

BRIEFING

To: SLT

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From: Jörn Scherzer, Manager Sustainability and Resilience

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Summary: As a result of global market changes, demand has decreased or there is no longer any demand at all for a number of plastic types collected at the kerbside. Our contractor has approached us to advise that they propose to no longer accept certain plastics types. Officers have identified four options in order to respond to their request, and the preferred option is to remove various plastic types from the list of acceptable recyclables.

SUBJECT: PLASTICS RECYCLING

Purpose

To provide you with an update on the challenges in the plastics recycling market, changes requested by Waste Management NZ with regard to our kerbside recycling contract with them, and for SLT to consider recommendations to address these.

Background

Hutt City Council has a contract with Waste Management NZ (WMNZ) to provide kerbside collection services for recyclable products in the Lower Hutt area. Funding for this contract is tied to a targeted rate set at \$40 per residential rating unit, recovering approximately \$1.5 million for the 2017/18 financial year.

Products that are collected by Waste Management for recycling include glass bottles and jars, aluminium and steel cans, paper, cardboard and various food plastic bottles and containers. They are then transported to either of two sorting facilities (both located in Lower Hutt¹), for sorting into various clean material streams², and a residual waste stream³.

¹ One facility is operated by OJI, the other by Waste Management NZ. The latter is scheduled to close by 30 April 2019, with the result that all materials collected within the Wellington will be sorted at the OJI facility.

² For a useful overview of how the sorting-part of the recycling system works, please have a look at <https://vimeo.com/290801739> (the facility featured in the video is not in Wellington, but it is useful for illustration purposes).

³ This includes contaminated recyclables, and general waste such as nappies mixed with the recyclable products, all of which go to Silverstream landfill in Lower Hutt.

The sorted recyclable material streams are then sold into domestic or overseas markets, as many are traded internationally as a commodity.

For a variety of recyclable products, markets are in place and there is demand. For example, glass goes to Auckland for processing, and is used to create new glass bottles. Steel and aluminium cans are baled and sent to metal recyclers to be processed into new products.

The market for plastic is more diverse and complex. Certain plastic products continue to see good market demand. This includes clear PET (#1)⁴ plastic bottles, which are recycled by local company [Flight Plastics](#) in Lower Hutt and made into products such as PET kiwifruit containers. Another example is HDPE (#2) milk bottles, there is local market demand and the product is sent to Palmerston North where it is washed and turned in re-processed pallets. The raw material is then turned into items such as wheelie bins.

But for certain other plastic products, generally plastic types 3-7⁵, demand has decreased or there is no longer any demand *at all*.

Changes in the global waste market and effect on New Zealand

Over the last year the global recyclables market has been under-going significant changes. Historically China has been the largest buyer of the world's recyclables, but in 2017, China introduced new strict standards for various materials. This has led to a collapse in prices for certain materials such as mixed plastics (bales can include a range of plastic types⁶, particularly plastic types 3-7). We have been advised by WMNZ that various jurisdictions such as Malaysia and Indonesia (the markets used for certain recyclables from Lower Hutt) are also reviewing what recyclables they are willing to accept.

While we do not have information on market prices for materials from New Zealand, Figure 1 below provides an overview of the maximum prices for the UK for various plastic materials, as a potential indicator.

These market changes have affected, and continue to affect, territorial authorities and recycling collectors in New Zealand. In March 2018, a WasteMINZ survey found that 82% of the councils surveyed indicated that they have been affected by the Chinese restrictions and are selling 3-7 plastics at a lower price, stockpiling, or struggling to find new buyers.⁷

