other textile materials												





### Placement of waste items in different bins, overall levels of knowledge





- Overall, the highest level of knowledge for correct disposal was seen for nappies, rubbish in plastic bags and disposable face masks (82%, 80%, 79% respectively).
- This is encouraging given the potentially hazardous nature of items such as nappies and, more topically, disposable face masks.
- The lowest levels of knowledge were seen for e-waste items such as household electrical items, batteries and ink cartridges (21%, 21%, 19% respectively).
- It would appear that many Victorians are still not aware that these items
   must be taken to an appointed drop-off facility and must not be placed in
   general waste or any other disposal option.
- A note on 'food scraps' it may appear that disposal of food scraps is low, or at least middling given knowledge of other items (64%). However, it is possible that participants confused two options in the survey:
  - A kerbside garden waste bin a bin where you can put your garden waste for collection; and
  - A kerbside food and garden organic waste bin.





### Knowledge of placement of waste items in different bins, demographic differences

- o Participants were classified as either 'low knowledge' or 'high knowledge'. This allocation was based on the number of correct responses given to the bank of questions. Those in the lowest quartile (fewest number of correct answers) were classified as 'low knowledge'.
- Some differences in levels of knowledge using this method mirrored those found in previous surveys. In terms of being classified as 'lower knowledge':
  - Metropolitan dwellers demonstrated lower knowledge than regional dwellers (27% low knowledge vs. 16%);
  - Those living in MUDs demonstrated lower knowledge than those in freestanding homes (38% vs 21%);
  - Those in larger households demonstrated lower knowledge than those in smaller households (32% vs. 23%);
  - Those on higher incomes demonstrated lower knowledge than those on lower incomes (35% vs. 21%);
  - o Renters demonstrated lower knowledge than those who owned their own homes (33% vs. 22%);
  - LOTE households showed lower knowledge than households where only English was spoken (35% vs. 23%);
  - Men showed lower knowledge than women (31% vs. 19%); and
  - Younger Victorians showed lower knowledge than mid-aged and older Victorians (36%, 26%, 12% respectively).

	Metro/Regional		al MUD		Household Size		Income		Owning vs. renting		LOTE		Gender		Age		
							Low	High				English					
	Metro	Regional	Detached	MUD	1-3	4+	(<\$100K)	(>\$100K)	Own	Rent	LOTE	only	Male	Female	18-35	36-55	55+
n=	1527	489	1602	414	1523	493	1193	619	1366	604	248	1747	953	1061	634	736	646
Lower knowledge	27%	16%	21%	38%	23%	32%	21%	35%	22%	33%	35%	23%	31%	19%	36%	26%	12%





#### Placement of waste items in different bins

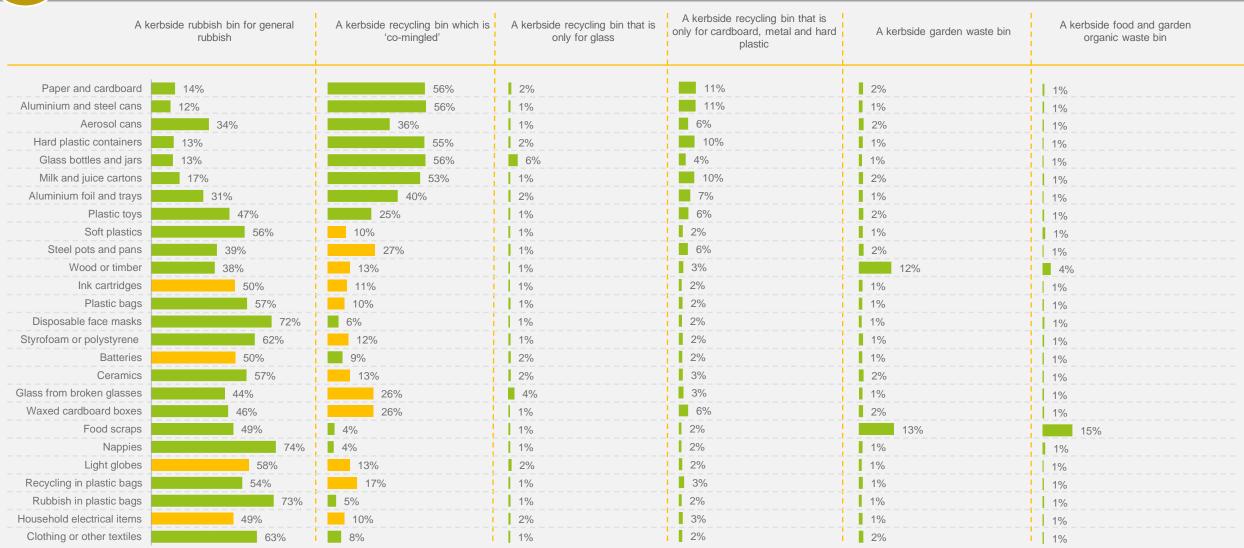
- As noted in the introduction, these summary /correct/incorrect' statistics are based on detailed options for 26 items and 13 disposal methods.
- The very detailed data given the 338 possible combinations of item/disposal option are provided on the following pages.
- Commentary is not provided for every single item; rather, areas of particular concern are flagged using an orange bar in place of a green one.
- The areas of greatest concern were, in general:
  - The relatively high number of people who still perceive that it is acceptable to dispose of e-waste in either the general waste bin or the recycle bin; and
  - The relatively high (greater than 10%) of people who incorrectly believe that it is acceptable to place items such as broken glass, steel pots and pans and waxed cardboard in their recycling bins.
- The following two slides show the details of these findings based on current knowledge and practice.
- A follow-up question was asked about anticipated practice once the new fourth bin is introduced (the question was only asked of those that do not currently have a fourth bin).
- As a question based on a theoretical future on a topic that has yet to be widely communicated to Victorians, this question has not need subject to detailed aggregation or analysis. The findings are presented here for reference.







### Placement of waste items in different bins, detailed outcomes







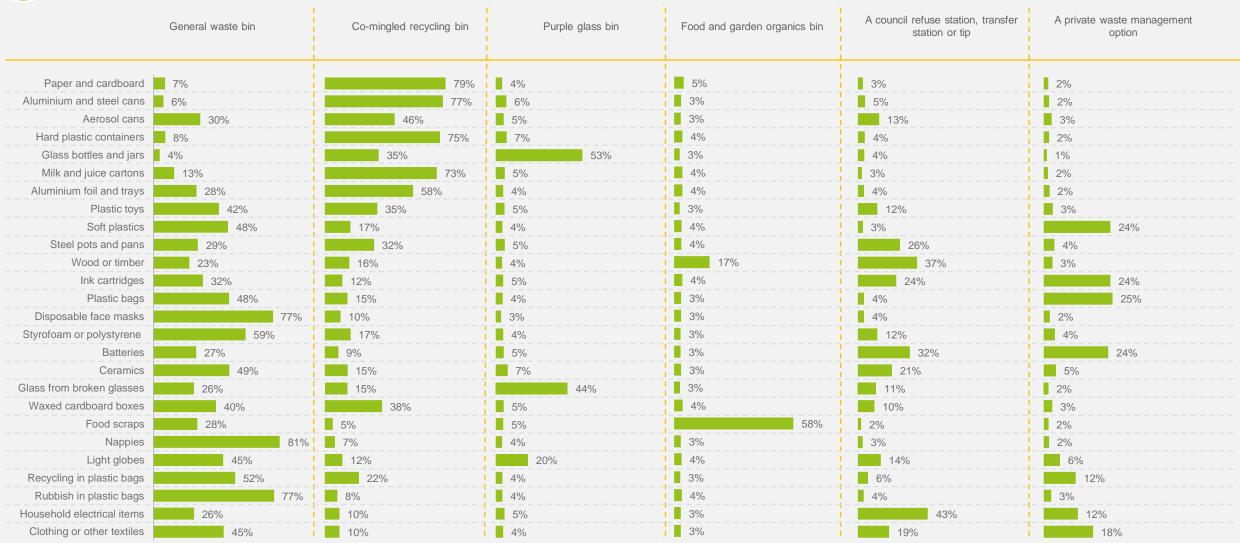
# Placement of waste items in different bins, detailed outcomes (cont.)

