

# Opportunities to reduce recycling contamination

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Council briefing

# Background



# Impacts of contamination



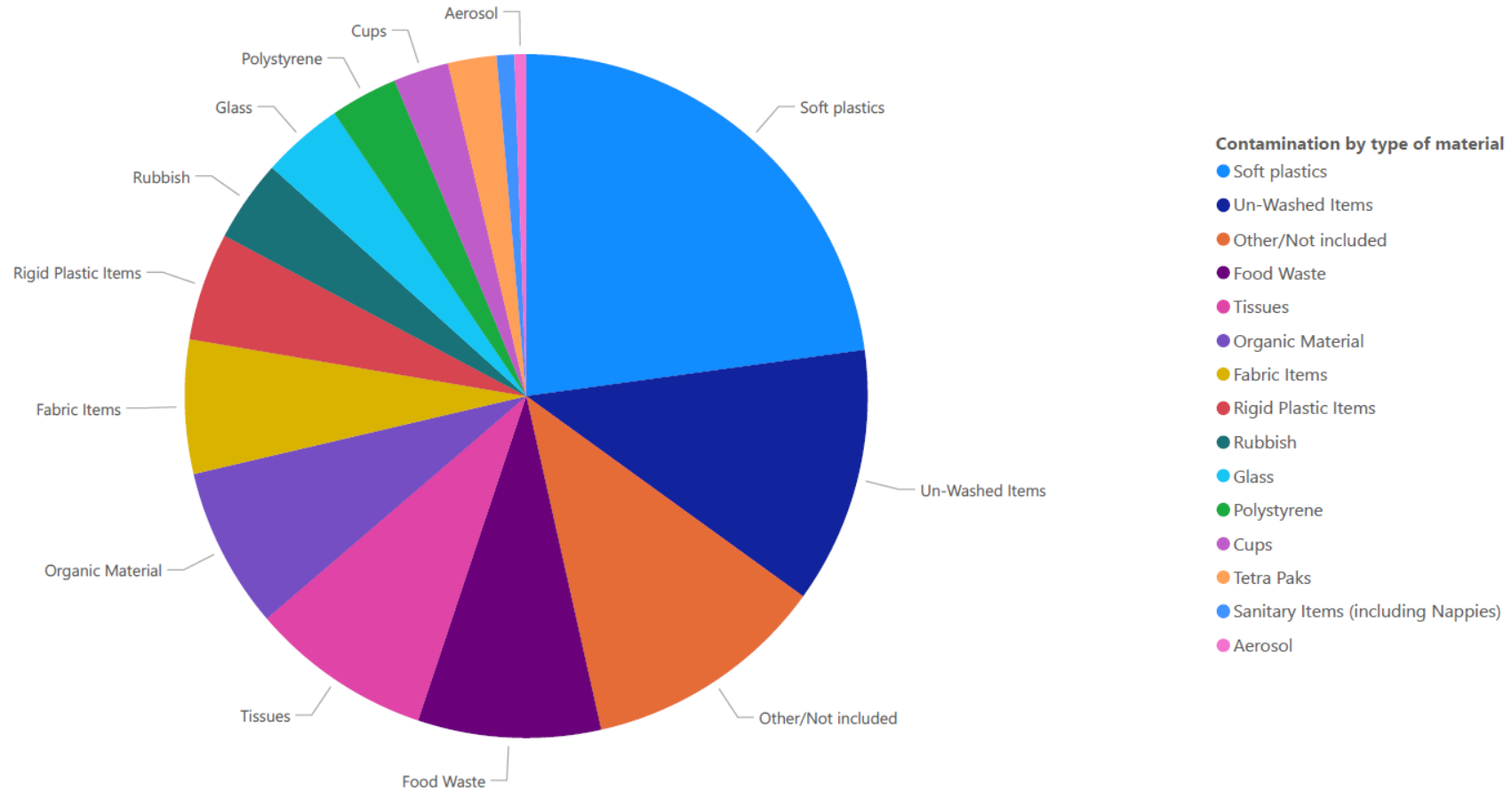
Council incurs a penalty rate on contamination above 10% at the processing plant. This penalty ranges from approximately \$13,500 to \$30,000 per month depending on the level of contamination