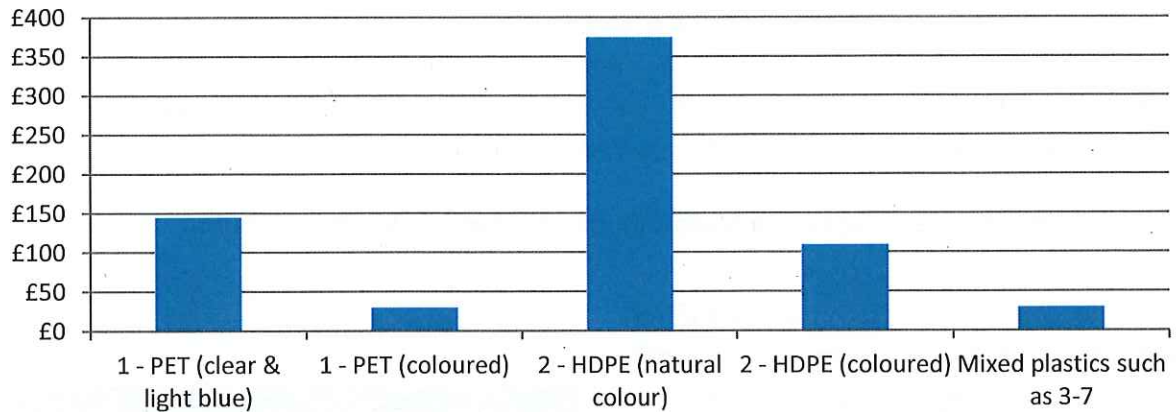
⁴ The type of material can normally be identified by a small number in a triangle, see also Appendix 1

⁵ For examples of various plastic types, please see Appendix 1

⁶ They may include a range of plastic types, including #1 and 2 (coloured PET bottles & mixed colour HDPE janitorial bottles, as well types 3-7.

⁷ In a number of cases, councils will only have contracts to collect recycling, whereas the contractors have to find markets for the collected recyclables.

Figure 1: Maximum price per tonne for different plastic materials, November 2018



Source: BBC (accessed 4 Jan 2019)⁸

Ultimately, if no buyer can be identified (or someone taking the material, potentially at a cost to the seller), the materials will need to go to a landfill. In response to these market challenges, plastic types 3-7 are no longer accepted in some areas in New Zealand. This includes South Waikato District Council, Taupo District Council and the Far North District Council.

At the national level, the Government has set up a taskforce to identify solutions where prices have reduced for the recyclable materials collected in New Zealand.

WMNZ seeks variation to recycling contract

Our contractor WMNZ has approached HCC to advise that they also propose to no longer accept certain plastics types.

WMNZ advises that due to the market changes they are now facing an additional cost of [redacted] per month to manage plastics 3-7 (this includes processing at the OJI sorting plant in Seaview, disposal and current market value of those materials). They are seeking a variation of their contract with us.

Such a variation is principally possible. While WMNZ have the responsibility to find markets for the collected recycling, they may seek a variation in respect of the collection, as long as HCC is satisfied that WMNZ has exhausted all possibilities of finding alternative markets.

HCC's original tender documentation stated that the chosen contractor would only need to collect plastics #1 and #2 (plus some additional items), WMNZ have generally accepted all plastics #1-7.

However, in practice certain materials such as plastic bags (#4) and polysterene containers (#6) were already excluded from the list of recyclable items that HCC provides to residents

with label under section 7(2)(g)(ii) of the Act

⁸ <https://www.bbc.com/news/science-environment-45496884>

(which is also consistent with the approach by Wellington City Council and Porirua City Council).

In a meeting with OJI and WMNZ on 20 February, it was confirmed that there are currently markets for plastic types #1, #2 (with some variation depending on whether plastics are clear or coloured) and to a lesser extent #5. Squeezable #4 plastics bottles also still have some value. For all other plastic products coded #3, #4⁹, #6 and #7, there is no longer any market, and they are effectively sorted out during processing and go to landfill.

Sorting technologies affect what materials can be recovered in our region

For some plastic products, such as PET #1 meat and fruit trays, there is technically demand, but they cannot currently be separated into a clean material stream. These products are currently diverted to the landfill.

The situation arises because of a lack of an optical sorting facility at the OJI sorting plant in Lower Hutt. Instead, the operator relies on mechanical and hand sorting.

Unfortunately, while products are usually labelled with the relevant numbers, hand sorters cannot see the difference between different types of plastics on conveyor belts running at speed and so, for now, have been instructed not to include *any* plastic food trays¹⁰ (see example in Figure 2). However, optical sorting technology can be employed to resolve this issue, as is done in locations such as Auckland. OJI has advised that they have been investigating optical sorting equipment but the capital investment required, so far, has exceeded their business constraints.¹¹

Together with other territorial authorities in the Wellington region, HCC has initiated a discussion with OJI to explore what could be done to have such technology installed in Lower Hutt. This could include supporting an OJI bid to the Ministry for the Environment's Waste Minimisation Fund, which is available to support such projects.