A	communal rubbish bin for general waste	A communal recycling bin which is 'co-mingled'	A designated council drop- off point for glass	A designated council drop- off point for 'co-mingled' recycling	A council refuse station, transfer station or tip	A soft plastics return point	Privately run drop off points for e-waste such as electronic devices and batteries
Paper and cardboard	4%	5%	1%	2%	1%	ı ı ı   1%	1%
Aluminium and steel cans	4%	6%	2%	2%	2%	1%	1%
Aerosol cans	5%	4%	2%	2%	4%	1%	1%
Hard plastic containers	4%	6%	2%	2%	2%	1%	1%
Glass bottles and jars	3%	6%	4%	2%	2%	1%	1%
Milk and juice cartons	5%	5%	1%	2%	1%	1%	1%
Aluminium foil and trays	5%	5%	2%	2%	2%	1%	1%
Plastic toys	5%	4%	1%	2%	4%	1%	1%
Soft plastics	7%	3%	2%	2%	1%	12%	1%
Steel pots and pans	6%	4%	1%	3%	8%	1%	1%
Wood or timber	6%	4%	2%	2%	13%	1%	1%
Ink cartridges	7%	3%	2%	2%	10%	1%	9%
Plastic bags	7%	3%	2%	2%	1%	11%	1 1%
Disposable face masks	7%	2%	2%	2%	2%	1%	1%
Styrofoam or polystyrene	7%	3%	2%	2%	4%	1%	1%
Batteries	7%	3%	2%	2%	12%	1%	9%
Ceramics	7%	3%	2%	3%	7%	1%	1%
Glass from broken glasses	5%	4%	4%	2%	5%	1%	1%
Waxed cardboard boxes	5%	4%	2%	2%	4%	1%	1%
Food scraps	8%	2%	1%	2%	2%	1%	1%
Nappies	8%	2%	1%	1%	2%	1%	1%
Light globes	6%	3%	3%	2%	6%	1%	3%
Recycling in plastic bags	7%	3%	2%	2%	3%	5%	1%
Rubbish in plastic bags	7%	2%	1%	2%	2%	1%	1%
Household electrical items	6%	3%	2%	2%	16	1%	6%
Clothing or other textiles	6%	3%	2%	2%	7%	1%	3%





### Placement of waste items in different bins, anticipated question in a theoretical four-bin future







### Attitudes to waste sorting

- Overall, Victorians understand the importance of good recycling practice for the environment; and see the value in careful sorting of recycling and waste.
- Specifically:
  - 88% agree that people need to think carefully about what can be recycled and what can't;
  - 87% agree that sorting waste correctly is worth the effort to protect the environment;
  - 87% agree that it is the responsibility of every individual to dispose of their waste through the correct bin;
  - 84% agree that putting the right things in the right bins is just a habit for me;
  - 81% agree that separating food and organics from other waste is important.
- Negative statements such as 'sorting waste and recycling correctly is not worth it' (28%)
  received the lowest levels of agreement. However, to have one quarter of Victorians who
  still perceive that recycling 'is not worth it' may still be cause for concern.



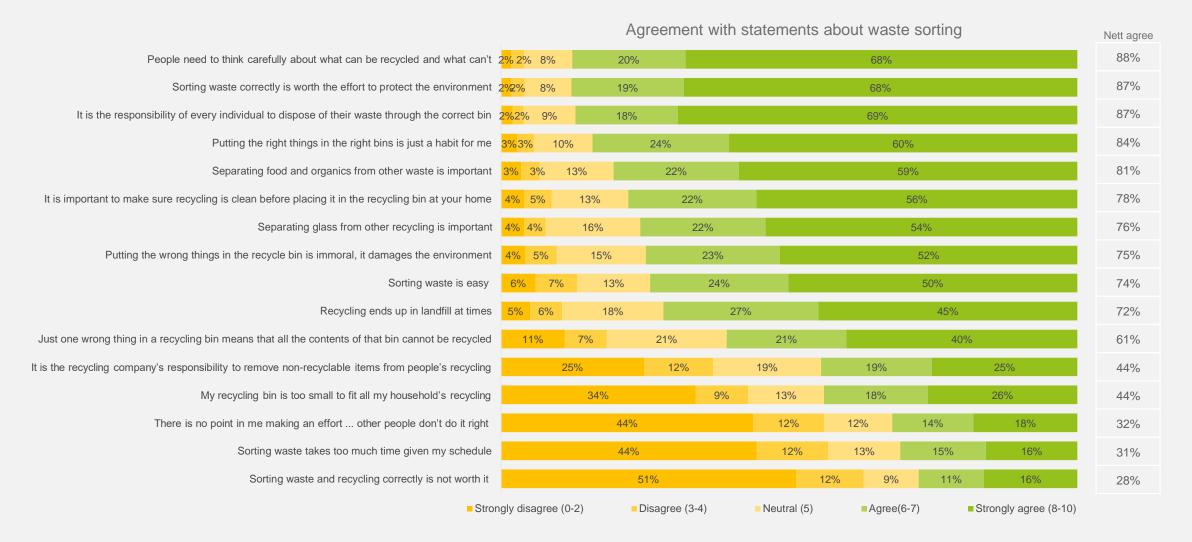
Please refer to the chart on the next page for all data relating to this set of questions.







