Recycling

The Authority recycles a whole range of materials at its Household Waste and Recycling Centres and a full list can be found on our website at **www.wrwa.gov.uk**

The following sections describe what happens to some of the larger recycling streams.

Co-mingled 'recycling sack and bank' scheme

Cory began the construction of an 84,000 tonne per annum Materials Recycling Facility (MRF) at the Authority's Smugglers Way Transfer Station in November 2008. This facility is processing co-mingled recyclate delivered by the Authority's constituent councils from their "Recycling Sack and Bank" schemes.

The MRF

Before construction of the main MRF building itself could start, preparation works were carried out to the river wall and a containment barrier was installed along the eastern boundary of the Household Waste and Recycling site to prevent any slightly polluted water (from the site's historic use as a Gasworks) under the main body of the site from draining into the Thames.

The design and build of the main MRF building and associated civil works were carried out during 2009 and the installation of the bulk of the processing and associated equipment was carried out during 2010. Commissioning commenced in October of that year and the facility was officially opened by Her Royal Highness the Princess Royal in March 2011.

Cory took over the operation of the MRF in April 2011, when the equipment contractor ceased involvement with the commissioning process, and has continued to work through the remaining design and engineering problems that have impacted on the MRF operation.

The Materials Recycling Facility welcomes visitors and, as well as school classes, also encourages adults to book on one of its regular tours





The MRF has a design capacity of 84,000 tonnes per annum and has been designed to process co-mingled materials, delivered loose or in plastic bags, consisting of a mix of one or more of the following dry recyclables: paper, cardboard, glass bottles and jars, clear and coloured PET plastic (e.g. drink bottles), clear and coloured HDPE plastic (e.g. laundry and washing-up liquid bottles) steel and aluminium cans and polycoat material (e.g. Tetra Pak).

The facility has allowed the Authority to be predominantly self-sufficient in relation to the sorting of collected co-mingled recyclable materials, complying with the proximity principle and reducing vehicle movements associated with this activity. The MRF building incorporates an interactive Education Room providing improved facilities for educational activities in relation to recycling which is of particular benefit to school children and students from colleges in the four boroughs, as well as visitors from the local community and further afield.

The building also benefits from the installation of photovoltaic cells (or solar panels) on its roof and visitors can see a display showing how much electricity they are generating and the carbon emissions saved as a result.

Following two significant fires in 2016, and a lengthy repair period when the MRF only ran at approximately 60%, further fire prevention measures were deployed, including the installation of fire curtains and a deluged water system in addition to the sprinkler water system. Other improvements carried out alongside the refurbishment works have also resulted in an increase in the efficiency of the MRF.

In recent years the Authority's constituent councils have also taken steps to reduce the contamination rate as far as possible and have largely been successful. One of the key changes has been the introduction of clear recycling sacks to replace the orange recycling sacks used previously. This move enables the collection crews to inspect the contents of the recycling sacks before deciding whether to place them in the recycling or the waste compartment of the collection vehicle, thereby reducing the delivery of non-targeted materials to the MRF.

How does the MRF work?

The MRF initially sorts the recyclable materials mechanically based on their specific size and shape properties.

The recycling sacks and bags are loaded onto a conveyor belt and travel through a 'bag splitter' which uses small blades to rip open the bag, releasing the materials.

The loose materials then pass through a sorting cabin where empty recycling sacks and contaminant materials are removed from the conveyor belt.

The rest of the materials travel up onto a set of screens. A screen comprises a set of rotating shafts with steel star- shaped discs spread out over a specific distance and inclined.

On the first screen sheets of cardboard "surf" up and over the screens, whilst the rest of the materials fall through the gaps.

The material that falls through the bottom moves on to the next screen, where the distance between the discs and their speed of rotation is set so that newspapers and pamphlets "surf" over the top and the rest of the material falls through the gaps. This process is then repeated on two further screens to remove mixed papers, plastic bottles, tubs and cans – while the glass and smaller items fall through all the screens.

The material from each screen then goes past an optical sorter that removes any rogue material that has incorrectly "surfed" up a screen (rogue recyclable material is returned to go around the process again). The cardboard and paper products then go through a manual quality control area before being baled or loaded loose into road bulkers.