Good recycling behaviour across the city can help to divert more resources from landfill, keeping materials in circulation for longer

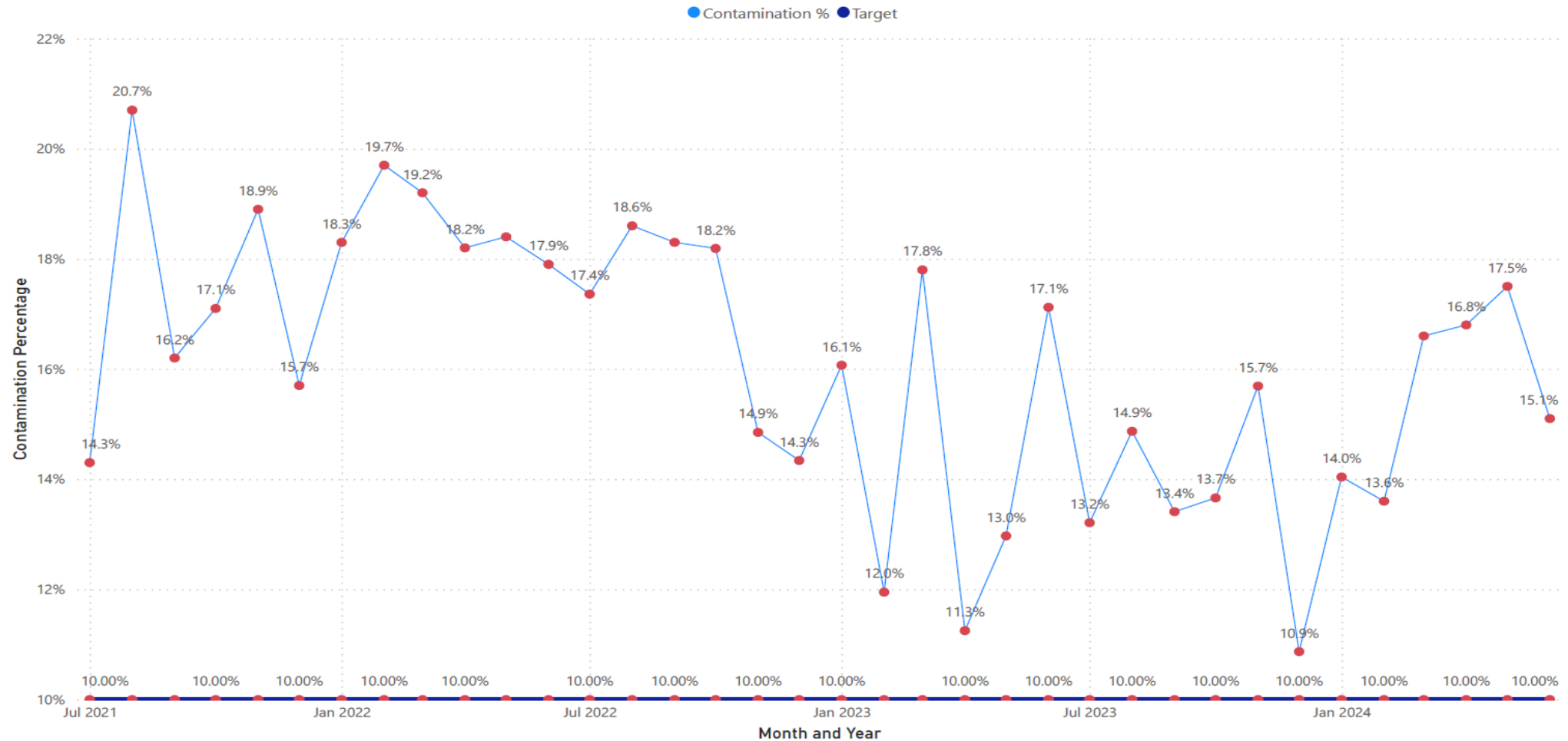
# Common contaminants

Most common contamination by type



# City wide contamination levels

Scoop Test City-Wide Contamination Percentages (As provided by OJI) for July 2021 - June 2024