Figure 2: PVC (#3) and PET (#1) food tray



⁹ There is a separate collection process for soft #4 plastics at supermarkets. The scheme is currently on hold until April. Recycling is possible (eg to make into park benches, bollards, etc) but the scheme was temporarily put on hold as too much material was being collected, and too little end-products were being purchased.

¹⁰ Flight Plastics in Lower Hutt receives clean PET (#1) bales from OJI for re-making into new PET products. If PVC (#3) ends up in a PET bale, then this adversely affects their production line as it is a contaminant, and hence, to minimise risk, all food trays are currently excluded.

¹¹ OJI is currently trialling the sorting of PET (#1) trays based on unique product patterns, but in light of an increasing range of PET products, this may only be a temporary solution, even if successful.

Unclear chain of custody

In addition to the changes in demand for various recyclables, there is a continuing lack of certainty and lack of visibility regarding the end use of those materials, ie the pathways various recyclables take once shipped overseas.

We are aware that some of the materials collected in the Lower Hutt area, such as plastics #5 and coloured HDPE (#2), are exported to South East Asian countries, including Malaysia. While we have been assured that they are going to receiving facilities that do indeed recycle and/or manage the materials appropriately, we currently have no absolute certainty over what happens, especially once materials leave those overseas facilities.

Options

We have identified four options in order to respond to WMNZ's request to no longer accept certain plastics products, particularly plastics #3-7, and to address the unclear chain of custody.

1. Status quo – no change

In this option, Council would not make any immediate changes to what products are acceptable for recycling at the kerbside.

WMNZ advises that there remains a possibility of local market demand for mixed plastics #3-7 developing in the future (as opposed to continuing to rely on international demand), potentially as a result of the NZ Government's current taskforce investigation into the matter. However, they regard this as being several years away, and likely to have a regional impact rather than full national impact.

While Option 1 would not require any immediate actions from Council, there is also increasing concern about what happens to collected materials, and HCC has received a number of public enquiries about this. Therefore, given the lack of clarity on what happens with certain plastics, Council could not say with confidence that those products are indeed recycled, and this could lead to reputational risks.

2. Retain only #1 and #2 on the list of accepted recyclables

In this option, all plastic types #3-7¹² would be removed from the list of acceptable plastics products for recycling collection at the kerbside.

In principle, Option 2 may be relatively straight forward to communicate to householders, in that eligible plastic products can be identified based on the number printed on each product (a triangle with the number, usually at the base of food plastic products).

¹² To be clear, the soft plastics collection scheme currently on hold until April may restart, to collect soft #4 plastics to be made into products such as park benches. This scheme is much more targeted and separate from our kerbside collection system.

This option would be consistent with the actions taken by some other councils on this matter already and be in line with various media coverage residents may have come across recently. While this option would miss some recyclable items that have retained some value, such as #5 and squeezable #4 bottles, this option maximises simplicity to avoid confusing consumers.

In order to give effect to this option, Hutt City Council would need to re-educate residents, via an education campaign, with regard to the acceptable types of plastics at the kerbside (*and recycling stations, if plastic bins continue to be deployed, please refer to the accompanying SLT memo on recycling stations*).

Costs for such an educational campaign are estimated at \$40,000 per annum, for at least two years and approximately half that amount thereafter for continued maintenance of messaging. It would require a lead-in time of two to three months, in order to prepare relevant campaign messaging and material.

While the campaign's focus would be on "re-education", it could achieve complimentary objectives. For example, the make-up of Lower Hutt's community continually changes and continues to grow (eg requiring some on-going education of people moving into Lower Hutt), and there continue to be on-going contamination issues at recycling stations (*see complimentary briefing on illegal dumping and contamination at recycling stations*).

This cost would be additional to the estimated \$1.5 million per annum recovered from residential ratepayers to pay for the recycling collection contract. Note that there is currently no funding allowance for an annual education campaign tied to the recycling collection at the kerbside, to ensure residents and households can contribute to an efficient and effective recycling system (eg to be fully informed about what is and is not recyclable and to minimise contamination of recyclables with waste). But ideally, costs for such education should be recovered via the targeted rate for kerbside recycling, as ultimately HCC's costs of its kerbside recycling contract are linked to how effective residents are sorting their recycling.

