Looking at Options for the Resources & Waste Strategy for Nottingham

[a non-technical summary]

As part of the process for developing a new strategy for managing the waste and recycling collected from homes and businesses in the City, Nottingham City Council engaged some specialists to consider how these services are delivered elsewhere and to look at how these alternative options could be employed here.

The result is an Options Appraisal report which is available at XXXX. The report focusses on different recycling and waste collection methods to seek to improve the amount of recycling and reduce the impact of waste management within the city on the climate (carbon dioxide emissions) - all in the context of managing the costs and providing good quality services in Nottingham.

Nottingham is already a national leader in adoption of electric refuse collection vehicles ('bin lorries') and in capturing the energy generated from the waste not recycled, through the electricity generation and district heating scheme running on the energy recovered from the Eastcroft Incinerator. Where we are not performing as strongly is in the separation of materials for recycling.

The Government has set a national strategy[1] to improve recycling rates and the quality of the materials collected across England, and so we looked at the preferred national approach in terms of how we could collect more materials from you at the kerbside for recycling.

For Nottingham, this means implementing food waste collections and adding plastic film and cartons to the recycling collection system as a minimum, but also targeting waste materials we already collect from you for specific separate collections. These systems are shown to deliver better recycling performance than mixing all recyclables into one bin.

In simple terms our Options Appraisal focussed on two alternative collection and recycling systems, and compared performance against the current service:

- **Twin-stream collection** – Retaining the current fortnightly recycling collections but collect paper and card separately (in a reusable bag) from the remaining materials (plastic, cans, glass and cartons). This would improve the quality and most likely, quantity of the paper and card we collect. We modelled weekly food waste collections in combination with:
    - collecting paper and card fortnightly (option 1)
    - collecting paper and card fortnightly, but with a smaller general waste bin (option 2)
    - collecting paper and card weekly but on the same vehicle as food waste and also with a smaller general waste bin (option 5).
- **Multi-stream** – We would collect all recyclables, including food waste on a weekly basis in boxes and bags (rather than the current wheeled bin). This 'multi-stream' collection means that the collection crew can sort the individual materials into different compartments on a specialised vehicle improving the quality of the collected materials to be taken for recycling. We modelled:
    - Multi Stream collections with the same size general waste bin (option 3).
    - Multi Stream collections with a smaller general waste bin (option 4)

[1] Resources and waste strategy for England - GOV.UK (www.gov.uk)

In all collection options, plastic film and cartons are added to the recycling collection and all options introduce a weekly food waste collection.

The performance of the two standard alternative collection options are highlighted below. Option 1 is the standard Twin-stream fortnightly collection, whilst Option 3 is the standard Multi-stream weekly collection option.

Category	Baseline	Option 1 – Twin Stream, fortnightly	Option 3 – Multi Stream, weekly
Total cost (Collection, Treatment & Disposal)	£13.4m	£14.5m	£13.6m
Kerbside Recycling Rate (%)	22.57%	29.14%	28.50%
Total Indicative City Recycling Rate (%)	23.90%	30.48%	29.83%
Total Environmental Benefit (carbon, $kgCO_2$-eq)	642,300	-13,700	-31,400
Cost of Change (initial Capex)	N/A	£6m	£3.2m

Whilst both options perform better than the current service, the Twin-Stream option delivers higher recycling performance but lower carbon benefit by comparison to the Multi Stream option. The Multi Stream option is more cost-effective to implement and to operate than the Twin Stream option, but both options are more expensive to implement and operate than the current service.

Bin Size

We then modelled variations of these two options but replaced the general waste bin with a smaller one. Where food and more recycling is collected separately, there is less demand on the space in your green wheeled bin, meaning that potentially a smaller bin is needed by households. Smaller bins for general waste have been shown to help drive up recycling. These variations are follows:

- Option 2 – The same as option 1 (Twin Stream), but with a smaller bin for residual general waste (non-recycling, currently collected in a green wheeled bin).
- Option 4 - The same as option 3 (Multi Stream), but with a smaller bin for residual general waste.

The modelling results are as follows show that by reducing bin size, both options deliver significantly improved recycling and carbon performance, by comparison to retaining the larger general waste bin, but whereas Twin Stream is more cost effective to operate, Multi Stream is less cost effective to operate.