# Contamination rates in other cities

- Kerbside service and testing methodologies vary significantly
- It is very difficult to objectively compare contamination levels
- Typical range suggested in previous scans is 10-25%

Council	Year	Contamination rate	Methodology
Western Bay of Plenty District Council	FY23/24	19.7%	Scoop testing method
Rotorua Lakes Council	FY23/24	23%	Mass balance assessment
Auckland	FY23/24	25%	Mass balance assessment
Christchurch City Council	FY23/24	9.9%	Scoop testing method
Selwyn District council	FY23/24	3%	Scoop testing method
Porirua City Council	FY23/24	21%	Scoop testing method

# Measures implemented to date

## Measures to date

1. Behaviour change campaign and communications
2. Recycling ambassadors and sticker system
3. Bin removal scheme
4. Targeted communication in contamination “hotspots”
5. Targeted engagement with MUDs
6. Review of contamination testing methodology at processing plant





# Behaviour change campaign

- Implemented from service commencement
- Used wide range of media and channels, based on research to understand barriers and opportunities for residents
- The Council also developed:
  - a recycling booklet,
  - complementary tools, including a waste search tool,
  - information and a video on what happens to our recycling,
  - good practice guidance for waste storage areas in MUDs



# Examples of campaign assets 2022/23 push



Posters



Social media

Too Good to Waste website decals and information



# Examples of campaign assets 2023/24 push

## Video advertisements



## In-store decals



## Social media

## Bus sides

# Recycling ambassadors and bin stickers



Recycling or bin ambassadors have been employed as part of the kerbside collection contract since the service began



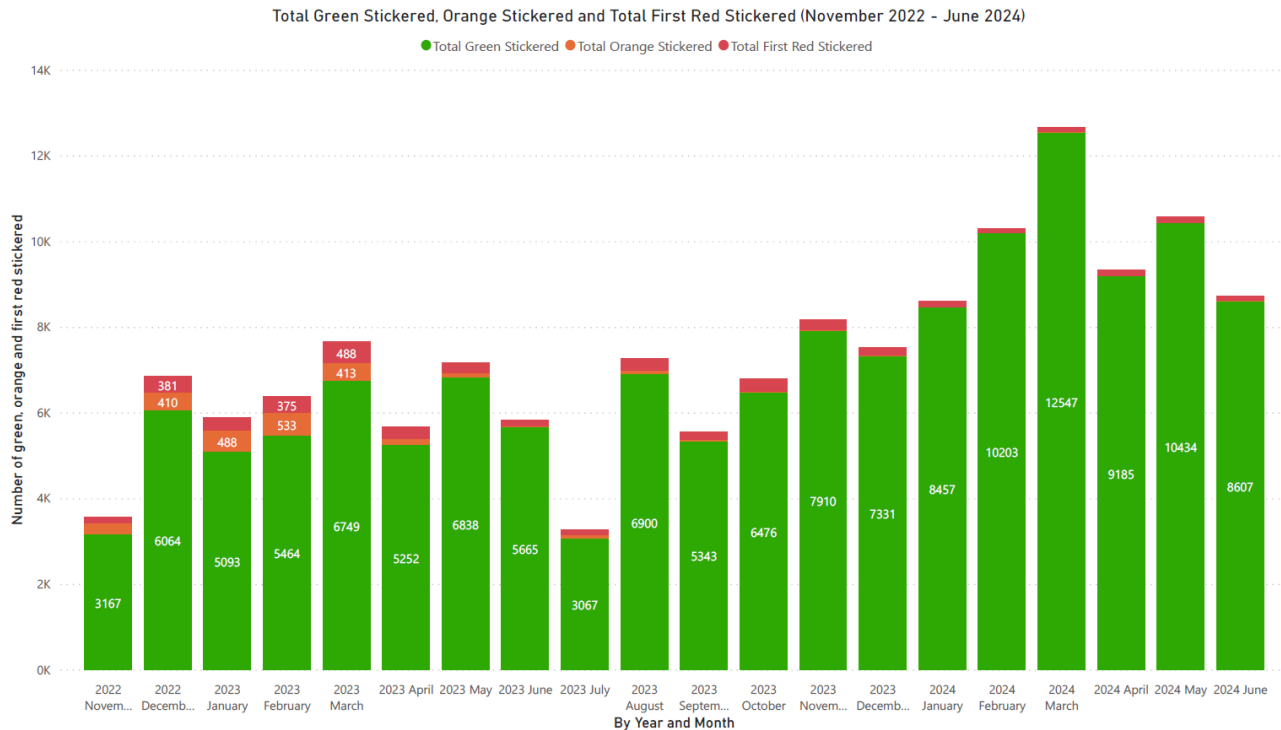
They inspect bins and provide feedback to households through a sticker system



