

## OUR COMPANY

Irish Packaging Recycling (IPR) is the largest recycling operation in Ireland and is part of a diverse group of companies that includes power generation, power sales, resource recovery and recycling. As a group of companies, we passionately believe that all the materials we collect can be converted into future resources. IPR sorted and produced more than 190,000 tonnes of recycled raw material products for export in 2018 which is broken down in the table on the right:

<b>PAPER &amp; CARDBOARD</b>	<b>172,000 tonne</b>
<b>ALUMINUM</b>	<b>700 tonne</b>
<b>PLASTICS</b>	<b>12,000 tonne</b>
<b>STEEL</b>	<b>1,635 tonne</b>
<b>TYRES</b>	<b>1,068 tonne</b> (104,000 tires recycled)

## OUR SERVICE

IPR provide customers with an efficient and consistent service as exemplified through the following initiatives:

- 24/7 customer service:** Emergency trucks capable of providing a 24/7 emergency service for commercial customers if needed. We never let our customers down. We also provide a flexible service for commercial customers that gives the choice of scheduled or one-off collections.
- 24/7 access to our facilities:** Two out of our three recycling facilities in Dublin have no time or day restriction for access. We staff those facilities 24/7 365 and accept our customers' material any time day or night. We collect a significant portion of the commercial material from Dublin's busy city centre and even material collected by others is delivered to our facilities in the middle of the night.
- Solving the unsolvable:** We work with our customers to find cheaper, greener alternatives to disposal. Many of our customers in the manufacturing industry have off-process waste for which we can find an alternative to incineration or SRF.

## GOING THE EXTRA MILE

IPR work tirelessly to deliver the recycling message to as many people as possible. In January 2019 we sent a letter to all 250,000 domestic customers to ask them to make a New Years Resolution to ensure no recyclable plastic, paper or cans are put in the general waste bin. We analysed our household waste collection and discovered 4% of the content was perfectly recyclable plastic bottles, pots, tubs and trays!

Companies within the Beuparc group service the waste needs of some of the largest Irish music festivals. IPR works with the festival organisers by encouraging them to visit our recycling facilities to understand how to segregate waste at events, encourage cup-return schemes, and to allow us host environmental awareness stands during the festival. There is nothing like getting the recycling message out to hundreds of thousands of happy festival attendees!

In 2019 IPR partnered with Repak and Focus Ireland to encourage businesses to use the new plastic recycling bags, an initiative which remunerates Focus Ireland based on the volume of plastics collected in the specially commissioned bags.





## PROCESSING OF DOMESTIC RECYCLING

IPR operates the largest household recycling facility in Ireland. The plant, which is in Ballymount, is licensed to process 100,000 tonnes per annum and employs more than 100 staff. Comingled household recycling is separated into different grades of recyclable materials and the residual materials are suitable for solid recovered fuel (SRF) production.

We produce the following products from our domestic recycling process:

Mixed paper 44%	Mixed plastic film 4%	Pots/tubs/trays 1%
Cardboard 10%	HDPE 2%	Fines 10%
Aluminium 1.5%	PET 2%	Residual (SRF) 24%
Steel 1.5%	Mixed plastic bottles 1%	

Products produced by this facility are sold as raw materials for manufacturing new products and exported worldwide. IPR is the only company in Ireland with an AQSIQ export license for access directly into Chinese markets (license no A372090046). This used to be a key differentiator for our business as we were the only recycling company who could deal directly with the mills in China. Our relationships with these mills meant we were the first to foresee this market closing so we focused our efforts on opening new markets for our products. We visited and networked with mills in Europe and India and managed to keep our product moving.