Category	Baseline	Option 1	Option 2	Option 3	Option 4
Total cost (Collection, Treatment & Disposal)	£13.4m	£14.5m	£14.4m	£13.6m	£13.7m
Kerbside Recycling Rate (%)	22.57%	29.14%	37.12%	28.50%	34.64%
Total Indicative City Recycling Rate (%)	23.90%	30.48%	38.46%	29.83%	35.97%
Total Environmental Benefit (carbon, $kgCO_2$-eq)	642,300	-13,700	-2,834,260	-31,400	-2,156,579
Cost of Change (initial Capex)	N/A	£6m	£6.4-8.7m	£3.2m	£5.9m

Finally, we also modelled a variant of Option 2 – enhancing performance still further by increasing the frequency of paper and card collection to weekly, enabling collections to be combined with weekly food waste collections utilising a single vehicle (option 5). As the table shows, by comparison with the other Twin Stream collection options, despite being slightly more expensive to operate, this option did not deliver a higher recycling performance despite improving the frequency of paper and card collection:

Category	Baseline	Option 1	Option 2	Option 5
Total cost (Collection, Treatment & Disposal)	£13.4m	£14.5m	£14.4m	£14.6m
Kerbside Recycling Rate (%)	22.57%	29.14%	37.12%	29.67%
Total Indicative City Recycling Rate (%)	23.90%	30.48%	38.46%	31.01%
Total Environmental Benefit (carbon, $kgCO_2$-eq)	642,300	-13,700	-2,834,260	-287,600
Cost of Change (initial Capex)	N/A	£6m	£6.4-8.7m	£4.5m

Our Option Appraisal found that all alternative collection systems improve recycling rates for the City from the current ~23% (of waste being recycled into new products, material or compost), to levels ranging from ~30% up to 42%. The higher performing options are numbers 2 and 4, which have a smaller residual general waste (green) bin.

Our modelling also looked at 'optimising' the highest performing options through investing more to inform, educate and support citizens We believe that when further national measures are introduced making materials easier to recycle – then recycling rates of more than 50% could be achieved in the medium term, more than doubling current performance.

How we manage waste has a bearing on the City's carbon emissions which contribute to climate change. In general, the more we recycle, the more it reduces these emissions and again, options 2 and 4 perform the best here, with option two the best, saving around 3,500 tonnes of carbon dioxide per year compared to the current service. This is equivalent to taking over 1,200 cars[2] off the road in emission terms.

The costs of all the alternative collection systems are more than the current service. However, to reach higher recycling levels and improve carbon emissions the Government requires additional services to be added and will compensate Councils for these new costs. The modelling shows costs may increase by between +1.5% and +9%. However, these increases will be offset to a degree by central Government and packaging producers contributing to the Council's collection, recycling and disposal costs. The lowest cost options are options 3 and 4, where recycling is collected on a weekly basis along with the food waste and sorted onto the vehicle. This approach means higher prices can be generally achieved for the recycling materials collected helping to balance the higher collection costs but that citizens will have to do more to separate their waste.

Not all issues can be considered in terms of numbers.. Other issues such as the demand of the services on residents and businesses (public acceptability) and the flexibility of the service have also been assessed using 'traffic lights' in the summary table below. The scores we have attributed are subjective and we welcome your views.

Category	Baseline	Opt 1	Opt 2	Opt 2a (optimised)	Opt 3	Opt 4	Opt 4a (optimised)	Opt 5
Total cost (Collection, Treatment & Disposal)	£13.4m	£14.5m	£14.4m	£13.9m	£13.6m	£13.7m	£13.6m	£14.6m
Kerbside Recycling (%)	22.57%	29.14%	37.12%	40.64%	28.50%	34.64%	38.07%	29.67%
Total City Recycling (%)	23.90%	30.48%	38.46%	41.97%	29.83%	35.97%	39.4%	31.01%
Environmental Benefit (carbon, kgCO_2-eq)	642,300	-13,700	-2,834,260	-3,488,800	-31,400	-2,156,579	-2,931,250	-287,600
Cost of Change (Capex)	N/A	£6m	£6.4-8.7m	£6.4-8.7m	£3.2m	£5.9m	£5.9m	£4.5m
Alignment to Policy								
Public acceptability								
Operational flexibility								
Social Value								
Health and Safety								

Legend

Worst — Best

[2] Source: https://www.carbonfootprint.com/calculator.aspx