The number of ambassadors has increased to four – reaching over 8,000 households per month



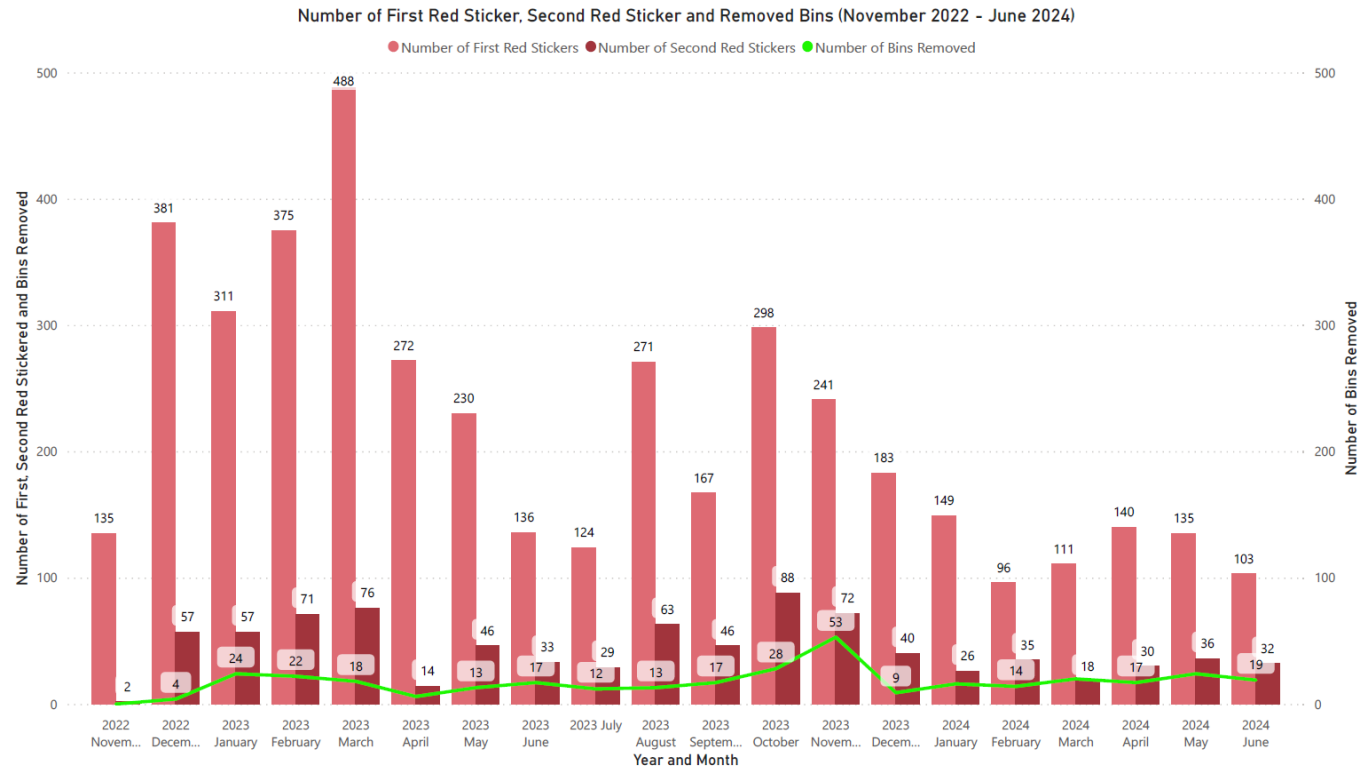
# Stickers issued by ambassadors



- Most households do a good job at recycling
- Most of the contamination appears to be due to a small number of households not getting it right

# Bin removal scheme

- Bin removal scheme began in late Nov 2022 (under Bylaw)
- Residents who repeatedly contaminate their bins have two chances to change their recycling behaviour
- If the bin is contaminated for a third time the bin is removed



# Targeted engagement and communication

- Officers have undertaken targeted pamphlet drops to “hotspot areas” of recycling contamination incidences
- Officers also engage directly with developers during the design of MUD waste storage areas (including Kāinga Ora MUDs)



# Contamination by suburb

Suburb	Residential Property Count (non-vacant)	Total sticker count (to check share of properties stickered)	Uncontaminated (Green) Count	Orange	Red	Contamination vs total stickered
Alicetown	781	68%	474	10	48	10.9%
Avalon	1,926	43%	696	10	129	16.6%
