



Our Future is Cleaner



Offsite  
Excellence

Re-Gen  
**Waste**

Serving local authorities with innovative MDR and Residual Waste services across the UK and Ireland.

Re-Gen  
**wte**

Supplying high quality RDF and SRF fuels to global markets.

Re-Gen  
**Materials**

Supplying recyclable material resources to global markets.

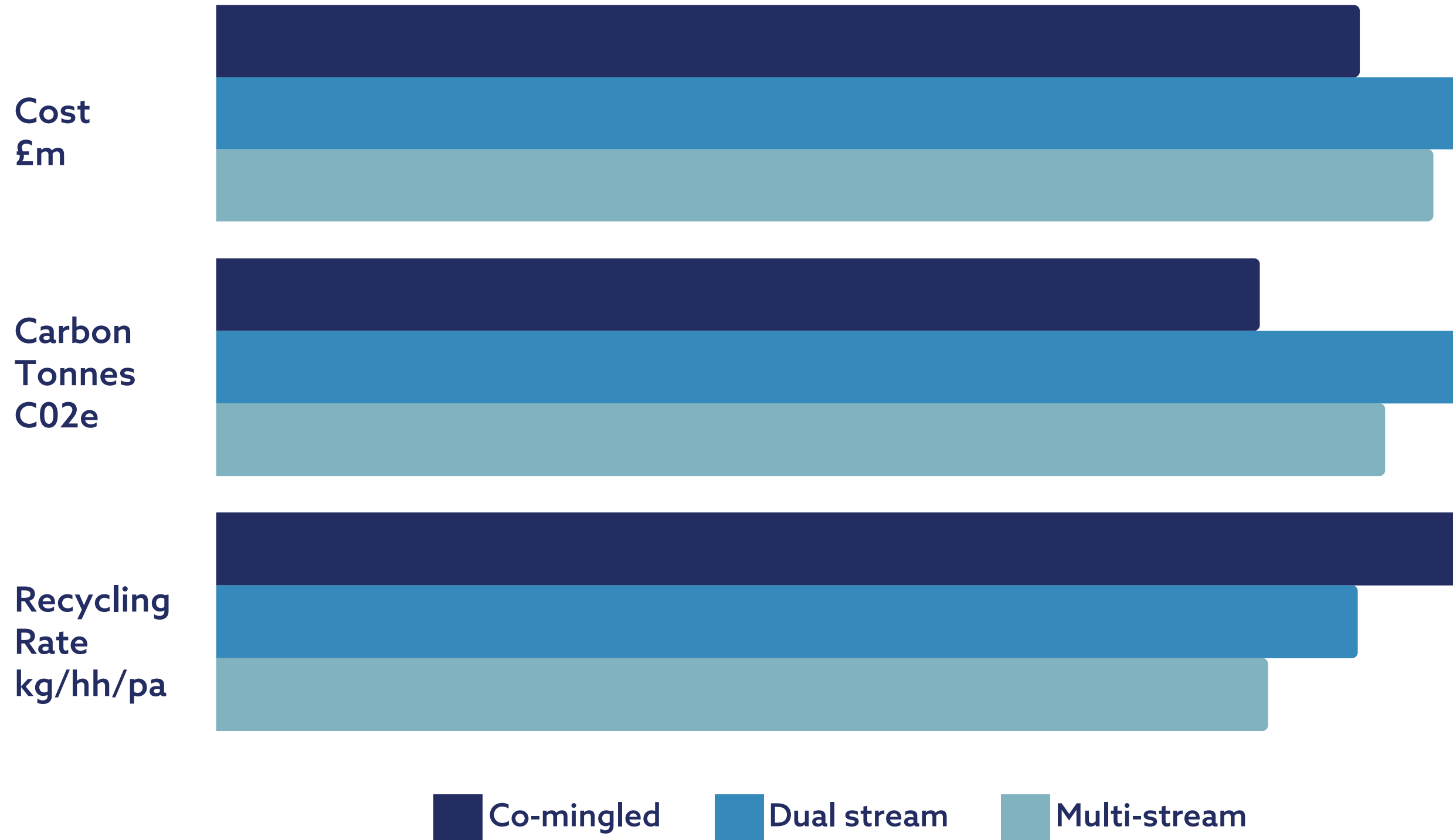


# Commingled: Efficient & Effective Recycling?

Yes 😊



# Cost, Carbon and Recycling Rate





# Policy Changes

**Consistent  
Materials**



**EPR**

**DRS**

Consistency changes adds packaging to be collected for EPR = extra recyclable materials to be collected from households and businesses = message is "This stuff IN"

But policies such as DRS will remove materials (PET plastic bottles and aluminium drinks cans) = confusing message "This stuff OUT"

A large recycling bin can flex with these additions and subtractions from the overall mix required as well as seasonal events (summer BBQs and Christmas)



**Effective messaging** – built around consistent range of recyclables; national campaigns possible

**Efficient collection** – standard RCVs; higher number of properties per round; contamination dealt with at the MRF not the kerbside into residual

**Effective for residents** – convenient; flexible capacity; small storage footprint; robust container





# Ricardo plc Conclusion

"From the information provided by WRAP and the modelling of the three collection scenarios, it can be seen that from both the outputs of the modelling and from consideration of the operational practicalities of each of the potential collection methodologies, it is likely that local authorities will be well placed to provide appropriate evidence to the Scheme Administrator that a commingled collection scheme represents the most Effective and Efficient collection methodology, even if operated fortnightly"

"To fully justify an exemption, councils may need to demonstrate that the MRF facility their material is delivered to is in full compliance with the MRF Code of Practice under the Environmental Permitting (England and Wales) (Amendment) Regulations 2014 and can demonstrate that the output of each material stream is of acceptable quality to reprocessors"

