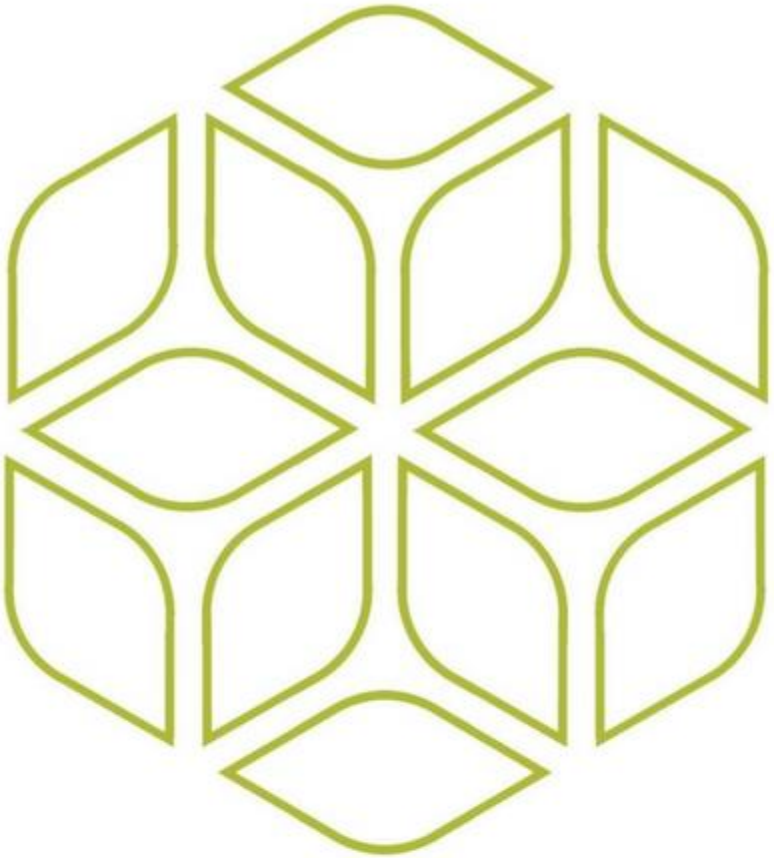

Options Appraisal Report:
Rutland County Council

Rutland County Council

October 2021

resourcefutures

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Version Control

File name	Rutland Options Appraisal Report
Version	Draft
Status	Confidential
Date	22 October 2021
RF contract no.	RF 5102

Background

Resource Futures has been commissioned to support Rutland County Council (RCC) through a collections options appraisal to inform the future development of the Council's household waste and recycling collection service. The purpose of this project is to review the comparative costs, anticipated performance and resource implications of a range of collection profiles to identify an optimal collection profile suitable for the Council to implement when services are reprocured in April 2024.

RCC provides an alternate weekly collection of residual waste and dry mixed recycling (DMR) for residents, via 240-litre black and grey bins. A minority of properties (approximately 130) have their recycling collected in blue sacks provided by the Council. A fortnightly chargeable subscription garden waste collection service is also offered to households throughout the year, using 240-litre bins.

Methodology and options modelled

Resource Futures completed a detailed data gathering exercise to replicate current operations and costs for the service (the 'Baseline' scenario). Tonnage data for 2019/20 provided the most up-to-date and representative information about Rutland's waste collection service prior to the implementation of Covid-19 restrictions. To bring the costs of this year in-line with realistic expectations of future service profiles, a Baseline PLUS was developed to represent the projected costs of the waste and recycling collection service in 2023/24, prior to the re-procurement of the Environmental Services contracts.