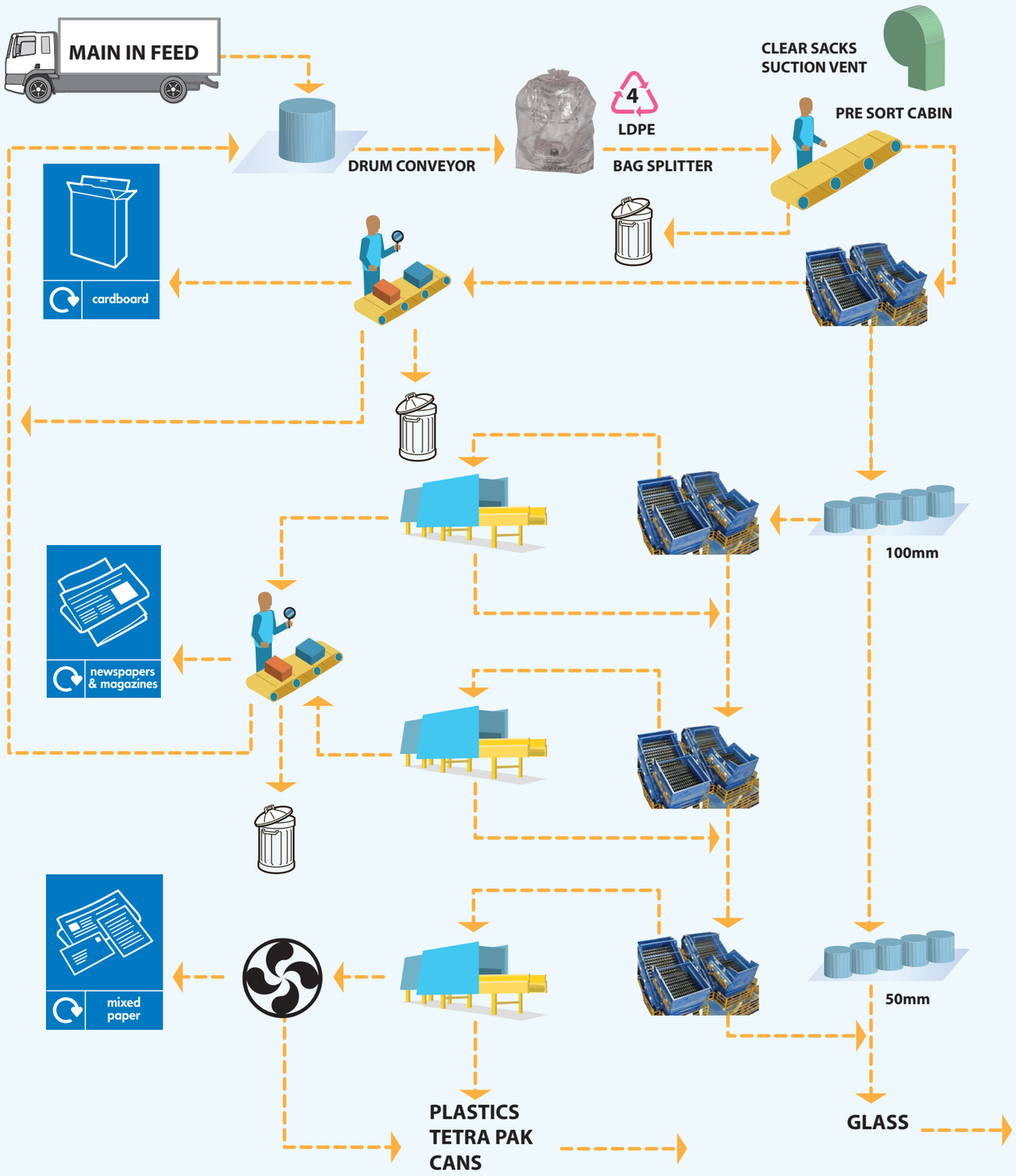
The cans are removed by magnetic and eddy current separators and the plastic bottles, pots, tubs and trays go through further optical sorters which can sort the material into different chemical types and colours.