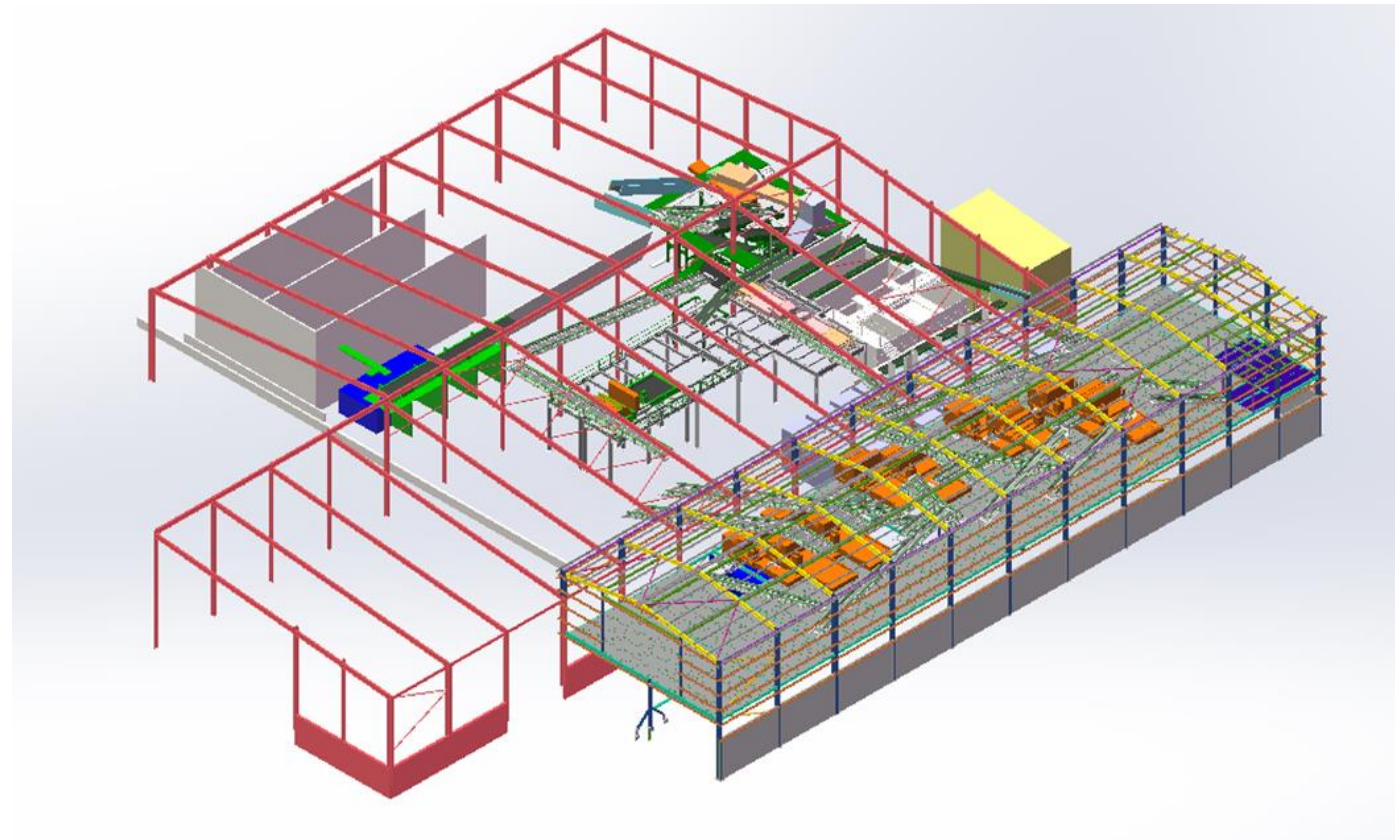


Food Waste	Dry Recycling	Residual Waste
53% increase in tonnage	21 % increase in tonnage	23% reduction in tonnage
		Saved 102,796 miles/yr
		Saved c2650t CO2e
		Saved £108k/yr in fuel



# Improving the standard of MRFs

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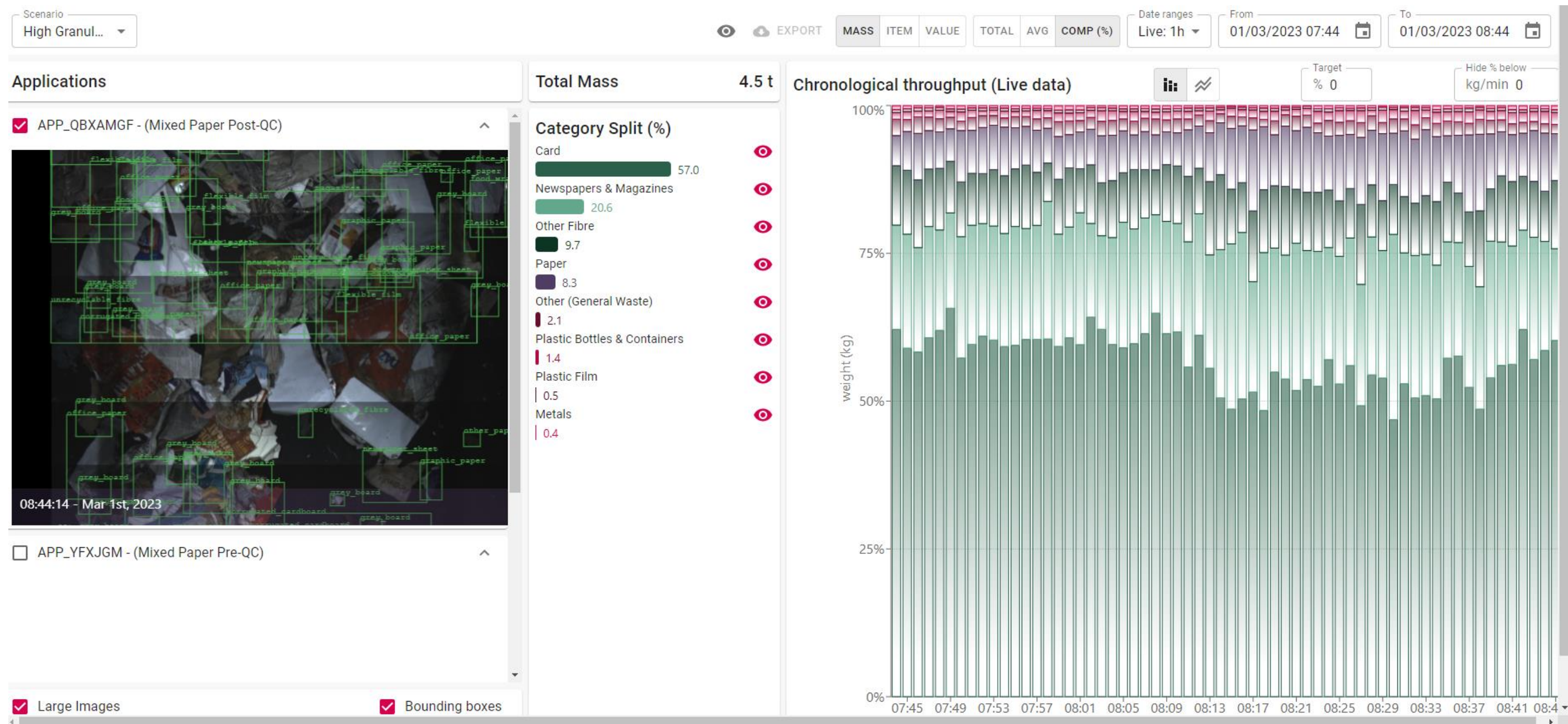


