

KERBSIDE RECYCLING SERVICE OPTIONS APPRAISAL

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1.0 Background

It was agreed at the Communities meeting on 16 August 2022 (Report 189/22) to review our Kerbside Recycling Service (KRS) to deliver financial savings and improve recycling performance, taking into consideration the Deposit Return Scheme (DRS), Extended Producer Responsibility (EPR) and the Scottish Government’s Charter for Household Recycling. An engagement exercise was undertaken in November 2022 by way of the Kerbside Recycling Service Survey which sought to gather the views of Angus residents in relation to potential changes to household waste collections.

This options appraisal considers the aforementioned factors to make recommendations for a revised KRS.

2.0 Reason for the Review ('case for change')

A review of the KRS has been undertaken for the following reasons.

- The council’s Finance and Change Plan 2023 to 2026 identifies £400,000 in savings associated with reviewing the KRS (£300k in 2024/25 and £100k in 2025/26).
- The Transition to Net Zero Action Plan identifies mitigating the impact of climate change as a priority for Angus Council and that we will continue to encourage people to recycle more, align our services with the DRS and deliver savings.
- In 2017 the Communities Committee (Report 27/17) agreed that the council would sign up to the Scottish Government’s Charter for Household Recycling and the associated Code of Practice (CoP), which seeks to maximise the quality of recycling and a consistent approach to collections across Scotland.
- Collecting fibre materials (paper and cardboard) or glass mixed with other recyclables is not Charter compliant and the council will be unable to access the Scottish Government’s Recycling Improvement Fund (RIF) (and most likely future funding allocations) unless a Charter compliant system is proposed.
- Scotland’s Deposit Return Scheme is expected to be introduced October 2025 (at the earliest) and will reduce the quantity of kerbside collected recyclables, and the efficiency of our current KRS.
- The Extended Producer Responsibility Regulations are expected to result in payment to authorities dealing with packaging waste from October 2025; authorities will however have to demonstrate cost-efficiency of their collection systems and there will be a focus on the quality of material collected for recycling.
- There are limited supplier outlets for the fully comingled mix of materials collected in Angus’s grey recycling bin and the current KRS therefore carries risk of limited supplier availability, elevated costs, and lack of contingency.

- Collecting recyclable materials in one bin incurs additional costs as materials have to be separated at a sorting plant to allow them to be recycled. Collecting materials separately can allow income to be achieved and this is particularly relevant with paper and card or 'fibre' materials.

More detailed information on the case for change is provided as follows.

Charter for Household Recycling

The CoP requires paper and card to be collected separately from metals, plastics and cartons, and glass to be collected separately from all other materials, either at the kerbside or at recycling points. The Circular Economy Bill, published earlier this year, introduces the requirement for the Charter to be reviewed in 2023 and become compulsory at a later date – the reviewed Charter is expected to look similar to the existing Charter.

Scotland's Deposit Return Scheme

Scotland's DRS has been delayed to align with aspects of DRS schemes across the UK and will be implemented October 2025 at the earliest and will no longer include glass. The DRS is expected to place a 20p deposit on drinks containers including plastic bottles (except milk) and cans, leading to a significant decrease in these materials in kerbside bins. This will change the composition of the materials collected and significantly reduce the overall value of the collected materials.

Extended Producer Responsibility

The Extended Producer Responsibility (EPR) Regulations will shift the cost of collecting household packaging waste from local authorities to producers and should result in payments to Angus Council from 2025; payments will be dependent on materials being collected and disposed of in a cost-efficient manner. The test for efficiency is not yet known but communications to date indicate there will be a focus on material quality. There will also be a requirement to collect flexible plastics (films) by March 2027.

Effect of non-Charter compliance on funding opportunities

The Scottish Government's Recycling Improvement Fund was launched in 2021 providing £70 million over five years for capital funding grants to improve recycling infrastructure and services across Scotland. To date, £52.6m has been awarded to 17 authorities. The RIF fund's scoring matrix deems kerbside collection redesign projects that are not aligned with the Charter as 'Not acceptable' and in such a case funding could not be awarded. This experience has been mirrored with previous funds for which Angus was ineligible.