A number of alternative collection profile options were developed by Resource Futures and RCC and confirmed at the inception (options workshop) and interim meetings:

- **Option 1a:** residual, dry recycling and garden collection services remain as Baseline, with the introduction of a weekly separate food waste collection via a dedicated fleet of 7.5T RCVs.
- **Option 1b:** residual, dry recycling and garden collection service remain as Baseline, with the introduction of a weekly separate food waste co-collected with either residual waste or dry recycling (depending on which collection week it is) via 26T RCVs with a separate pod at the front for food waste.
- **Option 1c:** residual, food and garden collection services as per Option 1a. Dry recycling changes to a weekly collection.
- **Option 2a:** residual and garden services remain as Baseline. No weekly food waste kerbside collections. Dry recycling changes to a fortnightly twin-stream collection (with paper and card presented separately from plastic, glass and metal containers) via a split back 26T RCV.
- **Option 2b:** as per changes in Option 2a, but with the introduction of a weekly separate food waste collection via a dedicated fleet of 7.5T RCVs.
- **Option 2c:** as per changes in Option 2b, with dry recycling changing to a weekly collection.
- **Option 3a:** residual and garden services remain as Baseline, with dry recycling collections changing to a fortnightly multi-stream collection via Resource Recovery Vehicles (RRVs). No weekly food waste kerbside collections.
- **Option 3b:** as per changes in Option 3a, with the introduction of weekly separate food waste collections via a dedicated fleet of 7.5T RCVs.
- **Option 3c:** as per changes in Option 3b, with dry recycling collections changing to weekly collections and food waste being co-collected with dry recycling via RRVs.

All operational modelling was completed using WRAP's Kerbside Assessment Tool (KAT) which allows current collections to be modelled and potential kerbside collection profile options to be forecast and evaluated. Costs were calculated for each option by identifying the performance and resources necessary to deliver each of the modelled options. The financial assessment considered operational costs including staff costs, vehicle maintenance and fuel, and fees for treating, sorting and/or disposal of materials. Any income estimated from the sale of recyclable materials was included as part of the treatment and disposal costs. Capital costs were calculated to provide the initial investment required for each option for vehicles and containers. However, it is important to note that all option modelled costs (including the Baseline PLUS) do not consider what the tendered costs may be as a result of undertaking a re-procurement exercise for the new service.

Key results

The modelling outputs provide analysis on a number of factors including kerbside recycling performance, resource requirements, operational cost, capital cost and carbon performance, summarised as:

Recycling Performance:

- The Baseline and Baseline PLUS kerbside recycling rate is 50.0%.
- Introducing a weekly food waste collection (Options 1a,1b,2b,3b) increases the recycling rate by approximately 9.3%.
- Introducing a weekly DMR collection and weekly food waste collection (Option1c) increases the recycling rate to 59.6%, the highest of the group.
- Introducing a fortnightly twin-stream dry recycling service with paper and card collected separately, as in Option 2a, produces a recycling rate of 49.3%. This results from overall DMR tonnage for twin stream collections being lower than commingled, though rate of contamination also declines for these options. Increasing dry recycling collection frequency from fortnightly to weekly and introducing a separate weekly food waste collection, as in Option 2c, increases the recycling rate to 58.8%.
- Introducing a fortnightly multi-stream dry recycling collection, as in Option 3a, results in a recycling rate of 47.4%. There is a reduction in dry recycling tonnage compared to the Baseline PLUS, however there is a significant decrease in contamination for these options. Increasing dry recycling collection frequency from fortnightly to weekly and introducing a separate weekly food waste collection, as in Option 3c, increases the recycling rate to 59.4%.
- The recycling rate performance of each option is detailed in the table below:

Option	Recycling rate performance
Baseline PLUS	50%
1a	59.4%
1b	59.4%
1c	59.6%
2a	49.3%
2b	58.6%
2c	58.8%

3a	47.4%
3b	56.7%
3c	59.4%

Resource Requirements:

- The KAT modelling identifies the number of vehicles required across the options by each waste stream.
- Options with separate food waste collection (Options 1a, 1c, 2b, 2c, and 3b) requires 3.0 dedicated 7.5T RCVs with a driver plus one loader.
- Co-collection of food waste with either residual or DMR in an RCV with pod for food waste (Option 1b) requires 4.0 vehicles.
- Increasing the frequency of commingled dry recycling collections to weekly in Option 1c brings the number of RCVs required to collect residual waste and dry recycling to 3.7.
- Introducing a twin-stream recycling collection with paper and card collected separately (Option 2a and 2b) requires 1.9 split back RCVs. Where the frequency of dry recycling collection is increased to weekly, the number of vehicles required rises to 3.0.
- Introducing a fortnightly multi-stream collection, as per Options 3a and 3b, requires 2.7 RRVs. The weekly co-collection of multi-stream dry recycling with food waste in Option 3c requires 4.6 RRVs.