**£5m investment 2022**  
In optical sorting equipment





# VRS (visual recognition systems)





# WRAP

Welsh Government spent £1billion on separate collections

**But** – collect the same dry recycling % as English councils

Their recycling rate more to do with restricting residual waste capacity by bin size or collection frequency

**And** – still have 62% dry recyclables in their residual waste



# The Future

EPR payments will be based on weight (tonnes)

Packaging is changing with lightweighting and consequently collected recycling tonnages are falling

**So** – lower recycling percentages when compared to residual where item weights are not reducing

**Result:** Same costs for **Lower** performance

**EPR Payment = Lowest Reasonable Cost**





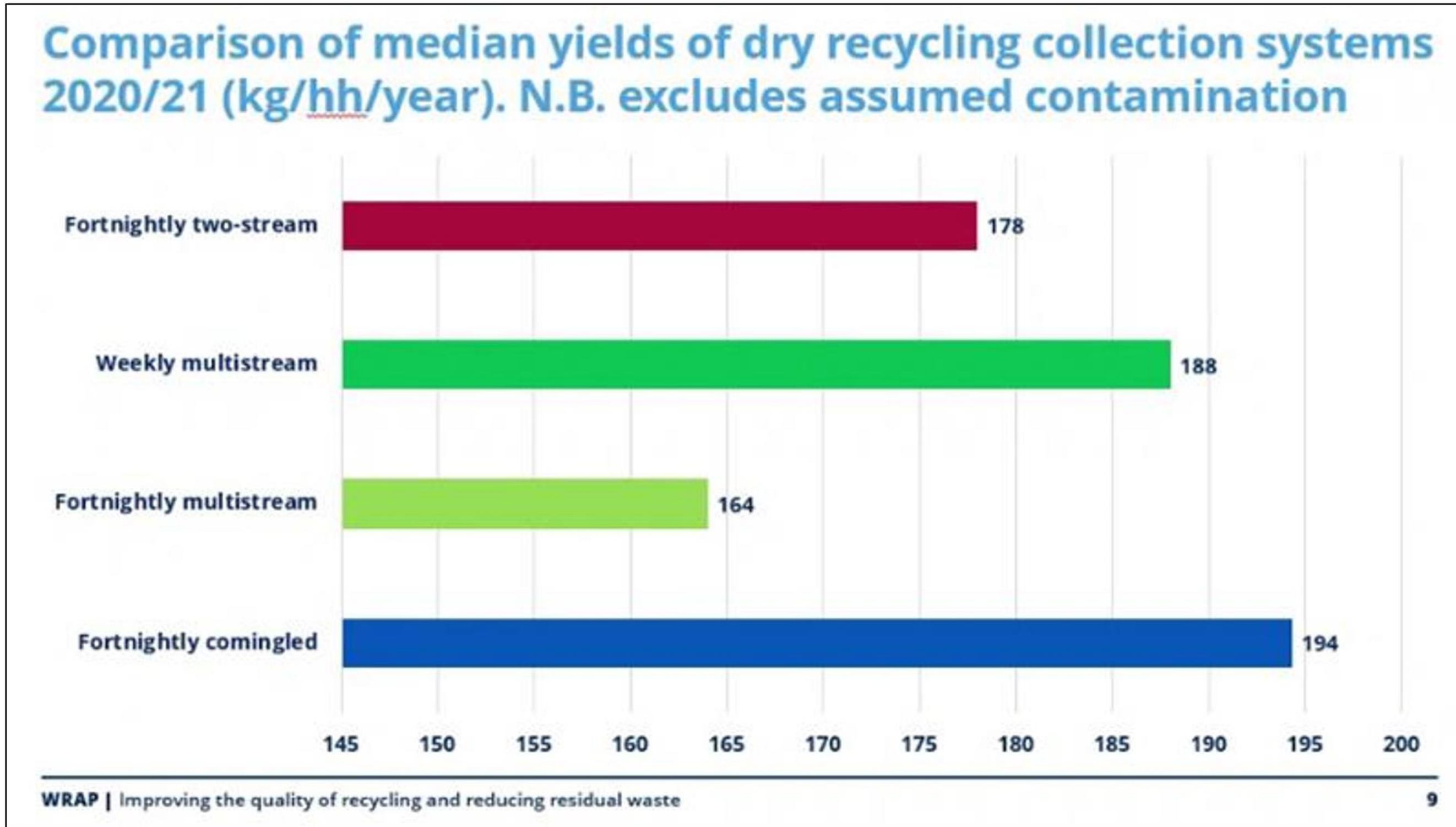