Belmont	964	57%	507	12	29	7.5%
Boulcott	1,149	38%	361	5	72	17.6%
Days Bay	248	18%	43	1	1	4.4%
Eastbourne	1,074	51%	491	16	36	9.6%
Epuni	1,046	44%	400	10	52	13.4%
Fairfield	942	50%	389	10	75	17.9%
Harbour View	264	46%	117	1	3	3.3%
Haywards	37	49%	16	1	1	11.1%
Hutt Central	1,501	46%	578	10	102	16.2%
Kelson	1,040	47%	433	6	45	10.5%
Korokoro	536	25%	124		12	8.8%
Lowry Bay	235	54%	118	2	6	6.3%
Māhina Bay (and Sunshine Bay)	64	28%	15		3	16.7%
Manor Park	126	63%	51	2	26	35.4%
Maungaraki	1,322	48%	579	10	45	8.7%
Melling	122	9%	4		7	63.6%
Moera (including Seaview)	614	56%	246	20	70	26.6%
Naenae	3,090	54%	1,381	30	264	17.6%
Normandale	632	43%	250	5	19	8.8%
Petone	2,809	33%	804	27	98	13.5%
Point Howard	143	40%	55	1	1	3.5%
Sorrento Bay	15	53%	7		1	12.5%
Stokes Valley	3,539	42%	1,189	36	275	20.7%
Taita	2,114	50%	770	29	261	27.4%
Tirohanga	367	51%	178	3	7	5.3%
Wainuiomata	6,596	49%	2,688	73	447	16.2%
Waiwhetu	1,593	45%	603	2	116	16.4%
Waterloo	1,833	55%	892	14	94	10.8%
Woburn	1,293	63%	743	19	56	9.2%
York Bay	126	33%	34	2	6	19.0%
<b>Grand Count</b>	<b>38,140</b>	<b>47%</b>	<b>15,236</b>	<b>367</b>	<b>2,407</b>	<b>15.4%</b>





