



Films and Flexibles: Newcastle City Council and FlexCollect Trial, MRF Perspective

BY MARK PENNY

Commercial Manager

mark.penny@jbreycling.co.uk



Facility
of the
Year

WINNER

ABOUT J&B

- We operate from four sites in the North East. Our Main MRF (Windermere MRF) being in Hartlepool.
- Second site in Hartlepool with MRF capability (Baltic St).
- Kerbside inputs into Windermere for sorting averages 130,000 tonnes pa, from on average 11- 13 different LA sources in England and Scotland. Mostly from predominantly Urban LA's.
- Current inputs include: Fully Comingled; Comingled without Glass; Comingled without Paper; Comingled Plastic, Cans and Card.
- Range of contamination in comingled streams averages per source from 7% to 25%.
- None of above sources include films and flexibles as "target materials".

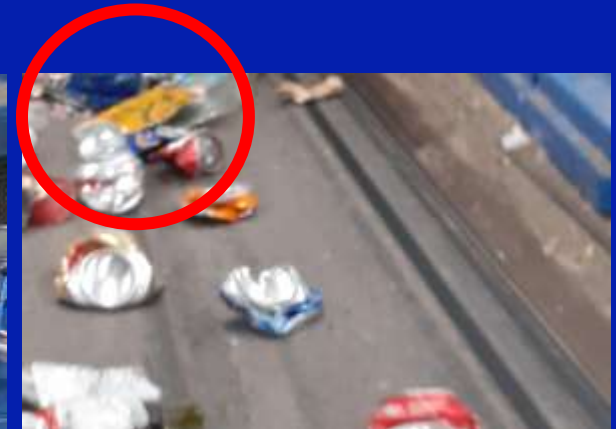


PRE-PROJECT RECOVERY OF FILM

Although film is “non target” in all our LA contract specs we do recover natural LDPE from the mixed (sampling average 0.25% of input).



CONSEQUENCES OF LOOSE F&F IN COMINGLED



WHY DIDN'T WE DO MORE

- 1 person or 1 robot could pick 0.03 tonnes per hour of film, tested in our MRF on current comingled
- Over 140 hour week this equates to 4.2 tonne per week
- The average "gate fee" for low grade or mixed films is a cost £35 per tonne plus transport, estimated total cost of £55 per tonne
- The average cost for disposal as residue as £125 per tonne

The MATHS don't stack up for 4.2 tonne (manual sorting)

- Labour cost for 140 man hours = £1,960 per week
- Saving between recycling of low grade film and disposal as SRF = -£294 per week

Net benefit to J&B = £1,666 per week additional cost

If we needed to recover 29.4 tonne per week (1.18% of input) then that's an extra cost of £11,662 per week (over £5.00 per tonne on existing gate fees).

If this was additional material not currently in the supply then the full cost to recover 29.4 tonnes would be £15,337 per week



ABOUT NEWCASTLE COUNCIL KERBSIDE

- Twin stream collection system using combination of: 240L bin with caddy. Glass goes in the caddy, everything else (comingled) goes in the main body of bin; plus 1100L bins for comingled and 240L or 1100L for glass only for shared bins (back alleys etc) or trade customers only.
- Target materials include paper; cardboard; cartons; plastic bottles, pots tubs and trays; metal cans and aerosols; glass bottles and jars.
- In 2022 a total of 19848 tonnes of kerbside recycling collected.
- Bin wagons deliver to two third party waste transfer stations at west and east sides of the city
- Glass bottles transferred direct to Reprocessor in bulk
- Comingled element transferred to J&B Windermere MRF in bulk
- Commenced trials as part of the FlexCollect project in June 2023
- Average collected per week for whole area (including trial) of 313.50 tonnes of comingled and 63.46 tonnes of glass in July 23.



TYPICAL NEWCASTLE COMPOSITION (NON TRIAL AREA)

2 streams glass only (caddy) and comingled (main body) in one bin

Average Composition (non trial area)	News & Pams	Cardboard	Mixed Papers	Beverage Cartons	Plastic Bottles & Tubs	Aluminium Cans	Steel Cans	Mixed Glass	Carrier Bags	Clear Polythene	Other Non Target	Waste
Comingled Element	20.52%	13.36%	13.32%	0.29%	12.55%	2.67%	2.77%	14.20%	0.50%	0.39%	1.69%	17.74%
Glass Element	NR	NR	NR	NR	NR	NR	NR	100%? Suspect 96%	NR	NR	NR	4%?
Total of Kerbside	17.08%	11.12%	11.09%	0.24%	10.45%	2.22%	2.31%	27.90%?	0.42%	0.32%	1.41%	15.44%?