**Thank you**



**Building A Better  
Environment, Every Day**

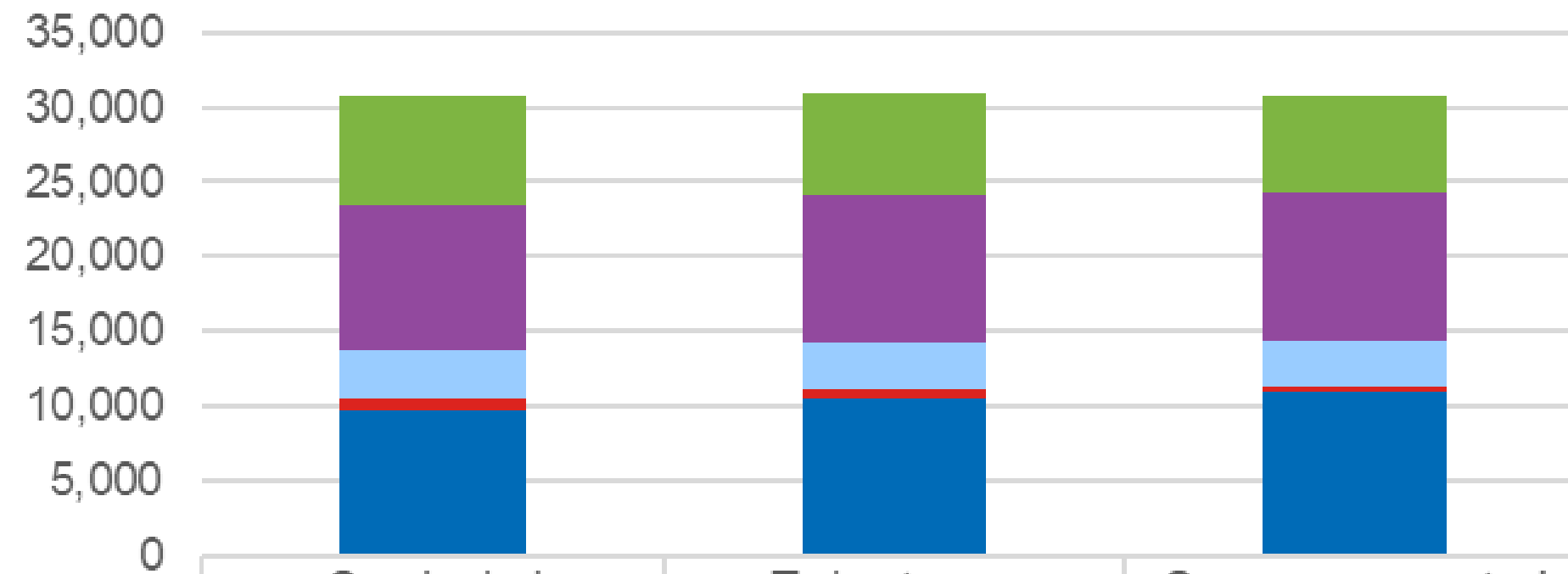


FIGURE 4: WRAP MEDIAN YIELD ANALYSIS



Source: Ricardo plc report "Consideration of Resources & Waste Strategy Impacts" 2023

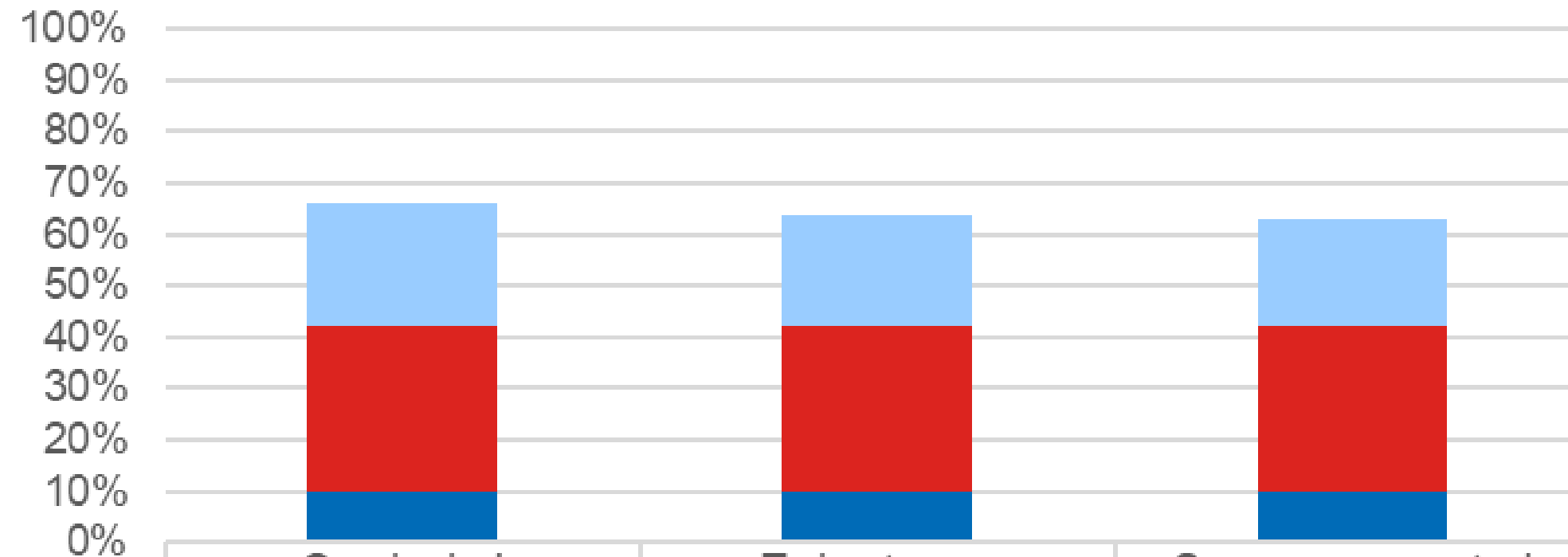
## Tonnage Collected at Kerbside



	Comingled	Twin stream	Source segregated
■ Dry recyclate (clean)	7,300	6,800	6,600
■ Garden	9,800	9,800	9,800
■ Food	3,100	3,100	3,100
■ Contamination & non-target	800	600	300
■ Residual	9,800	10,600	11,000

Source: Ricardo plc report "*Consideration of Resources & Waste Strategy Impacts*" 2023