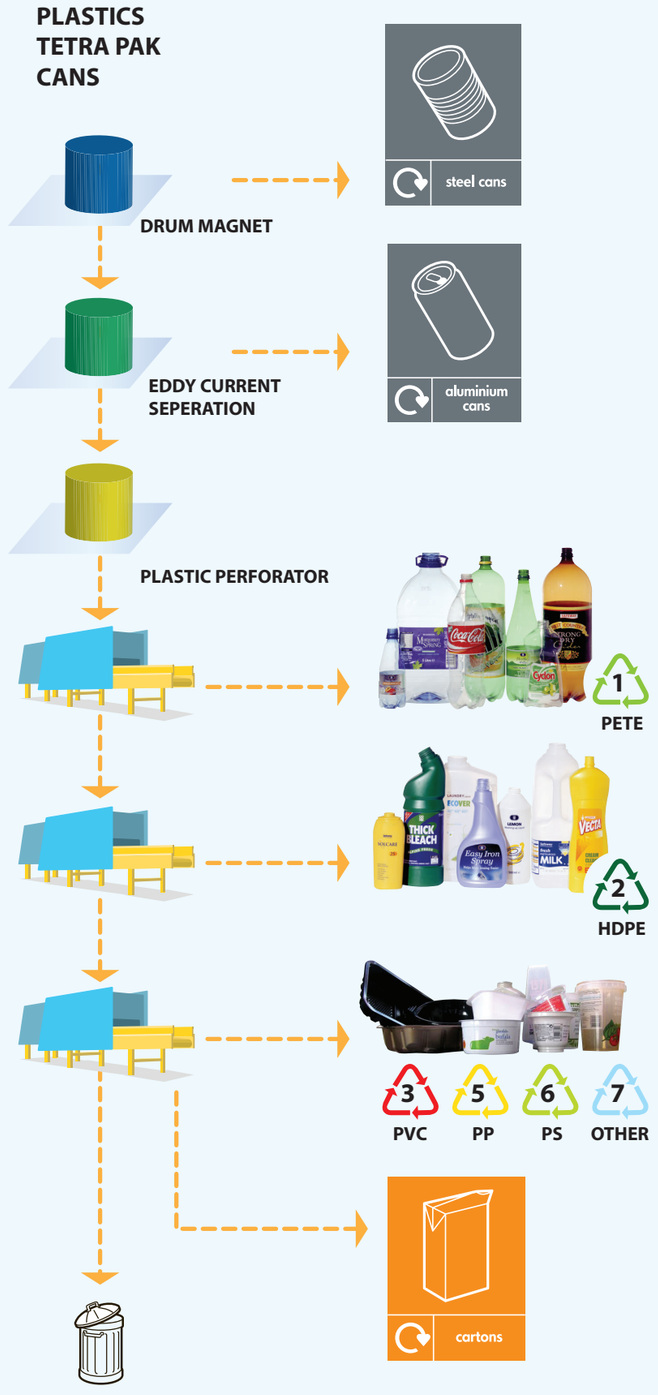
The glass goes through a large rotating drum with holes called a 'trommel' (that looks like a bit like a washing machine drum) and it separates the smaller items that should not be with the glass.

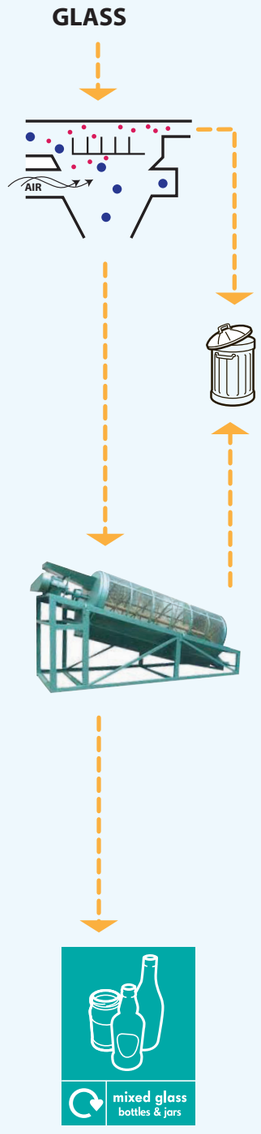
All the products leave the site by road (as the destinations are many and varied) with newspapers, pamphlets and glass going loose in bulkers and with the other materials being baled and transported by curtain-sided vehicles.

The material can be recycled into many different products – for example, paper is made into new packaging and various paper products, glass bottles and jars are recycled into new bottles, windows, other glass products or used as an aggregate material. In some cases the material is remade into the same product – steel cans become cans once again and some plastic bottles can be made into bottles again, or into other types of plastic container.

Materials Recycling Facility Fibre Recovery Process







KEY

QUALITY CONTROL

AIR SEPARATOR

BALLISTIC SEPARATOR

FINES SCREEN

OPTICAL SORTER

TROMMEL
(Separates glass from contaminants)

AIR CLASSIFIER
(Removes light material)