% Film in comingled element in non trial area of 0.89%

% Film in total kerbside in non trial area of 0.74%

NEWCASTLE CITY COUNCIL TRIAL



Profile

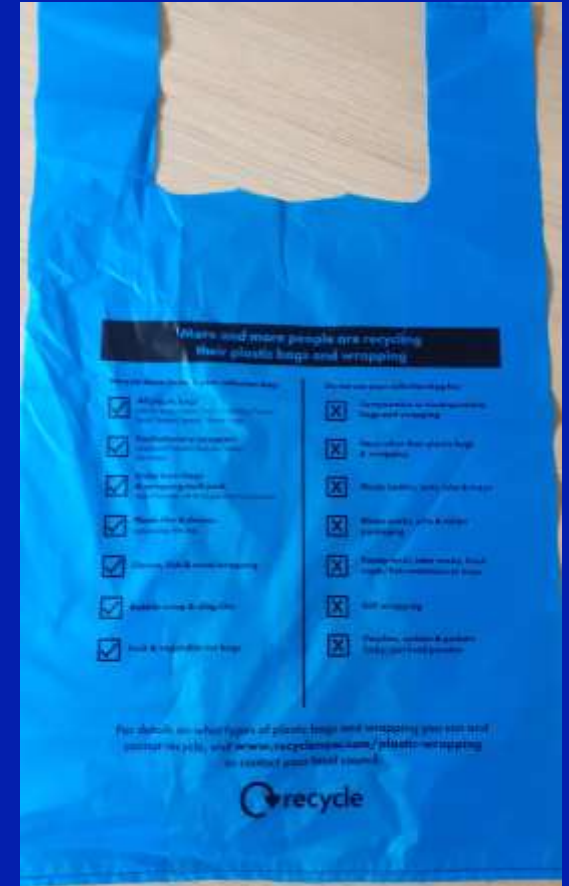
- Very Urban, high % transient/student population, lots of terraced housing and shared bins.
- Current twin stream collection method of comingled in bin plus glass in caddy, or separate bins.
- High contamination levels in both streams, comingled stream from 18-25%

Issues

- 5% of population (expandable to 25%) in one collection day per week (different geographical area each week as fortnightly collections) using survival bags for films to go in main body of bin.
- Expensive to adapt Windermere MRF to separate survival bags from intended 15-17 tonne per week supply when processing 2400 tonne per week at the MRF (needles in haystacks).

FlexCollect Trial Solution (week commencing 05/06/23)

- NCC selected two rounds (four drops) per week for trial, Wednesday week 1 and Thursday week 2
- Comingled loads from trial rounds tipped in separate area of one transfer station for transfer to MRF. Load kept separate, delivered to Baltic St so pre-sorted on manual line to remove survival bags, plus some other grades. Remainder then transferred to Windermere MRF to go through full MRF process as normal.
- Survival bags bale without further sorting to be sent to specified end users.
- Our objective for project is to provide the best information for stakeholders on the challenges and possible solutions to collecting and processing flexibles from the kerbside.



COLLECTING FROM TRIAL AREAS

Collections



Transfer Site



PROCESSING AT BALTIC ST

Baltic Street Inputs, Processing and Outputs



THE RESULTS, SO FAR

Selected Data (Full interim report on whole project to be released in November 2023)

Trial Area	08/06/23 to 31/08/23	Processed 138.4 tonnes
Lowest % of comingled that trial bags		1.40%
Highest % of comingled that trial bags		4.23%
Average % of comingled that are trial bags		2.40%*

* Selected film types in non trial area as a % of comingled = 0.89%

Anecdotal Evidence

- Average weight of each bag about 300g.
- Good levels of participation... data needs validation through repetition.
- Lower than expected contamination.
- Material mix of waste film in line with that of materials placed on market (70%+ PE & PP).

THE RESULTS, SO FAR cont

Sampling of ONE Comingled bulk load received before processing during same period

Film Composition (trial loads)	Trial Bags	Loose Carrier Bags	Loose Clear Polythene	Total "Film"	Waste (excl any inside trial bags)
Comingled Element	3.86%	0.11%	0.27%	4.24%	4.81%
Total of Kerbside	3.21%	0.13%	0.22%	3.53%	4.00%

% Film in comingled element in non trial area of 0.89%

% Film in total kerbside in non trial area of 0.74%

% Waste in comingled element in non trial area of 17.74%

% Waste in total kerbside in non trial area of 15.54%

CHALLENGES, MRF PERSPECTIVE

Operational

- Collection Day alternates each week.
- Relies on NCC drivers tipping in a different place to normal at usual delivery point, only 4 tonne delivered in one particular week
- Walking floor collects from a different place to normal at usual delivery point.
- Load collected last thing in afternoon for processing first thing following morning.
- Bulk loads of comingled lighter than expected as trailer not full, usually averages 11 tonne per load.
- Some bags not tied so contents escape during collection//transfer.
- Periodic six week program of data collection – counting bags and weighing using scales.
- Length of time to generate enough of a load of baled bags to be able to send to the Reprocessor.
- The actual recovery of bags presented in correct format has been relatively straightforward.