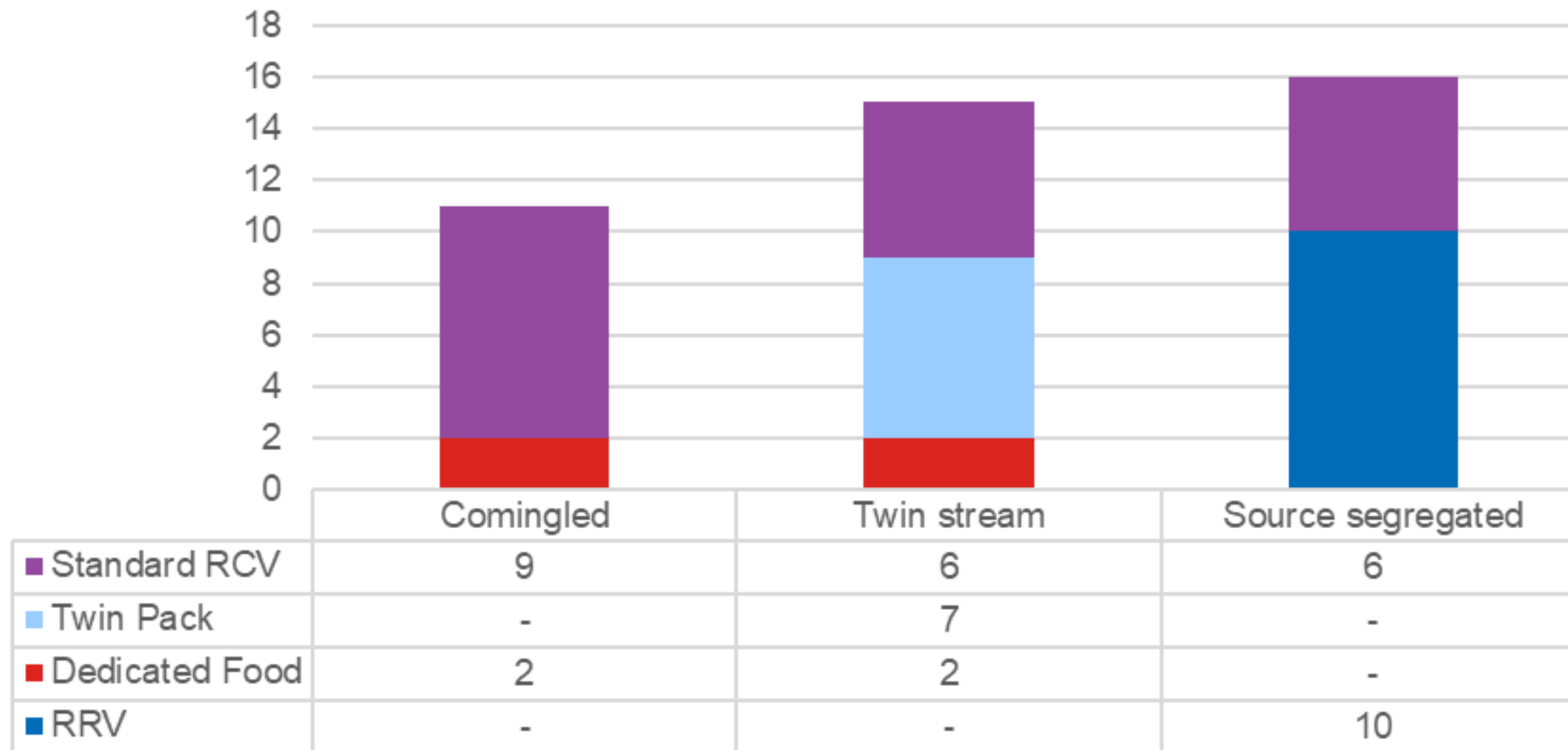
## Recycling rate



	Comingled	Twin stream	Source segregated
Total	66%	64%	63%
■ Dry recyclate (clean)	24%	22%	21%
■ Garden	32%	32%	32%
■ Food	10%	10%	10%

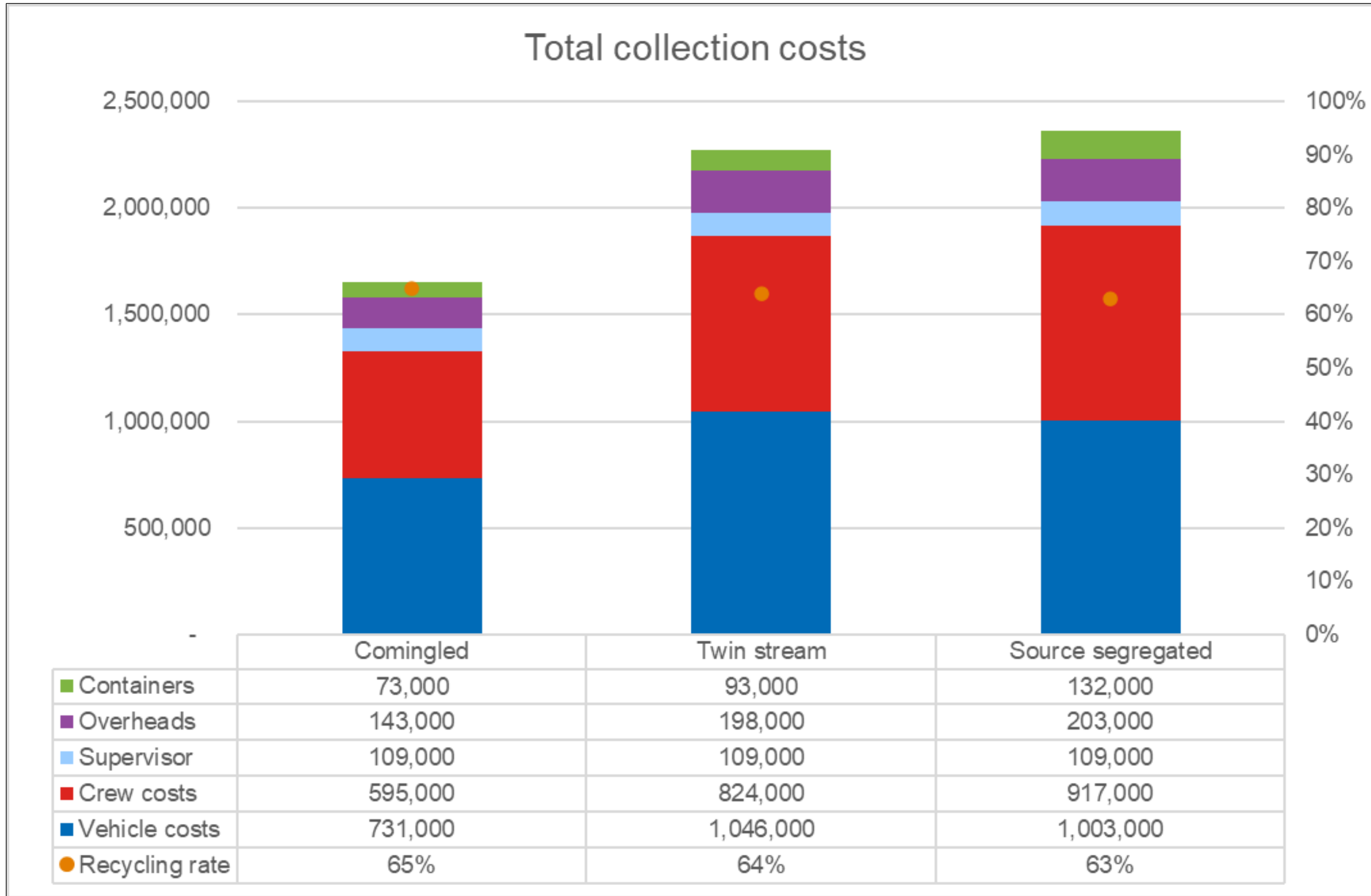
Source: Ricardo plc report "*Consideration of Resources & Waste Strategy Impacts*" 2023

### Vehicle Type and Numbers



Source: Ricardo plc report "Consideration of Resources & Waste Strategy Impacts" 2023