Limited supplier interest in fully comingled materials

Angus and just two other Scottish authorities collect glass along with plastics, cans, cardboard and paper in one bin. Over the last few years tendering exercises for this mixed material have seen bids from only the same two suppliers, which is in contrast to earlier tenders which received multiple bids. This lack of supplier interest exposes the council to higher risk of significant price increase and lack of contingency in the event a change of supplier was required.

3.0 Scope of the Review

Considered by the review

This review will consider the range of kerbside waste and recycling services provided to households and businesses in Angus. Neighbourhood recycling points are also within scope but not Recycling Centres.

Only kerbside collection schemes that comply with the Charter and Code of Practice for Household Recycling in Scotland will be considered. This is so the council can access RIF funding and align our services with other councils thereby providing greater opportunities for future collaborative working.

Not considered by the review

The kerbside garden waste service is out of scope as it already maximises income i.e., is a chargeable service with material processing undertaken at the council's composting facility at Restenneth Recycling Park.

It is proposed to extend the food waste collection service to additional households (on linking roads between towns and villages), and this could apply equally to each option considered, thus does not form part of the review (the increase to the overall household waste recycling rate is estimated to be 1.2%).

The potential to introduce kerbside collection of batteries is being investigated. In addition, a new policy could be introduced that would treat recyclable items in the non-recyclable waste bin as contamination. While neither change forms part of the review, the optimum implementation period would be during service redesign.

4.0 Defining the Objectives

The appraisal will assess each of the options against the following objectives:

1. To meet or exceed the savings identified in the Finance and Change Plan.
2. To maximise the amount of waste collected for recycling.
3. To align our kerbside recycling services with the DRS and EPR.
4. To take cognisance of the results of the kerbside recycling service residents' survey that was carried out November to December 2022.

Each objective will be scored between -3 (significantly negative impact); 0 (neutral impact); +3 (significantly positive impact). For the objectives which are qualitative the scoring is compared across the options and graded according to the scale of the impact. For the quantitative data the impacts are graded by the scale of the revenue and capital impacts.

Significant negative impact	Moderate negative impact	Low negative impact	Neutral impact	Low positive impact	Moderate positive impact	Significant positive impact
-3	-2	-1	0	+1	+2	+3

The scores against the objectives are weighted on the following basis. The higher weight for objective 1 reflects the urgent requirement to deliver financial savings.

Objective 1 – financial savings = 4 (40%)

Objective 2 – maximise recycling = 2 (20%)

Objective 3 – alignment with DRS = 2 (20%)

Objective 4 – cognisance of residents' survey = 2 (20%)

5.0 The options

A long list of potential options for redesigned kerbside collections is presented in Table 1, identifying how materials are collected in each option, and whether the option is Charter compliant or not.

Collection systems have been discounted from inclusion in this options appraisal where:

1. They are not Charter compliant and therefore would not allow funding to be accessed from the RIF.
2. Recycling capacity would be reduced – this will not be possible prior to implementation of the DRS and could restrict future opportunities to extend the range of materials we collect for recycling.
3. Excessive costs would be introduced or only marginal savings made – this would not allow the savings identified in the council's Finance and Change Plan to be achieved.

More detailed explanations of why systems have been excluded are provided in Tables 1 and 2 in the additional information section appended to the appraisal.

The two collection systems short listed and being considered in this appraisal are tabled overleaf.

Option	Blue 240 litre bin	Grey 240 litre bin	Glass	Food
1	Paper and card – collected monthly	Cans and plastics – collected monthly	Collected at an extended network of recycling points	Extended to all areas except the glens – collected weekly
2	Paper and card – collected monthly	Cans and plastics including flexible plastics (films) – collected monthly		

6.0 Information Gathering

A collections modelling report was undertaken by Eunomia Research & Consulting Research & Consulting in October 2020 to explore service redesign post-DRS. Though service redesign is proposed to take place prior to the implementation of the DRS, much of the modelling and research is still valid. Market engagement was carried out with suppliers who provide recycling collection, processing, and disposal services, and information was sought from other local authorities about their collection systems and disposal arrangements.