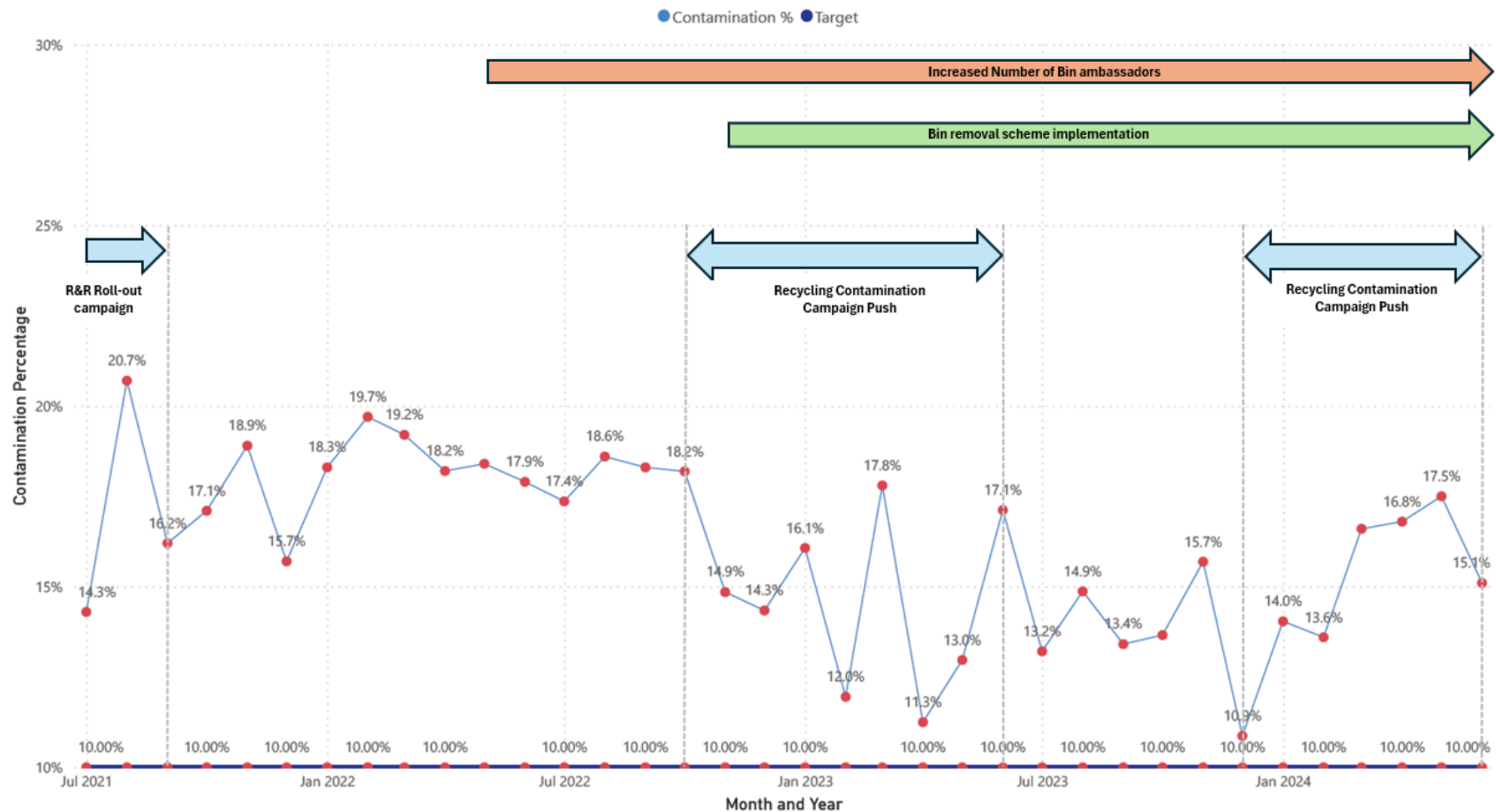
# Contamination testing methodology review

- Lower Hutt, Porirua and Wellington City Councils commissioned a review in 2023 of the processing plant's contamination methodology
- The scoop testing methodology was found to be a suitable methodology for estimating city-wide contamination.