### Attitudes to waste sorting (continued)







### Attitudes to waste sorting by key demographics

	Total	otal Metro/Regional		Gender		Age		Household Size		Income		MUD		Owning vs. renting		LOTE		
		Metro	Regional	Male	Female	18-35	36-55	55+	1-3	4+	Low (<\$100K)	High (>\$100K)	Semi / detached	Unit / apartment	Own	Rent	LOTE	English only
n=	2016	1527	489	953	1061	634	736	646	1523	493	1193	619	1602	414	1366	604	248	1747
Sorting waste and recycling correctly is not worth it	16%	18%	12%	21%	12%	22%	19%	7%	15%	20%	13%	24%	15%	21%	14%	22%	17%	16%
Recycling ends up in landfill at times	45%	44%	49%	46%	44%	45%	44%	46%	45%	43%	43%	49%	45%	45%	45%	44%	42%	46%
Sorting waste takes too much time given my schedule	16%	17%	11%	21%	11%	23%	20%	5%	14%	22%	12%	25%	14%	23%	15%	19%	18%	16%
Sorting waste is easy	50%	49%	54%	50%	50%	47%	49%	55%	49%	53%	51%	53%	51%	47%	51%	48%	41%	52%
People need to think carefully about what can be recycled and what can't	68%	67%	73%	65%	70%	58%	66%	79%	69%	66%	68%	71%	69%	63%	69%	64%	62%	69%
My recycling bin is too small to fit all my household's recycling	26%	26%	25%	28%	24%	33%	30%	14%	21%	40%	22%	35%	26%	27%	23%	33%	27%	26%
It is the responsibility of every individual to dispose of their waste through the correct bin or drop off	69%	68%	74%	67%	71%	62%	68%	78%	69%	69%	69%	72%	70%	65%	71%	66%	68%	70%
Putting the right things in the right bins is just a habit for me	60%	59%	64%	60%	60%	51%	59%	72%	61%	60%	62%	62%	62%	56%	63%	56%	56%	61%
It is the recycling company's responsibility to remove non-recyclable items from people's recycling	25%	27%	21%	30%	21%	31%	27%	18%	23%	31%	23%	33%	24%	30%	24%	28%	30%	25%
There is no point in me making an effort with sorting my waste because other people don't do it right	18%	19%	14%	24%	13%	23%	21%	9%	16%	23%	14%	27%	16%	25%	17%	21%	18%	18%
It is important to make sure recycling is clean before placing it in the recycling bin at your home	56%	55%	59%	53%	58%	50%	55%	62%	56%	55%	54%	60%	56%	55%	56%	54%	54%	56%
Sorting waste correctly is worth the effort to protect the environment	68%	68%	70%	65%	72%	62%	66%	77%	69%	68%	69%	71%	70%	63%	70%	66%	68%	68%
Putting the wrong things in the recycle bin is immoral, it damages the environment	52%	51%	53%	52%	52%	51%	51%	53%	50%	56%	51%	56%	51%	53%	52%	50%	55%	51%
Just one wrong thing in a recycling bin means that all the contents of that bin cannot be recycled	40%	40%	40%	40%	40%	38%	38%	45%	41%	38%	38%	45%	39%	45%	40%	39%	38%	41%
Separating food and organics from other waste is important	59%	57%	63%	59%	59%	52%	55%	70%	59%	57%	58%	63%	59%	56%	61%	54%	57%	59%
Separating glass from other recycling is important	54%	53%	56%	56%	53%	47%	52%	63%	54%	56%	54%	56%	54%	55%	55%	51%	56%	54%





### Attitudes to waste sorting by key demographics



Age (18-35, 36-55, 55+)

- Compared with younger Victorians, older Victorians were more likely to agree with statements relating to recycling being a shared responsibility such as:
  - People need to think carefully about what can be recycled and what can't (79% vs. 58%)
  - It is the responsibility of every individual to dispose of their waste through the correct bin or drop off (78% vs. 62%).
- In contrast, younger Victorians were more likely to express negative opinions about recycling such as:
  - Sorting waste and recycling correctly is not worth it (22% vs. 7%)
  - Sorting waste takes too much time (23% and 20% vs. 5%)
  - Their recycling bin was too small to fit all their household recycling (33% and 30% vs. 14%)
  - It is the recycling company's responsibility to remove non-recyclable items from people's recycling (31% vs. 18%).

#### Gender



 A virtually identical pattern was seen for gender. Women tended to hold positive attitudes towards the importance of recycling for the environment, men tended to see it as a chore that should be someone else's responsibility.

#### Household size (1-3 people, 4+ people)



 Larger households were more likely to agree that their recycling bin is too small to fit all of their recycling compared to smaller households (40% vs. 21%).

#### Income (\$100K-, \$100K+)

- Compared to lower income Victorians, higher income Victorians were more likely to agree with statements such as:
  - Sorting waste and recycling is not worth it (24% vs. 13%)
  - Sorting waste takes too much time given their schedule (25% vs. 12%)
  - Their recycling bin is too small to fit all of their household's recycling (35% vs. 22%)
  - It is the recycling company's responsibility to remove non-recyclable items from people's recycling (33% vs. 23%)
  - There is no point in making an effort to sort waste because other people can't do it right (27% vs. 14%).

#### MUD (semi / detached, unit / apartment)



- People living in MUDs tended to hold more negative attitudes towards recycling tasks. Compared to those living in detached or semi-detached houses, those living in units or apartments were more likely to agree with statements such as:
  - Sorting waste and recycling is not worth it (21% vs. 15%)
  - Sorting waste takes too much time given their schedule (23% vs. 14%)
  - There is no point in making an effort to sort waste because other people can't do it right (25% vs. 16%).









### Commitment to correct waste sorting

- o All participants were asked how committed they felt to correctly sorting their waste and recycling.
- o Overall commitment is high at 89% (65% very committed, 24% committed).
- o Only 4% in total do not feel committed to correctly sorting their waste and recycling.

o The primary difference for this measure was seen for age.



 Older Victorians consider themselves to be much more committed to correctly sorting their household waste into the appropriate bin in comparison to younger Victorians (75% vs. 55%).







### Engaging with waste and recycling behaviours and experiences

- All participants were asked about their participation or exposure to experiences that may influence their waste and recycling behaviours.
- The most common forms of participation/exposure were:
  - Conversations about waste and recycling (55% in the past 12 months);
  - Seeing news articles about waste and recycling 53%); and/or
  - Receiving or picking up a waste calendar (49%).
- Attendance at council events such as 'pop-ups' (19%) and/or having a tag put on a kerbside bin (21%) were far less common.



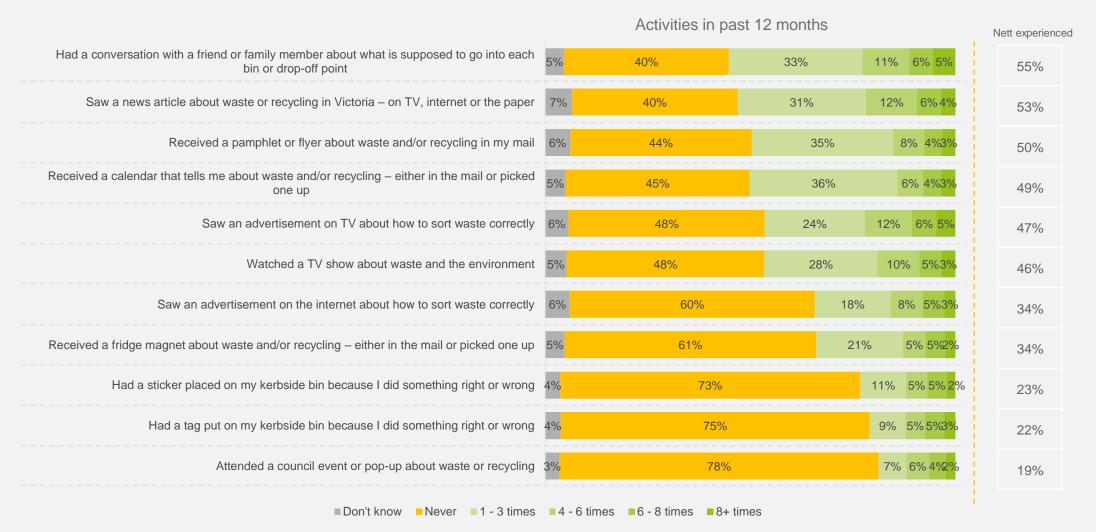


Please refer to the chart on the next page for all data relating to this set of questions.