6.1 Market engagement and financial implications

Market engagement was carried out with those suppliers listed as service providers on Scotland Excel's Framework for Recyclable and Residual Waste. This confirmed that income is available for separately collected paper and card, glass, and potentially also from a containers mix, though at the very least it is expected this should achieve a no-cost disposal route which will save approximately £50 per tonne compared to the current cost of processing mixed plastics and cans; including plastic films in the container mix is expected to cost in the region of £35 per tonne however would divert films from the purple bin and reduce non-recyclable waste disposal costs, thus the effect of the additional cost would be mitigated in part.

Supplier engagement with paper/ card and glass re-processors has confirmed that materials collected separately are much more attractive to them and are thus more likely to have surety of a disposal route and also achieve the best possible disposal price.

There is currently only one supplier in Scotland who can recycle film (accepted with containers) though it is known that a further supplier is preparing to build a Materials Recovery Facility which should be available to accept a similar film mix by some time in 2025. It is expected that further suppliers will accept film nearer to 2027 to meet the EPR requirement.

The financial implications for each option have been assessed using the market data obtained for each recyclable material stream.

6.2 Household waste collection systems across Scotland

The model of one bin for card and paper and another for containers is commonly called 'twin-stream' (TS). More than half of Scottish local authorities either operate twin-stream collections or are moving towards them; 16 authorities currently use the TS model and five plan to introduce the system over the course of 2023 and 2024. Two authorities collect recyclables in boxes and sort the items at the kerbside using specialist vehicles – these systems are Charter compliant. There are six authorities who collect paper, card, cans and plastics together in one bin and a further three (including Angus) who also include glass in this mix; none of these mixed collections are Charter compliant.

In terms of glass collections, nine authorities (including Angus) collect glass mixed with other materials in non-Charter compliant collections, 10 operate separate kerbside collections in bins or boxes, and 13 ask residents to bring glass to a recycling point.

6.3 Impact on recycling rate

Twin-stream system

Modelling by Eunomia Research & Consulting showed that changing the fully comingled bin to two bins i.e., a TS system, led to no change in the overall amount of material collected for recycling. Separate collections of paper and card do tend to have low contamination rates and it is possible we could see a slight reduction in contamination overall due to a TS system and thus a small increase in the materials recycled.

Glass

Introducing a requirement that residents should bring their glass to a bring site is likely to result in a small reduction in the amount of glass collected (glass has reduced in recent years due to lighter packaging). Based on the experience of Aberdeenshire Council we estimate a 4% reduction, which would equate to a reduction of 0.16% in our recycling rate. An extensive network of recycling points would be introduced to maximise recycling opportunities for residents.

Film

Films are currently difficult to recycle due to the many different plastic polymers used to make them; to enable recycling, films must be collected separately from paper and glass. It is estimated that including film as a material to be recycled in the containers bin would increase the household recycling rate by 0.5%

Effect of communications/ new policy

Service redesign presents the opportunity for a major recycling campaign that could increase the household recycling rate by up to 0.2%. Of even greater effect could be a new policy to treat recyclables/ food waste in the non-recyclable (general) waste bin as contamination; this is estimated to equate to an increase of around 1.8% on the total household recycling rate (modelling undertaken by Eunomia Research & Consulting estimated that applying this rationale to food waste could improve kerbside recycling by 3% - this method has been extrapolated to encompass all kerbside collected recyclables).

6.4 Alignment to DRS and EPR

DRS

The introduction of twin stream bins allows maximum benefit to be conferred when DRS is implemented. Current comingled bin costs are based on the cost of sorting the materials being offset against any income the sorted materials generate. Post DRS, comingled bin sorting costs will remain high however the income generated will markedly reduce due to the removal of valuable materials such as aluminium cans, thus disposal costs are expected to significantly increase. The separation of paper and card into a fibre bin will allow this fraction to generate income on an ongoing basis and reduce the impact of any potential decrease in income associated with the containers bin post-DRS.