# Impact on contamination

Scoop Test City-Wide Contamination Percentages (As provided by OJI) for July 2021 - June 2024



# Estimated spend to date

Cost type	2021/22	2022/23	2023/24
<i>Contamination penalties</i>	N/A	\$348,772	\$276,067
<i>Bin ambassadors</i>	\$96,784	\$304,534	\$335,960
<i>Behaviour change campaign and other mitigation measures (including printing costs)</i>	\$23,858	\$541,602	\$439,377
<b>Total</b>	<b>\$120,642</b>	<b>\$1,194,909</b>	<b>\$1,051,404</b>

# Opportunities to reduce contamination further



# Opportunities

- Officers have reviewed various information sources, and consulted with several other territorial authorities (including in Australia) to identify opportunities for further reduction
- A total of ten options have been identified and fall under three general themes:
  - 1. Targeted behaviour change**
  - 2. Household waste systems**
  - 3. Enhanced bin removal process**



# Initial comparison criteria

Option	Benefits	Costs	Resourcing	Operational risk	Implementation timeframe	Social impact	Effectiveness	Overall opportunity
<b>Theme: Targeted behaviour change</b>								
<b>A - Street competition</b>	<b>Medium</b> use of positive reinforcement, rewards the right behaviour  could increase engagement through existing local relationships (eg neighbours)	<b>Low</b> cost of incentives such as funding for a street BBQ not likely to be significant, albeit partially dependent on the number of households within the selected street	<b>High</b> requires staff resources to promote the competition and communicate the process/framework of how to win, and staff time to facilitate the organization of the reward (eg street BBQ).  possibly less effort required if reward does not involve organising an event, such as providing gift cards to households within the selected street.	<b>Medium</b> A focus on the “most improved” street may be received by some residents as rewarding contamination behaviour if contamination rates for the street remain higher than elsewhere. In addition, on an individual household level, this approach could also reward households that routinely contaminate.  depending on prize choice and design, could be viewed as wasteful or unnecessary spend	<b>Medium term</b> lead-in time likely between 3-6 months  could be trialled as a one-off and reviewed based on measurable change or could be set up to be a periodic action (especially if momentum of change slows or contamination rates increase after the competition ends)	<b>Medium</b> encourages collective action and could support community wellbeing and social norms	<b>Medium</b> Uncertain whether this would create enduring change; doubtful whether it would generate change as households that do this well generally will do so for reasons other than reward.  effectiveness may depend on how effectively the competition can be communicated with residents, and the attractiveness of prizes	<b>Low</b>

Example of analysis in **Appendix 4** of full paper



# Targeted behaviour change

## *A – Street competition (description)*

- Use contamination rates for each street and aim to incentivise collective action using social norms
- Could reward best recycling street but also the most improved street
- Requires effective communication and prizes – possibly street BBQ or vouchers

## *A – Street competition (analysis)*

- Costs are likely to be relatively low (depending on prize and street size)
- Significant staff resources required to promote and facilitate prize delivery
- May be viewed as wasteful depending on design of rewards etc

**Overall opportunity rating = LOW**

# Targeted behaviour change

## *B – Spot prizes for green stickered bin households (description)*

- Households with green sticker would go into a randomised prize draw
- Intended to incentivise others who do not yet recycle well to do better
- Could potentially use gift cards or pool vouchers as rewards

## *B – Spot prizes for green stickered bin households (analysis)*

- Costs are likely to be relatively low
- Timeframe would be likely less than three months to implement
- Likely to reward households that are already engaged more than incentivise behaviour change in others

**Overall opportunity rating = MEDIUM**

# Targeted behaviour change

## *C – Underlid stickers (description)*

- Stickers on underside of the bin lid that are visible when lid opens (there are already embossed symbols on top of the lids)
- Prompts people as they put items in the bin