### Engaging with waste and recycling behaviours and experiences (continued)







## Engaging with waste and recycling behaviours and experiences by key demographics

	Total	Metro/Regional Gender		nder	Age			Household Size		Income		MUD		Owning vs. renting		LOTE		
		Metro	Regional	Male	Female	18-35	36-55	55+	1-3	4+	Low (<\$100K)	High (>\$100K)	Semi / detached	Unit / apartment	Own	Rent	LOTE	English only
n=	2016	1527	489	953	1061	634	736	646	1523	493	1193	619	1602	414	1366	604	248	1747
Had a sticker placed on my kerbside bin because I did something right or wrong	12%	13%	7%	18%	6%	22%	13%	1%	11%	17%	8%	22%	9%	22%	10%	18%	12%	12%
Had a tag put on my kerbside bin because I did something right or wrong	12%	14%	7%	18%	7%	22%	13%	1%	11%	17%	8%	23%	10%	22%	10%	17%	11%	12%
Had a conversation with a friend or family member about what is supposed to go into each bin or drop-off point	23%	24%	17%	25%	21%	31%	24%	13%	21%	27%	20%	32%	21%	30%	22%	25%	19%	23%
Watched a TV show about waste and the environment	19%	20%	17%	25%	13%	29%	17%	11%	18%	21%	17%	25%	17%	28%	18%	23%	16%	19%
Received a pamphlet or flyer about waste and/or recycling in my mail	15%	17%	10%	21%	9%	24%	17%	4%	14%	20%	11%	25%	12%	25%	13%	19%	16%	15%
Received a fridge magnet about waste and/or recycling – either in the mail or picked one up	13%	14%	9%	18%	7%	24%	13%	2%	12%	16%	10%	21%	11%	20%	11%	17%	11%	13%
Received a calendar that tells me about waste and/or recycling – either in the mail or picked one up	14%	16%	9%	20%	8%	24%	15%	4%	13%	18%	12%	21%	12%	22%	13%	18%	10%	15%
Saw an advertisement on TV about how to sort waste correctly	22%	23%	21%	28%	17%	31%	22%	14%	21%	25%	20%	29%	20%	31%	20%	26%	19%	23%
Saw an advertisement on the internet about how to sort waste correctly	16%	17%	12%	21%	10%	27%	17%	3%	14%	21%	13%	25%	13%	26%	14%	20%	14%	16%
Saw a news article about waste or recycling in Victoria – on TV, internet or the paper	22%	23%	19%	28%	16%	29%	21%	16%	21%	24%	19%	31%	20%	29%	21%	25%	20%	22%
Attended a council event or pop-up about waste or recycling	12%	13%	7%	18%	6%	23%	12%	1%	11%	16%	8%	21%	10%	21%	10%	17%	11%	12%





### Engaging with waste and recycling behaviours and experiences by key demographics

Some very consistent demographic differences were observed for engagement with different types of recycling influencer. However, the drivers behind these different levels of engagement were not always clear.

#### Gender



- Males were more likely to report negative engagements with the recycling system such as receiving a bin tag (18% vs. 7% of women) or sticker (18% vs. 6%). This is presumably due to the poorer recycling practices of men.
- However, on a more positive note, men were also more likely to recall a range of advertising and other media such as a calendar (20% vs 8%), a fridge magnet (18% vs. 7%) and TV advertising (28% vs. 17%).
- Why men should be so much more likely to recall these potential influencers, yet still show lower levels of practice is unclear.

#### Age (18-35, 36-55, 55+)



A similar phenomena was seen for age. For example:

- Younger Victorians were more likely to have received a bin sticker, presumably due to their poorer practice (22% vs. only 1% of older Victorians)
- However, younger Victorians were also more likely to recall almost every type of information about recycling – for example, the ever-popular fridge magnet (24% vs. only 2% of older Victorians.

#### Income (\$100K-, \$100K+)



 A similarly uniform pattern was seen for household income. Wealthier households were simply more likely to have engaged with every form of potential influencer, positive or negative.

#### MUD (semi / detached, unit / apartment)



- MUDs were also uniformly more likely to have engaged with every form of influencer from stickers, to fridge magnets.
- This is presumably due to the communal arrangements of a MUD where information, including punishments, is often distributed by owners/property managers to localised residents.
- Similarly elevated levels of engagement were seen for both renters vs. home owners and for larger households vs. smaller ones.

#### Metro Regional



Metropolitan dwellers were mor likely to have engaged with a wide range of potential influencers such as:

- Negative experiences such as bin stickers (13% vs. 7% of regional dwellers)
- Having a conversation about recycling (24% vs. 17%)
- o General information and advertising such as pamphlets (17% vs. 10%).

### LOTE vs. English only



- LOTE vs. English-speaking households is an area where demographic differences in engagement might be expected.
- o However, no statistically significant differences were observed.





### Influences on attitudes and behaviours



- Those that had experienced each of these potential behavioural influencers were asked how influential they were on their efforts to manage waste and recycling appropriately.
- Despite being a relatively infrequent experience, attendance at council events such as pop-ups was seen to be most influential (82%).
- Fridge magnets and TV shows about waste and recycling were also seen to be highly influential (77%, 76% respectively).
- News articles and conversations with friends were amongst the more common behavioural influencers. However, these were seen to be among the least influential of all items listed (69%, 68% respectively.
- o This suggests that word-of-mouth is not an effective means to convey information about waste and recycling.
- Only one set of demographic differences was noted for this set of measures income. Specifically, compared to low-income earners, high income earners were more likely to be strongly influenced by:
  - Having a sticker placed on their kerbside bin for doing something wrong (65% vs. 37%)
  - Having a tag placed on their kerbside bin for doing something wrong (64% vs. 38%)
  - Having a conversation with a friend or family member about what is supposed to go into each bin or drop-off point (49% vs. 34%)
  - Receiving a fridge magnet about waste and / or recycling (59% vs. 42%)
  - Attending a council event or pop-up about waste or recycling (70% vs. 41%).