Operational Cost:

- The model calculated an operational cost for the current service per annum (Baseline).
- The projected operational cost for 2023/24, represented by Baseline PLUS, is a 24% increase per annum compared to Baseline.
- All options, except for Option 2a, realise an operational cost increase from Baseline PLUS, with Option 1c (weekly DMR with separate weekly food waste collection) providing the greatest cost increase at 29% per annum.
- Option 2a (fortnightly twin-stream) demonstrates the lowest operational cost (6% lower than Baseline PLUS) followed by Option 3a (fortnightly multi-stream) (4% increase compared to Baseline PLUS). Neither option includes the costs associated with collecting and treating food waste.
- Of the options providing a food waste collection service, Option 2b (fortnightly twin stream with weekly separate food waste) produces the lowest operational cost (11% increase compared to Baseline PLUS).

Capital Cost:

- All future options require a minimum communications cost of £1.50 per household.
- Option 1a presents the lowest capital cost, demonstrating the additional cost of adding a separate weekly food waste collection to the current service.
- Vehicle capital for Option 1b is the highest of all options. This option requires four RCV's with a pod to undertake the kerbside service. Three spare vehicles have been included within this option to account for any maintenance issues, of which these vehicles can pose a greater risk.

- Container costs are highest for Options 3b and 3c, which issue two 55-litre boxes and a reusable recycling sack for each household for the collection of multi-stream recycling, in addition to the provision of food waste bins and kitchen caddies.
- Option 3c demonstrates the greatest capital cost, largely attributed to the cost of purchasing RRVs (including spares).

Carbon performance:

- There is a net burden of 661 tonnes of CO_2e in the Baseline PLUS. The majority of emissions are attributed to the treatment of residual waste, while the reprocessing of recyclable materials provides a net benefit, helping to offset this emission.
- Options 1a, 1b and 1c (commingled dry recycling options) reduce the net burden by up to 77 tonnes of CO_2e as food waste is diverted from the residual waste stream.
- Option 3c (weekly multi-stream dry recycling with co-collected food) produces the greatest carbon saving compared to Baseline PLUS. This is owing to low contamination in this option, and the weekly collection of food waste and dry recycling, which means more material is diverted from the residual waste stream and sent for reprocessing or anaerobic digestion.
- All other options (Option 2a, 2b, 2c, 3a and 3b) demonstrate a slight increase in net carbon emissions. As the tonnes of dry recycling sent for reprocessing is lower for these options, the net benefit is reduced. Options 2a and 3a produce the greatest carbon burden as neither option includes a food waste service.

Options appraisal

To differentiate between the relative merits of the options, each was scored against a number of criteria as detailed in the methodology section of this report.

The following presents the results of the quantitative ranking and scoring process completed to appraise each of the options in terms of financial performance (annual operational cost), recycling performance, and carbon performance.

- Option 2a ranks the highest of all the future options. This is the only option to provide an operational cost saving when compared to the Baseline PLUS. However, this option scores the lowest for carbon performance and the second lowest for recycling performance, as it does not include a food waste collection service.
- Baseline PLUS ranks second, performing well for financial performance, as it does not bear the additional cost of food waste collection as do many of the other options. However, the lack of food waste collection results in poor recycling performance and low carbon performance.
- Options 1b and 2b rank third and fourth. Option 1b performs better on recycling performance and carbon assessment, while Option 2b scores higher on financial assessment.
- Option 2c ranks the lowest of all future options, primarily owing to its poor financial performance, which includes the additional resourcing required to collect twin-stream dry recycling and separate food waste on a weekly basis.