EPR

Ensuring that we collect our recyclables in a way that maximises quality and efficiency (including the cost of our collections) will be essential to optimise EPR payments. Collecting TS optimises quality and cost for Angus Council and allows space in the containers bin post-DRS for the flexible plastic films that we are required to collect from 2027.

6.5 Alignment to survey results

The kerbside recycling service survey was open from 14 November – 11 December 2022 and received 2464 responses. The survey asked residents questions about their preferences for potential changes to the kerbside recycling service in the context of the forthcoming DRS and the current financial crisis. The results are summarised as below and overleaf.

- Half of respondents disagreed with bringing their glass to a recycling point and half either agreed or neither agreed nor disagreed.
- Most respondents agreed with having two recycling bins where glass continued to be collected at the kerbside.
- Forty three percent agreed with having two recycling bins and bringing their glass to a recycling point.

- Almost two thirds of respondents always or regularly use their food waste caddy.
- Almost half of respondents were not willing to have their non-recyclable waste bin emptied every three weeks and just over half were either willing or neither agreed nor disagreed.
- Just over half of respondents agreed that non-recyclable waste bins containing too many recyclable items should be tagged and left uncollected.

7.0 Options Appraisal

Option 1 – Twin stream bins with glass collected at recycling points

Objective	Weighting (A)	Score (B)	Weighted score (A x B)
1. Financial savings	4	+3	12
2. Maximise recycling	2	+1	2
3. Alignment with DRS/EPR	2	+3	6
4. Cognisance of residents' survey	2	-1	-2
Total			18

- Estimated saving = £486,438
- Savings would be generated by decreased disposal costs and income generation from separately collected materials.
- There are a variety of suppliers available on Scotland Excel Framework who might tender for either the fibre or container material streams.
- The household waste recycling rate is estimated to increase by 3% due to the extension of the food waste service (1.2%), and the communications campaign (0.2%) and new policy where recyclables should not go in the purple bin (1.8%) (0.16% reduction due to slightly less glass recycled).
- System aligns entirely with the expected requirements of DRS and EPR in terms of quality, efficiency, and scope to include films in the containers bin by 2027.
- 43% of survey respondents agreed to make use of two recycling bins and bring their glass to a recycling point if this saved a significant amount of money.
- 82% of respondents agreed to make use of two recycling bins where glass was included in the container mix, showing that respondents were not opposed to the principle of a second bin.
- Half of respondents did not want to take their glass to recycling points, 43% agreed on the basis of a wide network of points being established, and 7% neither agreed nor disagreed.

Option 2 - Twin stream bins including films; glass collected at recycling points

Objective	Weighting	Score	Weighted score
1. Financial savings	4	+2	8
2. Maximise recycling	2	+2	4
3. Alignment with DRS/EPR	2	+3	6
4. Cognisance of residents' survey	2	-1	-2
Total			16

- Estimated saving = £355,423
- Savings would be generated by decreased disposal costs from fibre and glass however the effect of including film in the containers bin is expected to result in an additional cost of £131,015 over and above the expected cost of processing plastics and cans only.
- There are a variety of suppliers who might bid for the fibre stream however there is currently only one Scottish processor identified who can accept and recycle film.
- The household waste recycling rate is estimated to increase by 3.5% due to the extension of the food waste service (1.2%), the inclusion of film in the containers bin (0.5%), and the communications campaign (0.2%) and new policy where recyclables should not go in the purple bin (1.8%) (0.16% reduction due to slightly less glass recycled).
- System aligns entirely with the expected requirements of DRS and EPR in terms of quality, efficiency, and ensuring that films are captured in the containers bin by 2027.

- 43% of survey respondents agreed to make use of two recycling bins and bring their glass to a recycling point if this saved a significant amount of money.
- 82% of respondents agreed to make use of two recycling bins where glass was included in the container mix, showing that respondents were not opposed to the principle of a second bin.
- Half of respondents did not want to take their glass to recycling points, 43% agreed on the basis of a wide network of points being established, and 7% neither agreed nor disagreed.