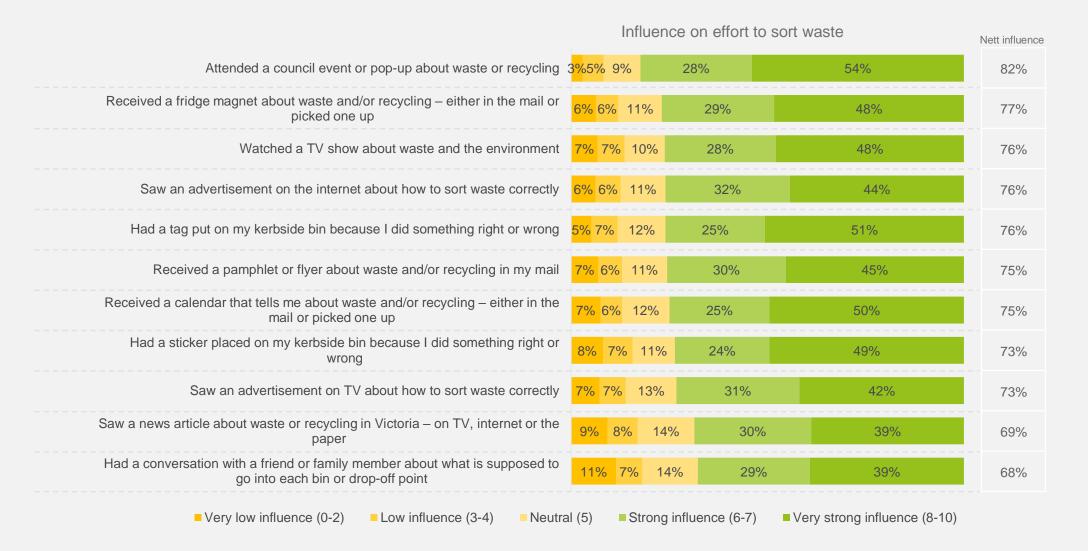


Please refer to the chart on the next page for all data relating to this set of questions.





### Influences on attitudes and behaviours (continued)









### Seeking information to inform good practice

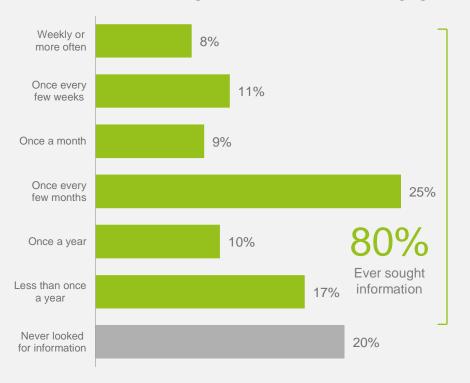
- Three sources of information stood out as the primary 'go-tos' for when Victorians are unsure about how to dispose of different items:
  - The packaging of the item itself (38%);
  - Council websites (37%); and
  - General internet searches (34%).
  - Encouragingly, few Victorians indicate that they would place an item in the recycling bin if they were unsure which bin it was supposed to go in (8%).

#### Information seeking when disposing an unfamiliar item



- Overall, 80% of Victorians have ever sought information about managing waste and recycling (a separate question from the 'unsure' question shown to the left).
- o Most look for information every few months or less often.

#### Occurrence of searching for information about managing waste

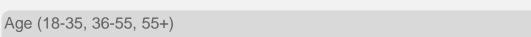






### Seeking information to inform good practice – differences by key demographics







- o Compared to older Victorians, younger Victorians were more likely to ask someone in their household (24% vs. 14%), or check the internet (40% vs. 25%).
- o In contrast, older Victorians were more likely to look at the packaging for information (51% vs. 31%), look up information on the council website (47% vs. 27%), or contact their local council by phone (24% vs. 12%).

#### MUD (semi / detached, unit / apartment)



o Compared to those living in a semi / detached house, people living in a unit / apartment were more likely to ask someone outside of their household (15% vs. 10%), or dispose of the item in a recycling bin (13% vs. 6%).





### Information sources and quality

- The 80% of Victorians who had ever sought information about waste and recycling were asked where they went to find the information they needed; and the usefulness of that information.
- Once again, Council websites were the most common destination (46%) and were seen to be useful (88%).
- Internet searches were the next most common source of information (37%) and were also seen to be useful (88%).
- Fewer Victorians turned to Council social media sites (12%) State Government (11%) or councils via phone (11%). Despite their lack of popularity, these sources of information were generally seen as useful (between ~80%-90% useful).
- o (The chart continues on the following slide).
- The least common sources of information about waste and recycling were phone calls to state government authorities and information conveyed via children in the household (each 4%). However, again, these sources of information were considered to be useful (around 90%).



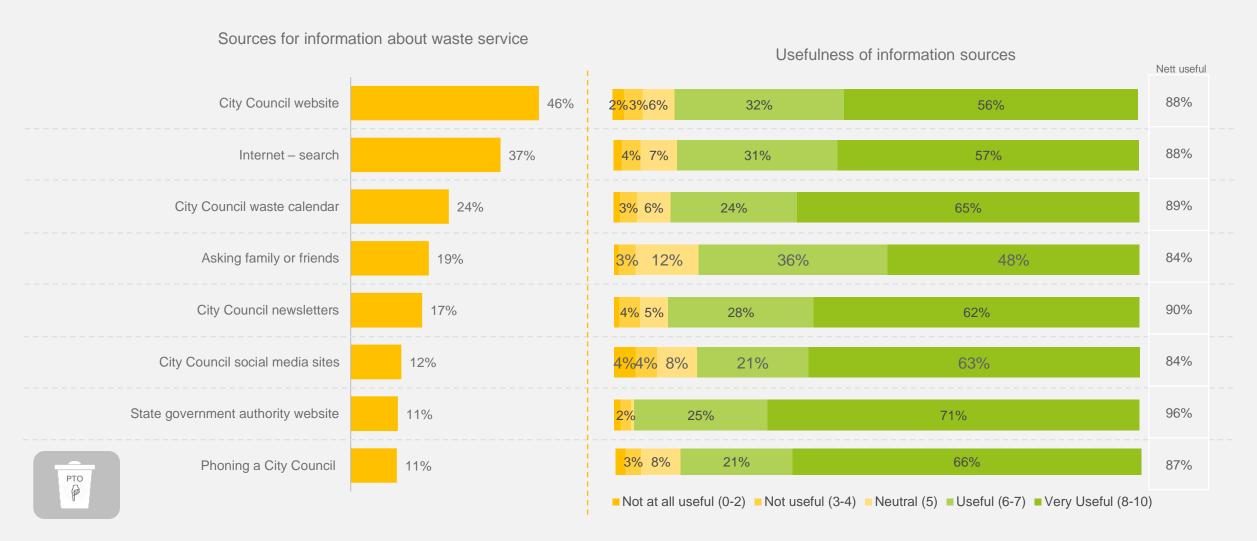
Please refer to the chart on the next page for all data relating to this set of questions.