A qualitative assessment of the public acceptability of each option was also conducted based on an agreed set of criteria with RCC, including food waste collection, the number and type of containers provided to each household for dry recycling and the weekly equivalent capacity.

- Option 1c presents the highest public acceptability as it introduces a weekly food waste collection service which is seen as a positive by householders. The retention of the 240-litre wheeled bin ensures sufficient weekly dry recycling capacity, and also ensures high public acceptability of this option.
- Options 1a, 1b and 2c also receive considerable public acceptability by retaining the 240-litre wheeled bin for dry recycling and providing good weekly equivalent dry recycling capacity.
- Options 3a presents the least favourable option for public acceptability as it does not provide a food waste service and replaces the wheeled bin for with two 55-litre boxes and a 70-litre reusable sack. As collection is offered on a fortnightly bases, this option offers residents the lowest weekly dry recycling capacity.

A review of the options in relation to the proposals contained within the Resources and Waste Strategy (RWS) was also undertaken. The following assessment was made:

- All future options accommodate for the collection of core materials stipulated by the RWS. RCC currently provides collection of all materials, including plastic film.
- All options maintain a chargeable garden waste collection, meaning the proposal for free garden waste collections is not met, and would need to be explored in further detail once further information is released by the Government.
- Options 3b and 3c are assessed most favourably for their alignment with the RWS. Both options ensure material quality is achieved through a multi-stream dry recycling service, which segregates different material streams at the kerbside. Both options include the collection of food waste, while Option 3a does not.
- Options 2a, 2b and 2c introduce a twin-stream dry recycling collection, which provides some degree of material segregation by separating paper and card from plastics, metals and glass. Should the Government require full segregation of materials, this would need to be accounted for.
- Baseline PLUS, Options 1a, 1b and 1c are assessed as the least favourable options as they retain commingled collections of dry recycling. More considerable effort would be needed to modify these options should the Government require materials to be segregated on collection. The Baseline PLUS additionally lacks a separate food waste collection service, though this could be added to the service profile at an additional cost.

Stage Two Modelling

Following completion of the initial options evaluation, it was agreed with RCC that Options 2a and 2b would be taken forward for further modelling in Stage Two. This further stage of modelling was undertaken to determine how changes in key input variables affects the outputs.

Variant option modelling was undertaken to assess the impact of residual waste restriction, either through reducing the frequency of collection to three-weekly or by replacing the current 240-litre wheeled bin with a 140-litre wheeled bin. The findings were as follows:

- Option 2a.i (three-weekly residual collection) provides the lowest operational cost - a 10% saving per annum when compared to the Baseline PLUS. This option does not include a food waste collection service, and therefore does not bear the cost of resourcing this additional service. However, this means that the option does not benefit from food waste diversion.

- Option 2b.i (three-weekly residual collection) ranks first in terms of recycling performance, increasing the recycling rate from 50% in the Baseline PLUS to 61.5%. Option 2b.ii (fortnightly residual waste in a 140l bin) increases the recycling rate to 60.5%. Option 2a.i (three-weekly residual collection and no food waste collection) increases the recycling rate to 51.2% and Option 2aii. (fortnightly residual waste in a 140l bin and no food waste collection) increases it to 50.2%.
- The operational cost of Option 2b.i is a 3% increase compared to the Baseline PLUS, but a 7% saving compared to Option 2b.
- Collecting residual waste in 140-litre bins on a fortnightly basis reduces the cost of Option 2a and 2b, but not as much as reducing the service to three-weekly residual waste collections.
- Option 2b.i provides a cost increase of 15% when compared to Option 2a.i. This represents the cost difference of providing a food waste collection service.