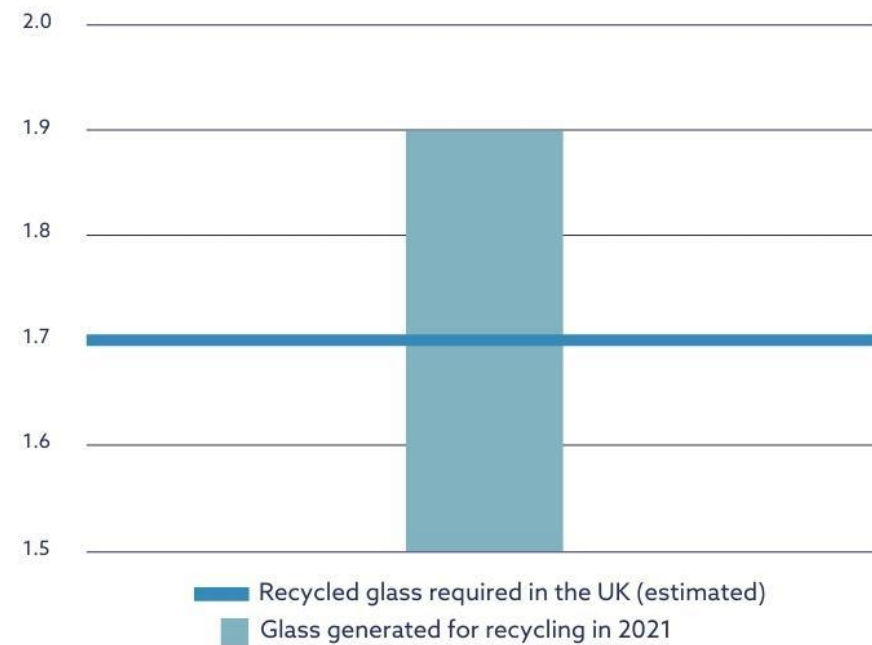




Source: Ricardo plc report "Consideration of Resources & Waste Strategy Impacts" 2023

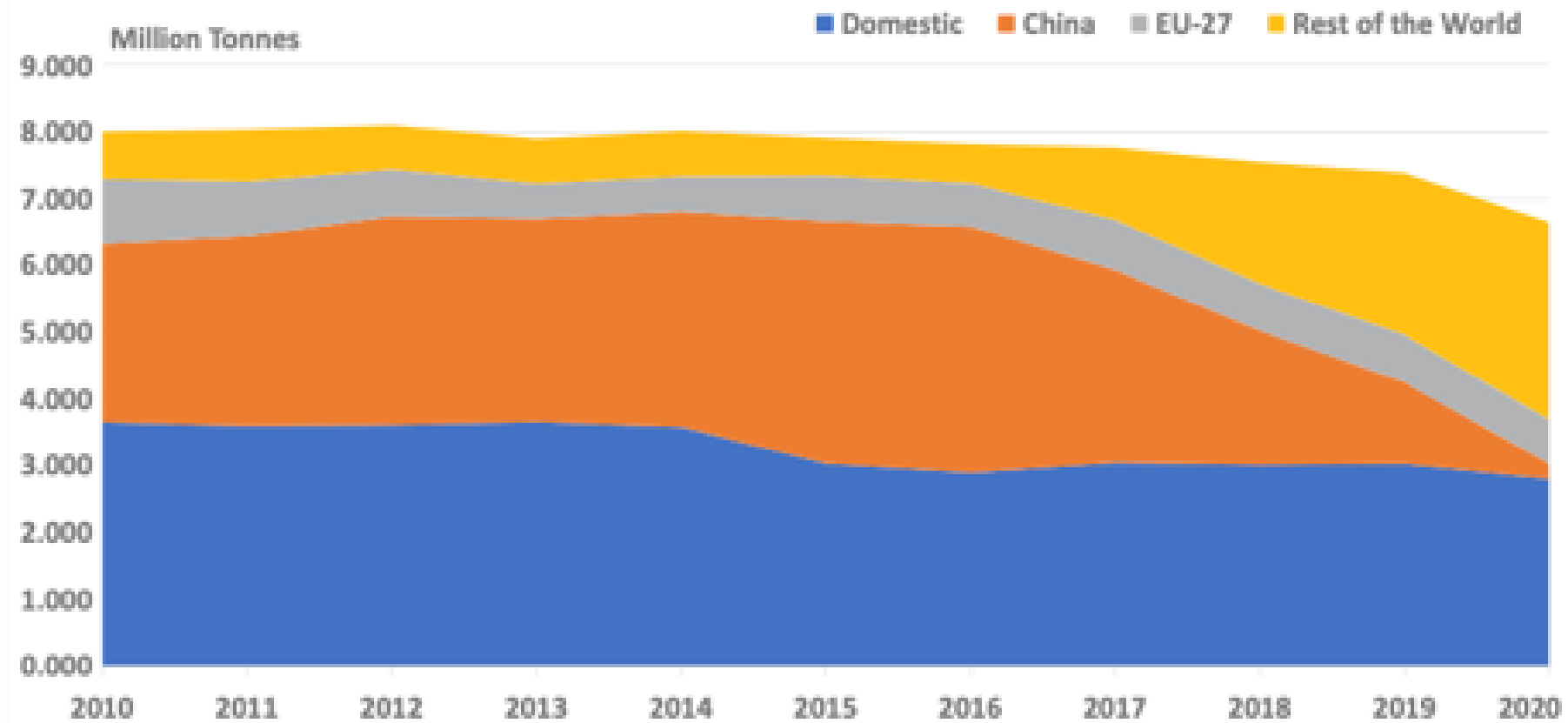
# Lack of Domestic Infrastructure

Quantity of glass required for recycling compared to the quantity of waste glass generated in the UK