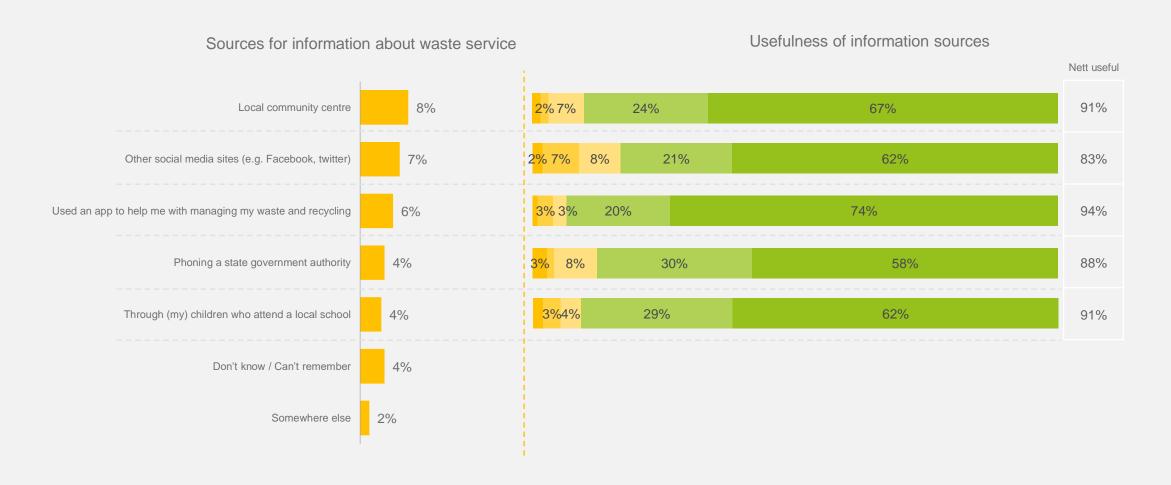
### Information sources and quality (continued)







### Information sources and quality (continued)







### Information sources and quality by key demographic



Age (18-35, 36-55, 55+)

- o Older and younger Victorians tended to use different sources of information with a preference for online resources. For example, younger Victorians were more likely to use:
  - The internet (45% vs. 24% of older Victorians)
  - Social media (12% vs. 1%)
  - Ask their friends (25% vs. 13%).
- o Conversely, older Victorians were more likely to use resources that were either hard-copy, or traditionally reputable such as local councils:
  - City council waste calendar (35% vs. 17%)
  - City council newsletters (24% vs. 13%)
  - Phoning a city council (16% vs. 6%)
  - City council website (52% vs 35%).



#### Gender

- o Men tended to use a wider variety of information sources compared to women. For example, men were more likely to use:
  - City council social media sites (16% vs 9%)
  - City council newsletters (20% vs 15%)
  - Local community centres (12% vs. 5%).
- o However, women were more likely than men to use the internet to search for information (40% vs. 33%).

### LOTE (LOTE, English)



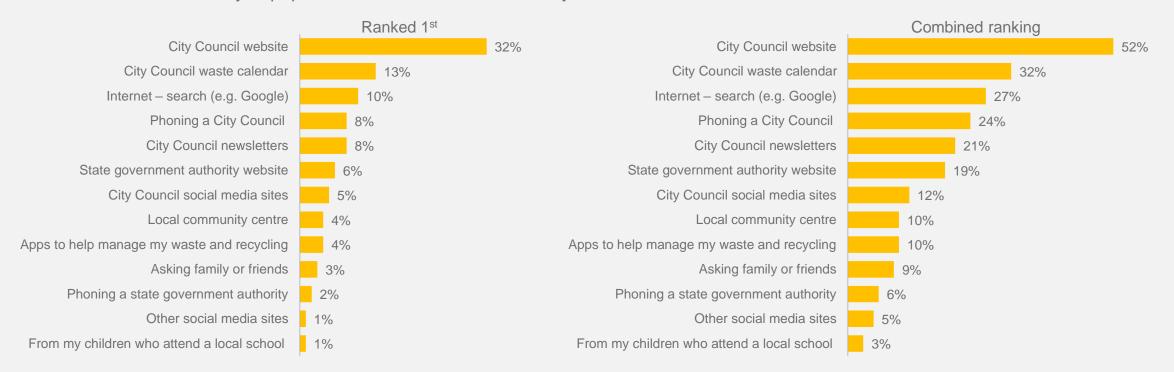
o Those who speak a language other than English at home were 10% more likely than English speakers to ask family or friends for information (28% vs. 18%).





### Ranking of quality of different sources of waste and recycling information

- Participants were asked to rank the various sources of waste and recycling information that was available by picking their top-three preferred sources.
- Council websites were by far the most preferred ranked first by 32% of participants, with 52% ranking this source in their top-three (52% 'combined ranking').
- Waste Council calendars were similarly popular with a 13% first-rank and 32% combined rank.
- o Word of mouth is a relatively unpopular source of information at only 3% first-rank and 9% combined rank.

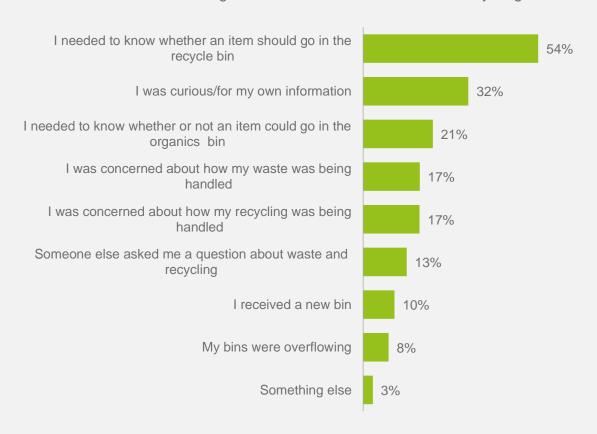






### Reasons for searching for information

#### Reasons for searching for information about waste and recycling



- All participants who had sought information were asked what prompted the behaviour.
- Most typically, those who sought information wanted to know if an item could be disposed of in the recycle bin (54%) or were simply curious (32%).
- Relatively few sought information because they had received a new bin (noting that relatively few Victorians have received new bins in recent times) or because of over-full bins (each 10% or less).





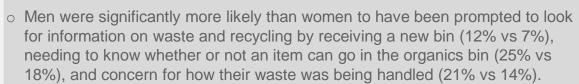
### Reasons for searching for information



Age (18-35, 36-55, 55+)

- Older and younger Victorians had different reasons for looking for information on waste and recycling. Specifically, younger Victorians were more likely to have been prompted by factors relating to an external logistical issue such as:
  - Receiving a new bin (13% vs. 6%)
  - Being asked a question about waste and recycling (17% vs. 10%)
  - Being concerned about how their waste was being handled (22% vs. 13%).
- In contrast, older Victorians were more likely to have been prompted by an internal need, specifically - knowing what items should go in the recycle bin than younger and middle aged Victorians (67% vs. 48% and 49%).

#### Gender







- Compared to those living in a semi / detached house, people living in a unit / apartment were more likely to have been prompted to look up information by:
  - Receiving a new bin (15% vs. 8%)
  - Being concerned for how their recycling was being handled (22% vs 16%).
- On the other hand, 56% of people living in a semi / detached house were prompted by needing to know whether an item can go in the recycle bin, compared to 47% of those in a unit / apartment.

### Household size (1-3 people, 4+ people)



 56% of smaller households were prompted to look for information by a need to know what can go in the recycle bin, compared to only 48% of larger households.

#### Owning / renting (home owners, renters)



 Those who own their home were significantly more likely to look for information because they needed to know whether an item can go in the recycle bin (56%), compared to those who are renting their home (48%).