Data Collection

week	tonnage comingled	No. Bags Collected	Weight Collected (kgs)	No. of Bags Rejected (Processing)	Property Count	Participation rate	Contamination (kgs)	% of input trial bags (film)
------	-------------------	--------------------	------------------------	-----------------------------------	----------------	--------------------	---------------------	------------------------------

NEXT STEPS

Bales of Survival Bags to be collected and sent to Reprocessor

Increase Phase 1

Add another round per week to trial area (so 3 vehicles instead of 2) to increase comingled including survival bags tonnage collected from 11 to 16 tonne per week (5% of comingled tonnage rather than 5% of population)

Implement Phase 2?

Increase trial area to cover 25% of population, that also include some of harder to reach properties such as those with shared bins.

- Loads no longer kept separate at Transfer Station, so included in bulked up loads delivered direct to Windermere MRF
- Will be processed along with NCC kerbside from non trial area and other LA sources
- Windermere MRF to be adapted to enable survival bags to removed on pre-sort line before entering main sorting process



LONG TERM OPTIONS FOR FILM

Separate Collection

Light loads, high collection cost, relatively high gate fee for LA RCV loads £35.00 – £85.00 per tonne (dependant on location of tipping point v PRF).

Twin stream

Similar issues as Separate Collection and Comingled

Don't mix with high % paper or high % glass, as still difficulties with recovery, eddy current and air Systems issues.

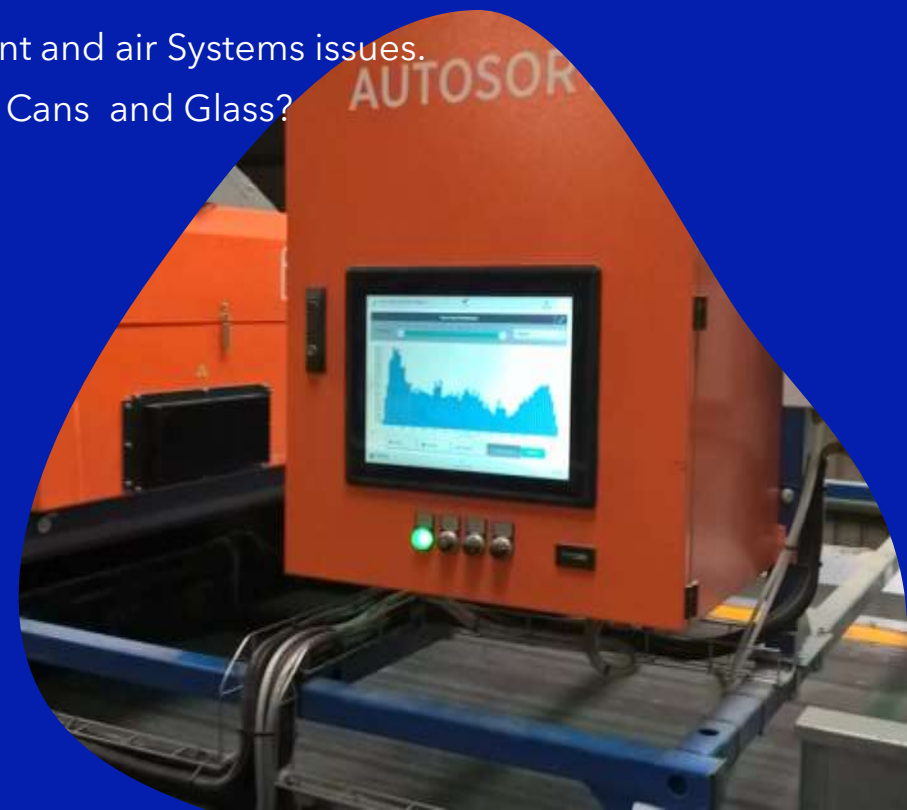
Which of government "preferred" streams do you put film into? Paper and Card? Plastic, Cans and Glass?

Survival Bags

Removal at start of process, higher Kg per hour recovery, sorting of films deferred to PRF, possible increase in film in the comingled **not** in survival bags. High cost of providing bags – long term funding etc.

Comingled

Complex, significant investment and or reconfiguration.



SUMMARY

Future impact of Films and Flexibles being a target material at Kebside

- Front loaded set up cost and ongoing supply if using survival bags.
- Cost for collection of kerbside per tonne will go up irrespective of collection method (large volume to weight ratio).
- Cost of processing will go up as throughput of tonnes per hour will go down.
- Residue from MRF processing could change from SRF to RDF as lower CV.
- Gate fees will increase (potential double whammy of DRS).