The impact of an 'on-the-go' and 'all-in' Deposit Return Scheme (DRS) was modelled on Option 2a and 2b to understand how a DRS could affect Rutland's kerbside collections. In both scenarios, a reduction in dry recycling tonnage and residual tonnage was noted, as beverage containers are diverted to the scheme from the kerbside collection. The modelling shows no change to the number of residual waste vehicles required. However, for dry recycling, the modelling shows a slight reduction in vehicles required for both DRS scenarios. Therefore, the whole system costs show both DRS scenarios would result in less costs for Rutland in Options 2a and 2b when compared with a no-DRS scenario.

A sensitivity on MRF gate fees modelled on Option 2a found that under a higher estimated gate fee for the mixed plastics, metals and glass fraction of twin-stream dry recycling, Option 2a still provides a cost saving compared to Baseline PLUS (0.5% saving) and remains the least costly of the Stage One modelled options.

A sensitivity on the food waste yields found that Option 2b would cost an additional 1% with lower food waste yields when compared to the Stage One results. The cost difference is attributed to the higher disposal costs associated with an increased proportion of food waste presented in the residual waste bin. As a result of the reduced yield, the kerbside recycling rate would decrease from 58.6% to 57.4%. Meanwhile, with higher food waste yields, Option 2b would realise an additional saving of 2% per annum with a recycling rate increase to 62.1%.

Conclusions

Two of the three twin-stream recycling options (Options 2a and 2b) were considered the most optimal service profiles by RCC to be brought forward for further modelling. They ranked first (2a) and fourth (2b) among the nine options when considering financial, recycling and carbon performance. Both perform moderately for public acceptability in that the recycling bins are retained for the collection of plastics, metals and glass, with residents required to sort only paper and card separately from these materials for presentation in a reusable sack. As a twin-stream collection profile, they both provide an intermediate solution to the separation of materials, behind fully source-segregated multi-stream options, but ahead of the current commingled collection service.

Compared to Option 2a, the benefit of Option 2b is that it provides a separate weekly food waste collection service, which helps to boost the recycling rate and carbon performance of the option. This option achieves a higher public acceptability rating through provision of a food waste service as well as aligning with the requirements of the RWS. The disadvantage is that this option does not perform as well financially when

compared to Option 2a, largely due to the costs of operating food waste collection vehicles and the corresponding staffing implications of this additional collection service.

Option 2b costs 18% more per annum compared to Option 2a. While Option 2a is the only option to provide a cost saving compared to the Baseline PLUS, Option 2b demonstrates the lowest operational cost of all the options providing a weekly food waste collection service.

Further savings can be realised in both options through the implementation of residual waste restrictions. Both reducing the size of the wheeled bin for fortnightly residual collections from 240-litres to 140-litres, and by reducing fortnightly collections to three-weekly (retaining a 240-litre wheeled bin) results in a cost saving compared to the original 2a and 2b options. The higher diversion of food waste and reduced frequency of collection in the three-weekly variant results in a higher cost saving compared to the variant reducing bin size in both options. However, it should be noted that Government is considering a minimum service standard of alternate weekly collections of residual waste as part of the consultation on collections consistency, which may impact the viability of this option.

When also considering the variant modelling, Option 2a.i (twin stream recycling collections, three weekly residual waste and no weekly food waste collection service) was the overall option (within Option 2a and Option 2b) which presented the highest cost savings for the Council (a 10% saving per annum when compared to the Baseline PLUS).

Option 2b.i (twin stream recycling collections, three weekly residual waste and a weekly separate food waste collection service) was the most cost-efficient within Option 2b. However, this presented an additional expenditure of 3% per annum when compared to the Baseline PLUS.

It should also be noted that Defra have committed to funding the net additional cost to local authorities of the new statutory duties placed on them, of which food waste collections and potentially free garden waste collections have been noted in the latest consultation for consistency in collections. Funding for separate food waste collections has very recently been announced as part of the Government's Net Zero Strategy, although the funding is stipulated as being available from 2025, some two years after the RWS requirement for Councils to have implemented this service. Additionally, an extra source of funding may be provided through Extended Producer Responsibility (EPR), in which payments will be made to local authorities for the cost of managing packaging waste generated by households, either collected for recycling or disposed of in residual waste. However, the details of these funding sources have yet to be released.