Source: Day Glass Recycling - Glass Export Report 2023

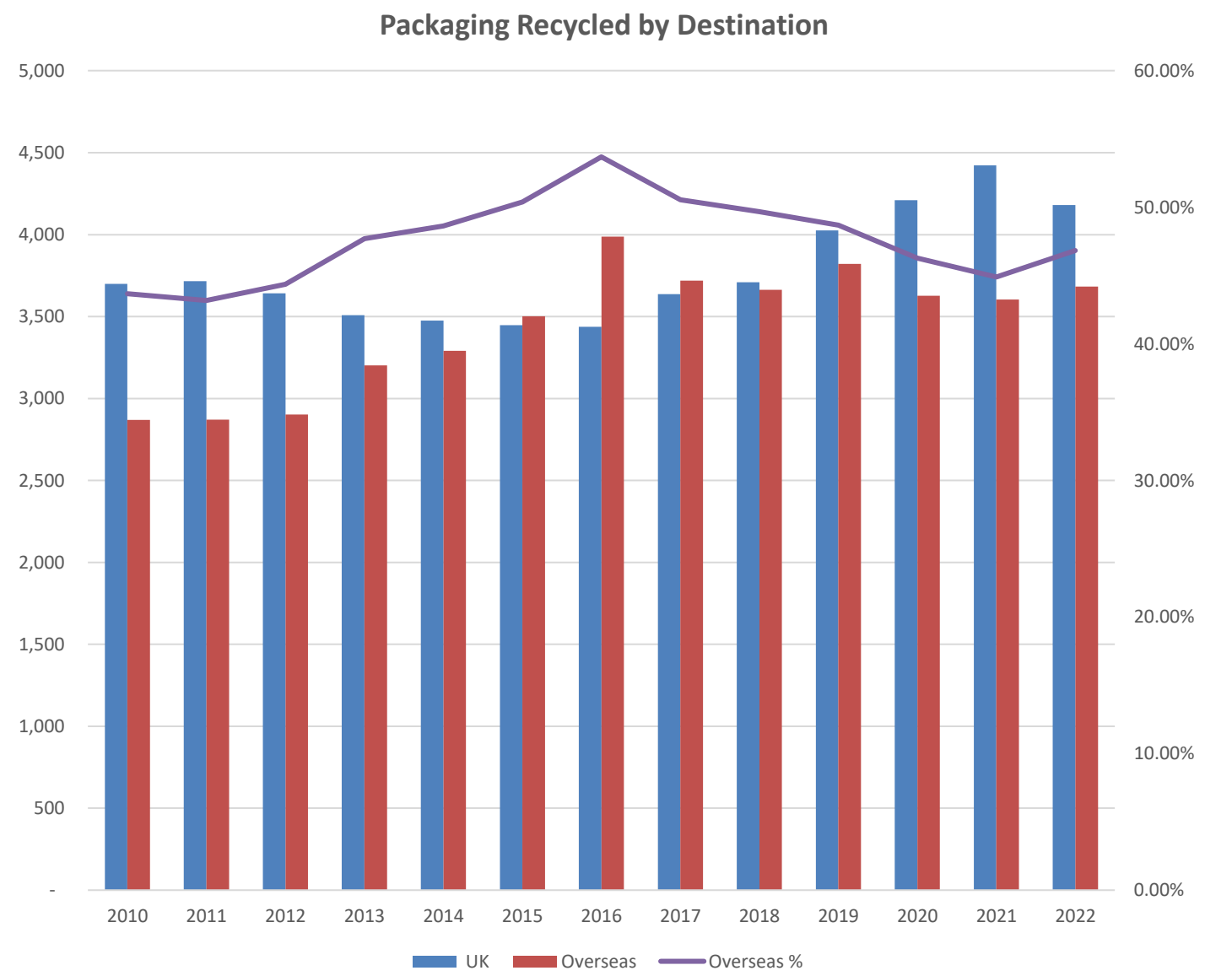
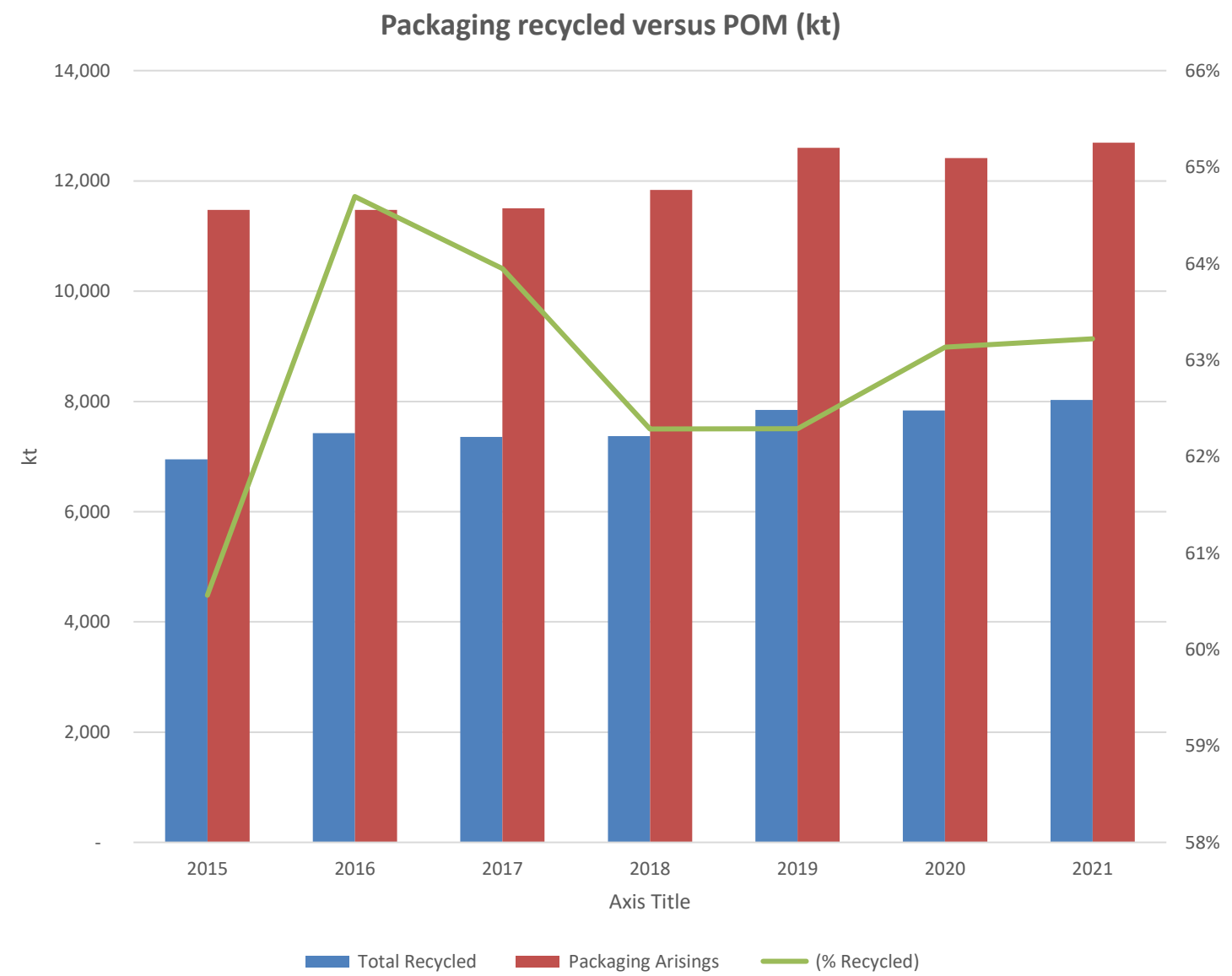
HOW UK PAPER AND BOARD IS RECYCLED



Sources: CPI, HM Revenue & Customs



# Reliance on Overseas Infrastructure



# Improving the standard of MRFs

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## **Investment**

Highly automated processes supported by data analysis and decision making

## **Skill Development**

Replacing manual processes so employees can be upskilled and increase their job satisfaction