With regard to the chain of custody, as there are local markets for most plastics #1 and #2, this option would help address the increasing concerns about what happens to collected materials, ie we have good information about what happens to collected materials if they are largely recycled within New Zealand. This would mitigate reputational risks to Council.

While some products such as PET (#1) meat trays would continue to be collected at the kerbside, and then would need to be separated out (and landfilled) until optical sorting technology is in place, this limitation could be temporary (potentially one to two years).

With regard to financial impacts, not being able to put plastics #3-7 into their kerbside recycling may increase waste disposal costs for residents, albeit WasteMINZ notes that plastics #3-7 usually make up only about 4% of the weight of a household's recycling. Overall, impacts may differ depending on whether residents have wheelie bins from private collectors, or whether they purchase Council rubbish bags based on the amount or volume of rubbish they produce, but – at least at the margin – waste disposal costs for residents could increase.

Nevertheless, in the medium term, potential cost impacts may balance out, because it can be expected that the cost of the next recycling collection contract (coming up for re-tender

during 2019/20), will be expected to account for the change in value of collected products, or whether or not they are still included in the list of acceptable materials.

3. Retain only #1, #2 and #5 on the list of accepted recyclables

This option is a variation of Option 2, in that the list of acceptable plastics products for recycling collection at the kerbside would also include #5. As an optional add-on, it could also include squeezable #4 bottles. This is to account for the advice HCC has received by OJL and WMNZ that plastics #5 (and squeezable #4 bottles) have retained some market value.

The cost for implementing this option (marketing campaign) is broadly the same as Option 2, albeit it would likely be more difficult to communicate to householders. This is because including #5 could create confusion for residents in relation to the actions taken by some other councils (and associated media coverage).

If some #4 items were to be included, it would further increase confusion, and it may also be viewed at odds with the separate actions by the Packaging Forum to put on hold their soft (#4) plastics recycling collection system in supermarkets, at least until April this year.

With regard to financial impacts, the potential additional costs on residents (by increasing waste disposal costs) may be slightly lower than Option 2.

4. Retain only a subset of plastics #1 and #2 on the list of accepted recyclables

This option is a variation of Option 2, in that some additional products would also no longer be acceptable. This would include PET (#1) food trays, and some other plastic products, such as coloured PET (#1) bottles and mixed-colour HDPE (#2) janitorial bottles.

Compared to Option 2, this option would be significantly more difficult to communicate to householders, as acceptance would not only depend on the numbering of the product, but also rule out specifically shaped or coloured products for plastics #1 and #2 that would otherwise be acceptable. It is likely that this option will cause significant confusion among the community – on top of existing confusion about what is recyclable.

With regard to financial impacts, the potential additional costs on residents (by increasing waste disposal costs) may be slightly higher than Option 2, albeit these additional plastic products make up only a small share of the recycling.

In addition, should the OJL sorting plant end up with investing in optical sorting technology in the future, it would then require re-educating the community that it would now be ok to put particular products into their recycling at the kerbside.

Discussion

Considering the four options above, officers consider that Option 2 would be the easiest to communicate and in line with actions taken by other councils, while Option 3 would more closely align the materials collected to the existence of relevant markets (at the present time), and maximise the rate of recycling.

Neither of these two options would create barriers to a potential increase in the rate of recycling once optical sorting technology is in place (potentially partially offsetting the reduction) and avoiding potential re-education of the public in the future.

With regard to the lack of a clear chain of custody for recyclables, both options 2 and 3 would - in the short-term – link more closely the types of plastics collected to known markets for those. However, officers also consider that for the next tender for the kerbside recycling contract, the contractor could be required to formally report periodically and provide evidence on the end-use of collected recyclables, in order to provide assurance to Council.¹³

Where recyclables are shipped overseas, the contractor could also be required to provide evidence that recyclables are only shipped to companies for processing that can show evidence of their chain of custody. This could mean that they may have to show that they have a relevant audited Environmental Management System in place, including relevant environmental objectives as to the end-destination of their products or material streams.¹⁴

Risks

In relation to the unclear chain of custody, ie the lack of certainty and lack of visibility regarding the end use of collected recyclables, there is a reputational risk to Council. Options 2, 3 and 4 provide means to mitigate this reputational risk, by being more upfront about what is recyclable (as opposed to perpetuating the myth that something is recycled just because it is collected at the kerbside). Notably, such a change could also send a signal to consumer brands and producers of plastic materials that they should change their packaging to higher quality materials such as #1 that have viable and valuable end-markets.