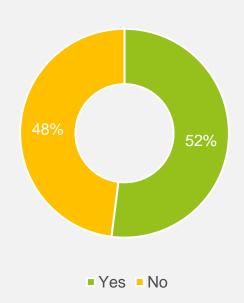


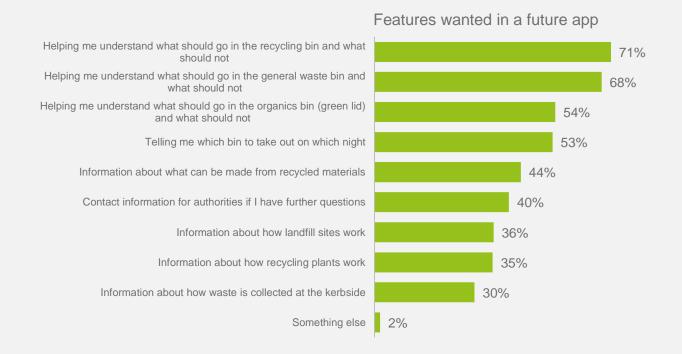


### Appeal of a waste management app

- o The survey included specific assessment of the level of interest in an app to assist with managing waste and recycling.
- Interest is moderate at 52% of Victorians.
- o These Victorians most commonly desire guidance on what should/should not go in their recycling (71%) general waste (68%) and/or organics (54%) bins.
- o The idea of alerts for bin night was also relatively popular (53%).
- o Fewer were interested in more general information about how recycling plants work (35%) and/or how waste is collected (30%).

#### Interest in an app helping manage waste and recycling









### Appeal of a waste management app by key demographics

Features wanted in a future app

#### Interest in an app helping to manage waste and recycling

#### Age (18-35, 36-55, 55+)



 Younger Victorians were much more likely to be interested in using an app than older Victorians (68% vs. 35%) – in line with a general preference for online resources to guide practice.



#### LOTE (LOTE, English)

 Those who speak a language other than English at home were 10% more likely to be interested in using an app compared to English speakers (61% vs. 51%).



#### Income (\$100K-, \$100K+)

o Higher income earners were 14% more likely than lower income earners to be interested in an app (63% vs. 49%).



#### Gender (male, female)

- o There were some app features that appealed more to women than they did to men. These include:
  - Helping them understand what should / shouldn't go in a recycling bin (77%) vs. 63%)
  - Helping them understand what should / shouldn't go in an organics bin (59% vs, 49%)
  - Helping them understand what should / shouldn't go in a general waste bin (73% vs. 62%).

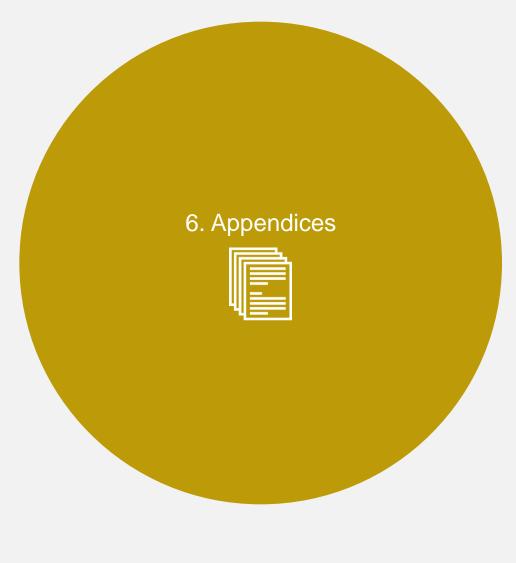


#### Age (18-35, 36-55, 55+)

- Older Victorians had some app features they preferred considerably more than younger and middle-aged Victorians, including:
  - Helping them understand what should / shouldn't go in a recycling bin (81% vs. 66% and 69%)
  - Helping them understand what should / shouldn't go in a general waste bin (79% vs. 66% and 64%).
- o On the other hand, younger Victorians were 18% more likely to want information about how waste is collected at the kerbside, compared to older Victorians (36% vs. 18%).

