It's all rubbish...?

Walking alongside a fairly peaceful canal in East London, close to Canary Wharf, nothing really prepares you for the onslaught of noise and commotion when you enter Bywaters' massive Materials Recovery Facility (MRF or recycling centre to you and me). Built on what are now the fringes of the Olympic Park, the MRF is an extraordinary complex, where mountains of waste are coaxed into ingenious machinery which rips bags apart, drops the contents onto huge rotating claws, sends it flying along colossal rollers, constantly separating paper from plastic, metal from glass, with each stage of the process segregating the contents of our recycling bags until each component stream is finally unloaded into a huge baler.







To bin or not to bin?

The wish to visit Bywaters all began when I started to wonder exactly what happens to the plastic yoghurt pot I put in our recycling bins on occasion. Where I live near Sevenoaks, there is a baffling set of rules for our recycling bags – average thin supermarket shopping bag OK, thicker clothes shop plastic bag not OK, laundry detergent plastic container OK, ice cream container not OK...enough to put off even the most ardent tree-hugger. Then I come to work and anything goes – tetrapaks, plastic-coated coffee cups, metal cold drink cans, plastic packaging, everything!

So what makes our recycling at work so very flexible? Well, the answer lies in the MRF you send it to. The more 'state of the art' the facility, the more likely they are to take any plastics – ice cream containers included. And to my mind, the more things you can put in the recycling bag overall (including glass!), without getting confused, then surely the more people will end up keeping recyclabes out of the rest of their waste, so less will go to landfill?



Chomping and whizzing

The technical wizardry needed to make it all possible is very impressive. Waste from commercial, industrial and municipal customers is collected by refuse collection vehicles (or RCVs) – either Bywaters' or a council's – then unloaded in massive piles just inside the entrance of Bywaters' covered building.

This is where the clever stuff begins. Huge grabbing vehicles seize clumps of this waste then release them into the jaws of a hungry bag-splitting machine. Here sharp claws rip open the plastic bags, liberating the waste onto a fast-moving conveyor belt.

At this point, real human beings come into play. As the conveyor belt moves through a big cabin, twenty or so employees wearing overalls, gloves and masks sort through the mess to pull out anything dangerous or waste that might prevent the efficient sorting of the dry recyclables. The odd bit of clothing is often found at this point (bundled up to be sent off to charities), and contaminated materials will be removed.

The rest whizzes off to the first mechanical sorting point, a series of giant screws which jiggle the wastes about, allowing smaller items to fall through, but which ingeniously keep big bits of cardboard afloat, to be dispatched to the first sorting bins.

The smaller items drop onto another belt which then goes over a set of rollers. The paper glides along the top, while plastic bottles are diverted to one area and glass and metal to a further belt. The paper goes through another large hand pick cabin, where different types of material can be collected to any market specification required. All materials, once sorted, travel by conveyor belt from their bunkers to the baling machine.

The plastic bottles whizz under an amazing scanner which is capable of differentiating plastic types (drinks bottles and milk bottles are different for example). Within a millisecond of it detecting the type of plastic, an air jet blasts the relevant bottle into the air, where it is propelled onto a higher conveyor belt. The clear plastic bottles are the easiest to recycle and fetch good prices (so remember this the next time you throw your water bottle into a general bin!). I spotted the occasional tin mixed up in the clear plastic conveyor belt, but was assured by our tour leader, David Rumble, that a small percentage of error was acceptable and would be sorted at the next stage of the process.

The aluminium and steel cans also went through a clever process. Still nestled in amongst the general waste, the tins passed under a massive magnet, covered by a rotating belt. As they rose up towards the magnet (going "ping" as they did so), they were drawn out of the general mess and dumped into two separate bins, one for aluminium and the other for steel. Both again are easily sold and recycled with almost no further resources needed.

The final bit of sorting comes in the form of a huge rotating barrel pierced with small holes. Here any segments of broken glass will drop out onto another belt and be whisked off to be melted down into new bottles.

Any rubbish that can't be sorted in some way will end up in an incinerator, but the amounts left over are impressively small. Most components end up in massive bales which are then stored for a short time before the relevant companies interested in buying the materials come to pick it up.

Where's the Power?

When asked how the whole unit is powered, Bywaters said that they are about to invest in their own small incinerator (planning per nission for bigger ones being hellish to apply for), part of a new generation of power generators that look very promising. Here waste will be heated to such high temperatures (achieved initially through external power, but then subsequently as a result of the burning itself) that rubbish will virtually evaporate, turning into useful gases which can be harnessed to generate electricity. Not only do they expect to produce enough power to drive all the machinery and heat the offices etc., but they anticipate having some left over to supply back to the national grid.

So next time you wonder whether you can walk two extra paces to the recycling bins, just imagine your yoghurt pot (rinsed out if possible) travelling to East London, being dumped on a conveyor belt, riding crazily around a huge hangar before being baled up and, ultimately, turning into next winter's stylish fleece hat! **Sarah Newman** ■

Here's some good news:

- At Slaughter and May, we now recycle 94.5% of our waste (and 4% goes to Waste for Energy (or incineration)), compared with 44% in 2008 (with 55% going to Waste for Energy)
- Around 40% of waste from households is currently recycled, compared with 11% in 2000/01
- The average residual waste per person has reduced by 76kg since 2006/07 to 275kg per person per year
- According to RecycleNow, UK recycling saves more than 18 million tonnes of carbon dioxide a year – equivalent to taking 5 million cars off the road
- 52% of commercial and industrial waste was recycled or reused in England in 2009, compared to 42% in 2002/3
- The UK water industry treats 66% of sewage sludge by anaerobic digestion (AD), generating in the region of 1TWh per year of electricity in 2010. The diversion of biodegradable wastes to AD could reduce greenhouse gas emissions from landfill even further.

Room for improvement:

- Despite the huge increase in the amount of waste recycled at Slaughter and May, we still produce a similar amount of waste to 2007, so there remains a lot to be achieved in the reduction of waste overall
- 55% of municipal waste generated in the UK is sent to landfill, compared to an EU average of 40%
- The UK produces approximately 7 million (5 in England) tonnes of food waste per year and about 90 million (40-60 in England) tonnes animal slurry and manure that could be sent through anaerobic digestion technology, generating power and producing fertilizer.