## *C – Underlid stickers (description)*

- Some duplication with existing bin symbols and reminders
- Minor cost and short implementation timeframe
- Could increase information accessibility
- Stickers may deteriorate over time

**Overall opportunity rating = MEDIUM**



# Targeted behaviour change

## *D – AI and real time tracking (description)*

- AI technology could potentially link into existing RFID tags, readers and truck cameras
- Analyse bin loads for contamination in real time and generate feedback to households via letters

## *D – AI and real time tracking (analysis)*

- Once up and running could increase efficiency and frequency of reminders
- Costs could be very high (especially if HCC is first moving Council)
- Resourcing demand and operational risks are high
  - No existing off the shelf system, likely to require a trial phase, need clarity on privacy and data storage, likely teething issues to resolve when integrating into kerbside system, will still require staff follow up
- More of a long-term option

**Overall opportunity rating = HIGH**

# Household waste systems

## *E – Increased direct engagement with residents (description)*

- Door to door visits and household waste assessments, drop-in clinics and workshops to provide education and problem identification
- Would need to be designed to consider property owner decision-making where tenants are renting

## *E – Increased direct engagement with residents (analysis)*

- Likely to be an opportunity to help address some barriers identified through behaviour change research
- High cost and resourcing implications with additional staff required
- More face-to-face engagement can also have safety impacts for staff
- Likely to have long lead time where recruitment is needed

**Overall opportunity rating = MEDIUM**

# Household waste systems

## *G – Household waste assessment and advice prior to removal (description)*

- Household waste assessments (i.e. checking bin capacity relative to waste and how waste is being sorted) and direct face-to-face engagement could be added as an additional step in the bin removals process before bins are removed
- Step could also be added as a prerequisite to getting bin returned

## *G – Household waste assessment and advice prior to removal (analysis)*

- Unlikely to reduce contamination substantially but could avoid bin removals
- Resource intensive and potential risks to staff where household may be disengaged or relationship with the Council may have deteriorated

**Overall opportunity rating = LOW**

# Household waste systems

## *H – Mandatory bin size increase (description)*

- If a household repeatedly contaminates recycling and/or their general waste bin is overfull, Council could require that the general waste bin is upsized
- This could include a service fee waiver but would incur higher targeted rates for households and needs to be assessed in detail against policies

## *H – Mandatory bin size increase (analysis)*

- Takes preventative action against a potential contamination driver
- Increases household costs (impact on lower income households, renters)
- Would need to be designed to account for different tenancy types and decision-making responsibilities

**Overall opportunity rating = HIGH**

# Enhanced bin removal process

## *1 – Earlier removals (description)*

- The current scheme is based on a three-strikes process but this could be potentially reduced to two
- This option would need to be assessed in detail against existing policy and bylaw settings

## *1 – Earlier removals (analysis)*

- Could enable savings if it brings penalty rates down
- Increases resourcing demand on staff
- Likely to be perceived as unreasonable by residents to a publicly provided service
- Not likely to create sustainable long-term change

**Overall opportunity rating = LOW**



# Enhanced bin removal process

## *J – Suspension of service via RFID (description)*

- Collection trucks can read RFID tags (equipped on bins)
- Contamination can be identified via cameras *after* it has been emptied into the hopper
- If a bin is flagged as problematic due to previous contamination issues or inspections RFID tag readers could mean the bin is not lifted until checked

## *J – Suspension of service via RFID (analysis)*

- Would avoid flagged bins entering truck hoppers (and therefore reaching processing plant and raising contamination rates)
- High cost (albeit most may to sit with WM New Zealand), will create additional demand on resourcing initially until up and running

**Overall opportunity rating = HIGH**

# Summary

- Downward rate in contamination – gradual and varied month to month
- Option remains to continue with existing approach
- Range of opportunities set out to be investigated in short, medium and long term
- Substantial work programme (with multiple options pursued) would likely impact on prioritisation of current work



# Questions