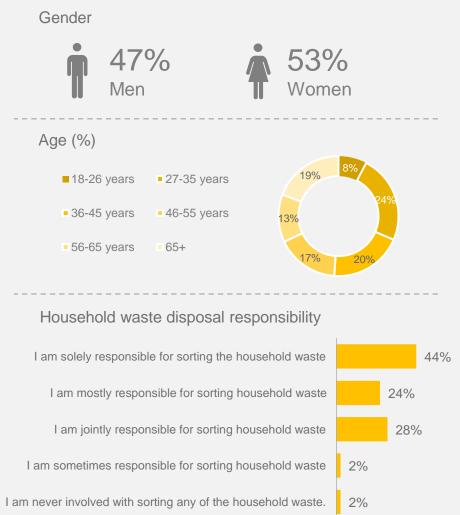






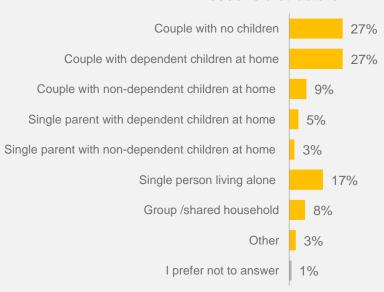


### Demographics from the survey (unweighted)





#### Household structure

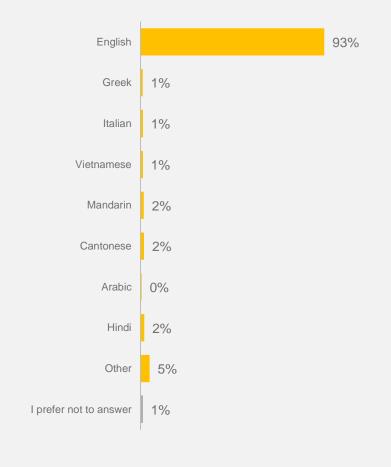


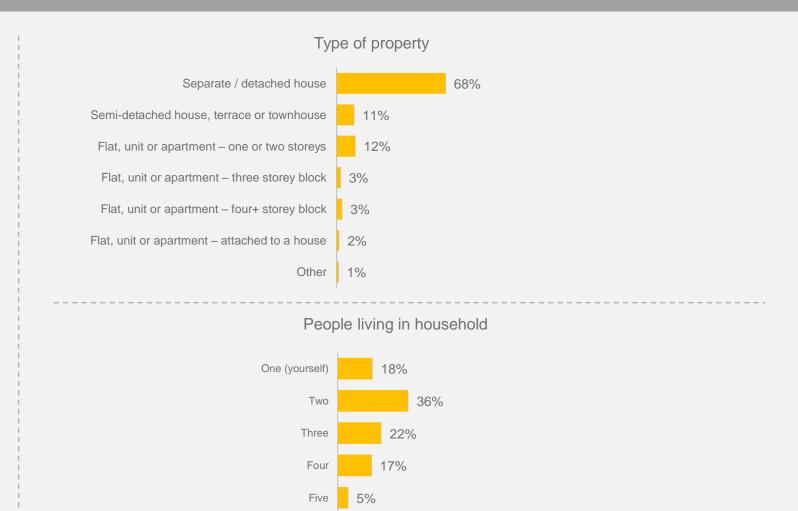




### Demographics from the survey (unweighted) continued

### Languages spoken



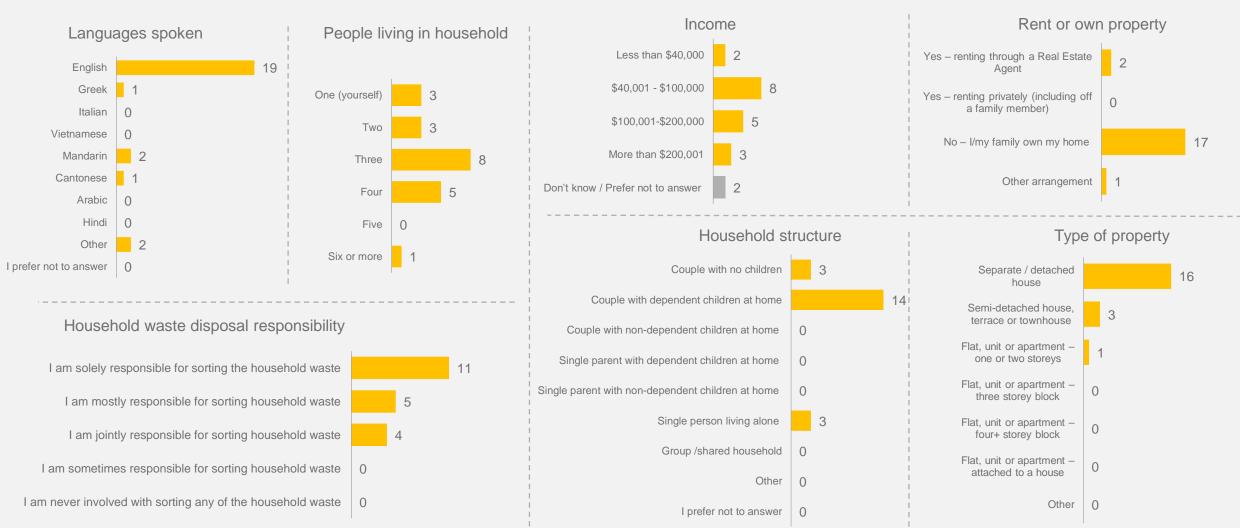


Six or more





### Bin audit participants (unweighted counts)







## Full list of bin audit items

Newspaper	PS (P6) packaging	Food - loose, condiments sauces herbs spices	Glues (water based solvents)
Magazines brochures	EPS (P6) packaging - in bags (100%)	Food - loose, staple foods	Herbicides weed killers
Print office paper - shredded	EPS (P6) packaging - loose	Food - loose, cake desserts	Insect spray pesticides
Print office paper - not shredded	PS & EPS (P6) non-packaging	Food - loose, confectionery snacks	Motor oil
Miscellaneous packaging paper	Other plastics (P7) containers - beverage CDS	Food - loose, processed fruit	Nail polish remover
Disposable paper - coffee cups	Other plastics (P7) containers - non-beverage CDS	Food - loose, other	Oven cleaners
Disposable paper - other	Other plastics (P7) packaging - excl. beverage containers	Food in unopened packets containers	Paint tins - with liquid paint
Contamination soiled paper - hand towels	Other plastics (P7) other - non bev. non packaging	Skins (bananas etc)	Paint tins - with dry paint
Contamination soiled paper - other	Other plastics – toys	Bones pips corn cobs egg shells	Pharmaceuticals
Composite (mainly paper)	Other plastics – plant pots	Tea bags coffee grounds	Pool chemicals
Corrugated cardboard - pizza boxes	Other plastics – plates, cutlery	Peelings stems outer leaves	Rat poison
Corrugated cardboard - other	Other plastics – CD DVD cases	Drinks	Solvents
Waxed cardboard	Other plastics – car parts	Garden vegetation - compliant	Transmission fluid
Cardboard - other	Other plastics – other	Compostable liner bagged material	Wax
Tetrapak containers - beverage CDS	Plastic film	Compostable liners	Wood preservatives finishes (oils varnish)
Tetrapak containers - beverage non-CDS	Plastic bags film – compostable (empty bags)	Other putrescible - animal excrement	Asbestos
Tetrapak packaging	Plastic bags	Other putrescible - other	Brake pads
LPB containers - beverage CDS	Composite (mostly plastic)	Wood timber - treated	Cables chargers
LPB containers - beverage non-CDS	Steel containers - beverage CDS	Wood timber - untreated	Computers
LPB containers packaging	Steel containers - beverage non-CDS	Disposable face masks	Computer accessories (mouse keyboard etc)
Glass containers - beverage CDS	Steel packaging (excl. beverage containers)	Other face masks	Dust
Glass containers - beverage non-CDS	Steel other non-packaging - pots pans	Clothing textiles	Hazardous mixed fines
Glass containers - other	Steel other non-packaging - cutlery	Leather	Headlights
Glass packaging (excl. fines)	Steel other non-packaging - car parts	Rubber	Incandescent globes
Glass - miscellaneous other	Steel other non-packaging - other	Oils (excl. motor oil)	Mobile phones
Glass fines (<50mm)	Composite (mostly ferrous)	Acids alkalis	Needles epi pens medical
PET (P1) containers - beverage CDS	Aluminium containers - beverage CDS	Aerosol cans	Oil filters
PET (P1) containers - beverage non-CDS	Aluminium containers - beverage non-CDS	Anti-freeze	Printer cartridges
PET (P1) packaging - excl. beverage containers	Aluminium packaging (aerosol, excl. beverage containers)	Batteries (household akaline)	Sunscreen
PET (P1) other - non bev. non packaging	Aluminium foil - trays	Batteries (car)	Toiletries cosmetics
HDPE (P2) containers - beverage CDS	Aluminium foil - sheets	Brake fluid	TVs monitors
HDPE (P2) containers - beverage non-CDS	Other non-packaging non-ferrous - car parts	Car body filler	Other e-waste
HDPE (P2) packaging - excl. beverage containers	Other non-packaging non-ferrous - other	Cleaners (ammonia based)	Other hazardous
HDPE (P2) other - non bev. non packaging	Composite (mostly non-ferrous)	Compact fluorescent light globes (CFLs) and starters	Nappies hygiene products - adult
PVC (P3) containers - beverage CDS	Food - loose, fresh salad leaves	Coolant	Nappies hygiene products - children
PVC (P3) containers - beverage non-CDS	Food - loose, fresh fruit	Detergents disinfectants drain cleaners	Nappies hygiene products - feminine hygiene
PVC (P3) packaging - excl. beverage containers	Food - loose, fresh vegetables	Fertiliser	C&D - dust, dirt, ash, soil
PVC (P3) other - non bev. non packaging	Food - loose, bakery	Fire extinguishers	C&D - ceramics
LDPE (P4) packaging	Food - loose, meals (home cooked pre-prepared)	Floor-care products and waxes	C&D - bricks, tiles, cement, rock
LDPE (P4) non-packaging	Food - loose, meat and fish (uncooked)	Fluorescent tubes	C&D - plasterboard and plaster products
PP (P5) packaging	Food - loose, dairy eggs	Fuels (petrol diesel kerosene other)	Bagged material (not in compostable liners, sort separately)
PP (P5) non-packaging	Food - loose, processed vegetables salad	Gas cylinders (up to 9kg BBQ leisure)	Other (not sorted anywhere else)
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# **KANTAR**

### **Thank You!**

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