## **Challenging Ourselves**

Continually looking to do it better and improve the environment





**Where we started  
18 years ago**





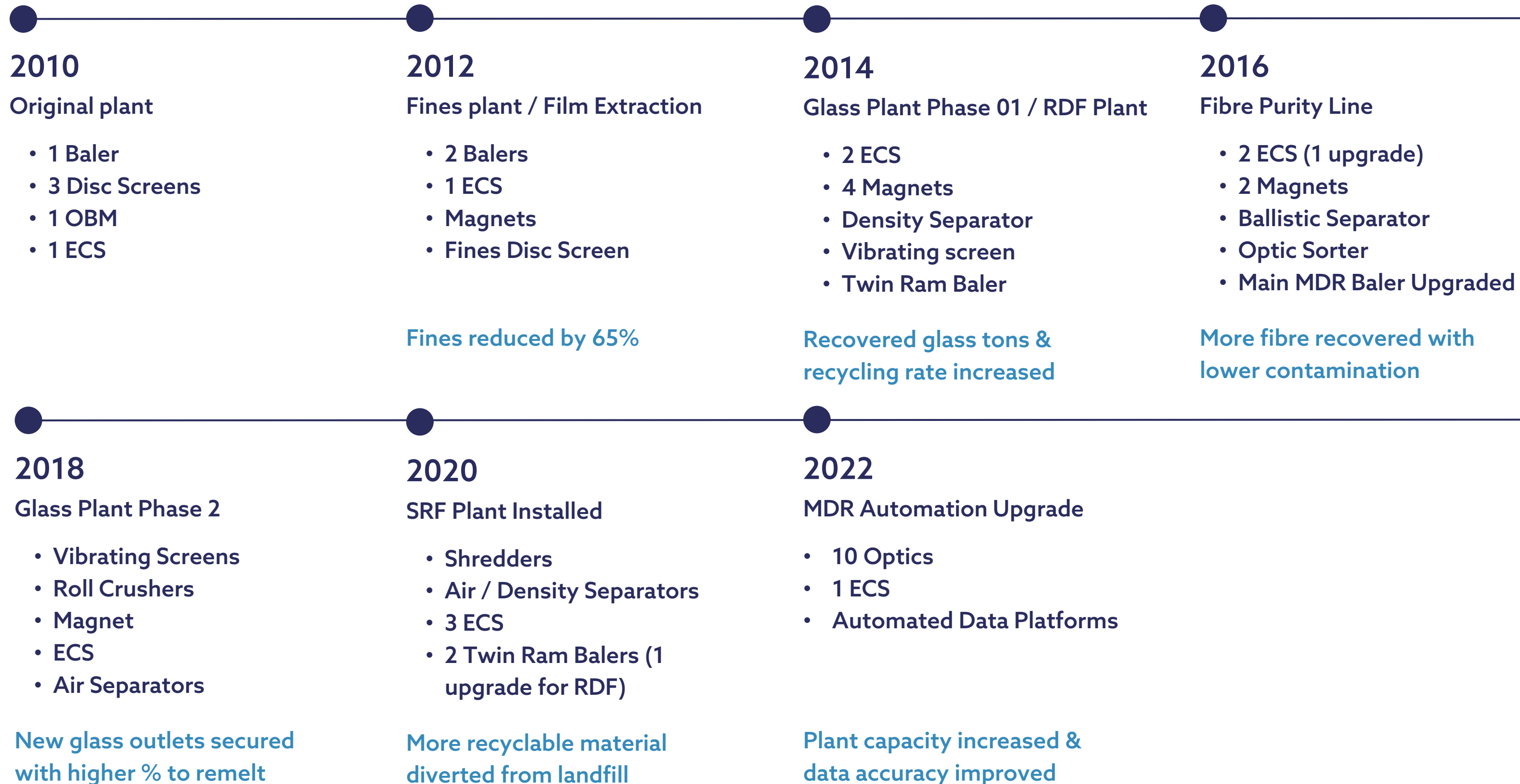
Where we are today





# Re-Gen's Upgrade Timeline

Constant process review and improvement is essential



# How can modern well invested MRFs help?

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## Rich data

Mechanical sorting interfaced with visual recognition systems can capture rich data to provide detailed information on the material mix

This will be very important for helping implement EPR and DRS and FPOC

## EPR

Rich data will enable Councils to maximise their claim for funding from the EPR Scheme Administrator

## DRS

Rich data will enable Re-Gen to provide evidence to the Deposit Management Organisation to possibly reclaim the deposits back on obligated items





# Sampling for EPR

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## Material sampling categories

- Glass
  - Aluminium
  - Steel
  - Paper
  - Card
  - Plastic
  - Plastic bottles
  - Plastic pots, tubs and trays
  - Plastic films and flexibles
  - Fibre-based composite material
- Target total
  - Target packaging
  - Target Drink containers
  - Non-target total
  - Non-target packaging
  - Non-target Drink containers
  - Non-recyclable total
  - Non-recyclable packaging
  - Non-recyclable Drink container

Councils could find that they will have to undertake sampling of their waste and recycling collections

Re-Gen are experienced in sampling and could offer the service to our council customers

Old requirement 60kgs every 125 tonnes = **4.8%**

New requirement 60kgs every 75 tonnes = **8%**

# DRS in Council Collections

Material	Tonnes	%				
Mixed Paper	11.743	42.05%				
Cardboard	1.073	3.84%				
Mixed Plastic Bottles	3.977	14.24%				
Steel cans	1.14	4.08%				
Aluminium cans	0.71	2.54%				
Plastic Film	0.425	1.52%				
Wires		0.00%				
Wood		0.00%				
Wee		0.00%				
Mixed Rigid Plastics	0.02	0.07%				
Clothes		0.00%				
Glass	5.845	20.93%				
Stainless steel		0.00%				
Glass Plant steel		0.00%				
Prepick	0.605	2.17%				
Paper Line Residual	0.532	1.90%				
Landfill		0.00%				
Fines	1.174	4.20%				
Paper from optical		0.00%				
Glass Plant Landfill	0.685	2.45%				
Bottle line residual		0.00%				
Pacon		0.00%				

		% tot	% from tot bottles	% from good bottles
PET Colour	0.382	1.37%	9.61%	14.64%
HDPE Jazz	0.118	0.42%	2.97%	4.52%
HDPE Natural	0.667	2.39%	16.77%	25.56%
PET Clear	1.393	4.99%	35.03%	53.37%
PP	0.05	0.18%	1.26%	1.92%
Total % good bottles		2.61	65.63%	100.00%
Low Value Bottles	1.367	4.89%	34.37%	
	3.977			



VRS can recognise items by form, in this example, items obligated under DRS

VRS is a self-learning system and the data from several MRFs across the UK is pulled together so the accuracy of the system improves and material capture increases