8.0 Summary and preferred options

Option	Weighted score	Estimated Saving
1. Twin stream bins with glass collected at recycling points	18	£486,438
2. Twin stream bins including films; glass collected at recycling points	16	£355,423

Option 1 is considered the preferred option for the following key reasons:

- It provides a revised collection service that meets the requirements of the Charter and realises the greatest opportunity for savings compared to our current collection system.
- While the ability to accept films would increase recycling by approximately 0.5%, there being only one reprocess or who can accept this mix introduces an unacceptable level of risk.
- While a very small proportion of glass may be lost by the introduction of a requirement to bring glass to a recycling point, the extension of the food waste service combined with the campaign to promote recycling and the potential new policy whereby recyclables in purple bins will be treated as contamination, will significantly increase the capture of recyclables overall.
- The system fully meets the requirements of the forthcoming DRS and EPR.
- There is no significant difference between the options in terms of the expected acceptability to residents as in both cases glass will require to be brought to a recycling point.

Additional information

Table 1 Long List of Kerbside Recycling Service collection options considered

Long list of options for revised waste collection services													
Option	Non-recyclable (general) waste		Recycling bin 1			Recycling bin 2			Food coverage	Glass at bring sites/ kerbside	Total bin capacity (litres) over four weeks	Total bin capacity as %age of baseline	Charter compliant ?
	Frequency	Container	Materials	Frequency	Container	Materials	Frequency	Container	23L weekly				
Baseline - current system													
	Every 2 weeks	Purple 140L	Paper, card, cans, plastics & glass	Every 2 weeks	Grey 240L				Towns and villages only		852	100.00%	No
Mixed recycling bin collections													
1a	Every 2 weeks	Purple 140L	Paper, card, cans, plastics & glass	Every 3 weeks	Grey 240L				Extended to all areas except glens		692	81.22%	No
1b	Every 2 weeks	Purple 140L	Paper, card, cans & plastics	Every 3 weeks	Grey 240L				Extended to all areas except glens	Significantly increase no. of glass recycling points	692	81.22%	No
Twin-stream recycling bin systems - recycling bins collected alternate fortnights													
2a	Every 2 weeks	Purple 140L	Paper and card	Every 4 weeks	Grey 240L	Cans, plastics & glass	Every 4 weeks	Burgundy 180L NEW	Extended to all areas except glens		792	92.96%	No
2b	Every 2 weeks	Purple 140L	Paper and card	Every 4 weeks	Grey 240L	Cans & plastics	Every 4 weeks	Burgundy 180L NEW	Extended to all areas except glens	Significantly increase no. of glass recycling points	792	92.96%	Yes

Table continued overleaf.

Long list of options for revised waste collection services													
Option	Non-recyclable (general) waste		Recycling bin 1			Recycling bin 2			Food coverage	Glass at bring sites/ kerbside	Total bin capacity (litres) over four weeks	Total bin capacity as %age of baseline	Charter compliant ?
	Frequency	Container	Materials	Frequency	Container	Materials	Frequency	Container	23L weekly				
Twin-stream recycling bin systems - recycling bins collected alternate fortnights													
3a	Every 2 weeks	Purple 140L	Paper and card	Every 4 weeks	Blue 240L NEW	Cans, plastics & glass	Every 4 weeks	Grey 240L	Extended to all areas except glens		852	100.00%	No
3b	Every 2 weeks	Purple 140L	Paper and card	Every 4 weeks	Blue 240L NEW	Cans & plastics	Every 4 weeks	Grey 240L	Extended to all areas except glens	Significantly increase no. of glass recycling points	852	100.00%	Yes
3c	Every 2 weeks	Purple 140L	Paper and card	Every 4 weeks	Blue 240L NEW	Cans & plastics	Every 4 weeks	Grey 240L	Extended to all areas except glens	Introduce kerbside service – box /140L bin 4 weekly	992	116.43%	Yes
3d	Every 2 weeks	Purple 140L	Paper and card	Every 4 weeks	Blue 240L NEW	Cans & plastics, & plastic films	Every 4 weeks	Grey 240L	Extended to all areas except glens	Significantly increase no. of glass recycling points	852	100.00%	Yes
4a	Every 3 weeks	NEW 180L	Paper and card	Every 4 weeks	Grey 240L	Cans, plastics & glass	Every 4 weeks	Purple 140L	Extended to all areas except glens		712	83.57%	No
4b	Every 3 weeks	NEW 180L	Paper and card	Every 4 weeks	Grey 240L	Cans & plastics	Every 4 weeks	Purple 140L	Extended to all areas except glens	Significantly increase no. of glass recycling points	712	83.57%	Yes
Kerbside sort systems													
5a	Every 2 weeks	Purple 140L	Paper, card, cans, plastics & glass	Weekly	Separate boxes on a trolley				Extended to every household in Angus		852	100.00%	Yes
5b	Every 2 weeks	Purple 140L	Paper, card, cans, plastics & glass	Weekly	Boxes & bags (no trolley)				Extended to every household in Angus		852	100.00%	Yes