While the implementation of HCC's recycling collection contract is an operational matter, the issue of whether or not to accept certain plastics types could be viewed by the wider community and councillors as of particular interest to them. Without at least consulting councillors, there could be a risk of a backlash, if options 2, 3 or 4 are chosen. Officers request guidance by SLT on how councillors should be informed or involved in relevant decisions.

¹³ Some of this information may be commercially sensitive, but it may be possible to rely on audited information from an independent third party.

¹⁴ *ibid*, see footnote 13

Recommendations

It is recommended that you:

1. **Agree** that

 EITHER plastics #3-#7 be removed from the list of accepted recyclables at the kerbside (Option 2), as soon as possible Yes/No

 OR plastics #3, #4, #6 and #7 be removed from the list of accepted recyclables at the kerbside (Option 3), as soon as possible Yes/No
2. **Note** that the implementation of either of these two options requires an estimated lead-in time of 2-3 months, in order to design and implement an education campaign to give effect to it
3. **Note** that the costs for an education campaign are estimated at \$40,000 per annum, for two years, and approximately half that amount thereafter for continued maintenance of messaging. (*This is also referenced in the SLT briefing on contamination and illegal dumping at recycling stations.*)
4. **Agree** that – in principle - educational activities in relation to the kerbside recycling contract should be funded from the targeted rate on recycling in the future, with the key aim to minimise contamination and to ensure residents divert the correct products Yes/No
5. **Agree** that until a cost allowance for educational activities has been approved for the residential targeted rate on recycling, the short-term costs for developing and implementing a marketing campaign could be covered from cost centre 7322 and/or the Waste Minimisation Reserve (in case of a shortfall) Yes/No
6. **Note** that officers are requesting guidance from SLT on how to involve or inform councillors on the implementation of the preferred option

Jörn Scherzer

Manager Sustainability and Resilience

Appendix 1 – Examples of different plastic types¹⁵

Symbol	Polymer Name	Product Examples
 PETE	Polyethylene Terephthalate (PETE or PET)	<ul style="list-style-type: none"> • Soft drink bottles • Water bottles • Sports drink bottles • Salad dressing bottles • Vegetable oil bottles • Peanut butter jars • Pickle jars • Jelly jars • Prepared food trays • Mouthwash bottles 
 HDPE	High-density Polyethylene (HDPE)	<ul style="list-style-type: none"> • Milk jugs • Juice bottles • Yogurt tubs • Butter tubs • Cereal box liners • Shampoo bottles • Motor oil bottles • Bleach/detergent bottles • Household cleaner bottles • Grocery bags 
 V	Polyvinyl Chloride (PVC or V)	<ul style="list-style-type: none"> • Clear food packaging • Wire/cable insulation • Pipes/fittings • Siding • Flooring • Fencing • Window frames • Shower curtains • Lawn chairs • Children's toys 
 LDPE	Low-density Polyethylene (LDPE)	<ul style="list-style-type: none"> • Dry cleaning bags • Bread bags • Frozen food bags • Squeezable bottles • Wash bottles • Dispensing bottles • 6 pack rings • Various molded laboratory equipment 
 PP	Polypropylene (PP)	<ul style="list-style-type: none"> • Ketchup bottles • Most yogurt tubs • Syrup bottles • Bottle caps • Straws • Dishware • Medicine bottles • Some auto parts • Pails • Packing tape 
 PS	Polystyrene (PS)	<ul style="list-style-type: none"> • Disposable plates • Disposable cutlery • Cafeteria trays • Meat trays • Egg cartons • Carry out containers • Aspirin bottles • CD/video cases • Packaging peanuts • Other Styrofoam products 
 OTHER	Other Plastics (OTHER or O)	<ul style="list-style-type: none"> • 3/5 gallon water jugs • Citrus juice bottles • Plastic lumber • Headlight lenses • Safety glasses • Gas containers • Bullet proof materials • Acrylic, nylon, polycarbonate • Polylactic acid (a bioplastic) • Combinations of different plastics 

¹⁵ <https://www.elyrecyclingblog.com/recycled-material/plastics-recycling-its-all-in-the-numbers/>