Table 2 Reasons for discounting options

Option	Reason for discounting
1a and 1b	Recycling capacity cannot be reduced prior to introduction of Deposit Return Scheme Scotland (DRS) reducing recycling capacity would limit opportunities to extend the range of materials we accept for recycling in the future. These options are also not Charter compliant.
2a and 2b	A 180L bin (burgundy to align with the colour of Dundee City Council’s container recycling bin) reduces recycling capacity which cannot be done prior to the introduction of the DRS and would limit opportunities to extend the range of materials we accept for recycling in the future. A 240L burgundy bin could be introduced to maintain the current level of capacity however it is more favourable to introduce a 240L blue bin (the grey 240L thus becomes the containers bin) as fibre suppliers advise fibre quality is superior when a new fibre bin is introduced rather than using the former comingle bin to accept fibre. Option 2a is not Charter Compliant.
3a	This option is not Charter compliant.
3c	Providing a separate kerbside glass collection along with twin stream recycling bins makes a saving of only -£79,305 and thus would not meet the savings target identified in the Finance and Change Plan. It would also mean an additional bin or box for households to store (bringing the total to six when include food and garden waste), which could raise strong objections.
4a	Three weekly non-recyclable waste collections would require a new 180L bin and the 140L purple bin would be used as a containers bin instead, however recycling capacity cannot be reduced prior to the introduction of DRS; this option is also not Charter compliant.
4b and 4b	Three weekly non-recyclable waste collections would require a new 180L bin and the 140L purple bin would be used as a containers bin instead, however recycling capacity cannot be reduced prior to the introduction of DRS and would limit opportunities to extend the range of material we accept for recycling in the future. Option 4b is not Charter compliant.
5a	This option requires the purchase of a fleet of special vehicles that would allow recyclables to be sorted at the kerbside and food waste to be collected at the same time. More vehicles (and thus also staff) are required than our current system because sorting through boxes and loading items to vehicles manually is slower than emptying bins. This system uses a trolley to hold a range of boxes containing different items. While good income can be achieved from separately collected recyclables, the trolley is very expensive and combined with vehicle/ staff costs introduces significant cost rather than the savings identified in the Finance and Change Plan. Modelling carried out by Eunomia Research & Consulting in 2020 found this option could cost the council £988,882 more than our current system.
5b	This option requires the purchase of a fleet of special vehicles that would allow recyclables to be sorted at the kerbside and food waste to be collected at the same time. More vehicles (and thus also staff) are required than our current system because sorting through boxes and loading items to vehicles manually is slower than emptying bins. Recyclables are contained in boxes or bags. Good income can be achieved from separately collected recyclables, however Modelling carried out by Eunomia Research & Consulting in 2020 found this option would provide savings only in the region of £108,823 and would thus not meet the financial savings target identified in the Finance and Change Plan. It would also require households to find space to store multiple boxes and bags at home and would significantly increase the manual handling carried out by our frontline waste operatives.