## PLASTIC FILM RECOVERY PROJECT

Our reaction to the effective closure of the Chinese paper market, 95% of our export business in 2016, was to completely change our business, invest and innovate. In May 2018 we completed a significant upgrade to our facility which cost the company €3.2 million. This turn-key investment was built by Tullamore based engineering company, McDonald International. The primary objective of this investment was to improve the quality of our mixed paper product. Included in this upgrade was a “fibre recovery” line which is an optical separator programmed to eject paper. Feeding this optical separator are two streams of material;

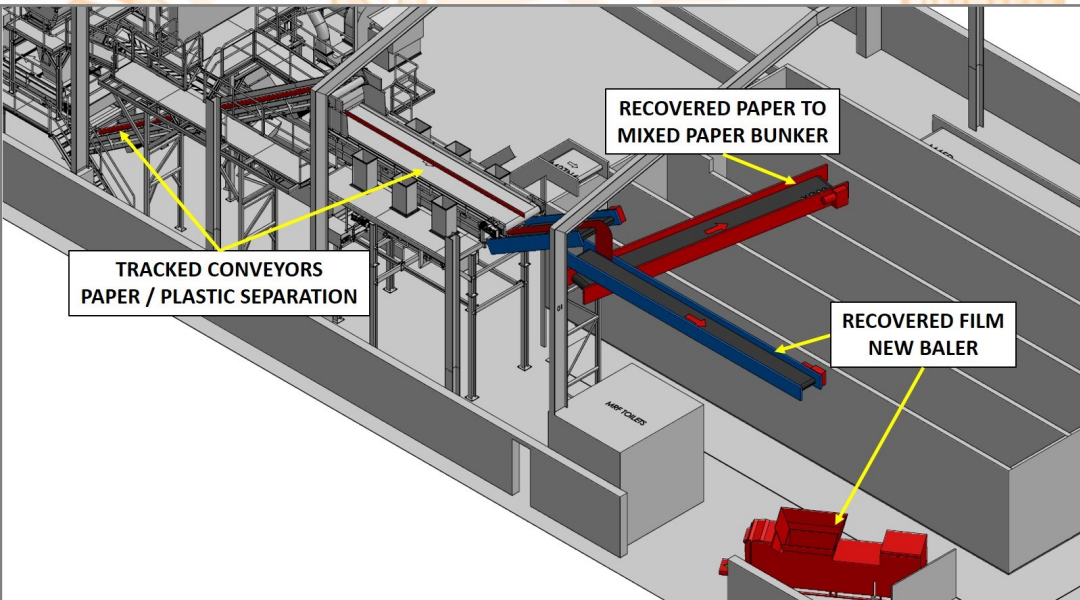
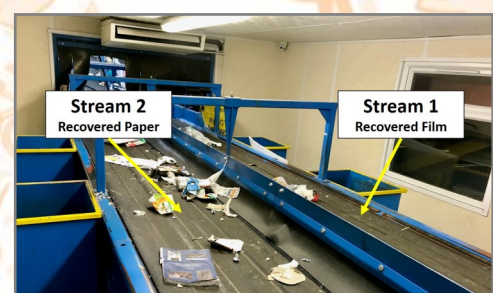
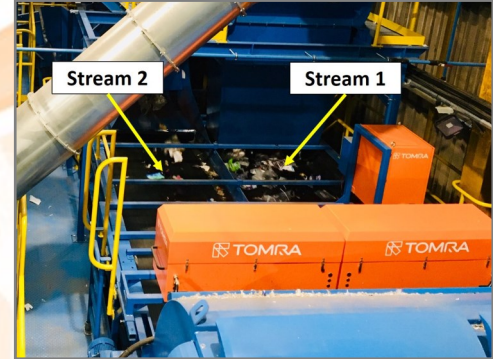
Stream 1: Small pieces of paper which travelled through rather than over our paper screens.

Stream 2: Material collected from the 4 optical separators removing non-fibre contamination from the paper.



This “paper recovery” optical is divided or “tracked” so stream 1 & 2 are separated on the optical belt (see right).

When designing the plant upgrade we expected the 4 optical separators removing contamination from the mixed paper would also remove some paper (collateral damage). We were pleasantly surprised by how little paper was lost in the clean-up process so the majority of contamination removed is plastic film.



## RESPONDING TO REPAK INITIATIVES

When Repak announced that they are not reaching their recycling targets we worked with McDonald International to modify the fibre-recovery optical to, instead, extract plastic film. It was possible to change the optical separator so one side of the track targets paper (stream 1) and the other side recovers plastic film. We had to maintain material separation as the two streams were conveyed more than 20 meters to a Quality Control cabin. Material separation continues through the cabin and we divert the recovered film into a new Baler which was purchased for this product.

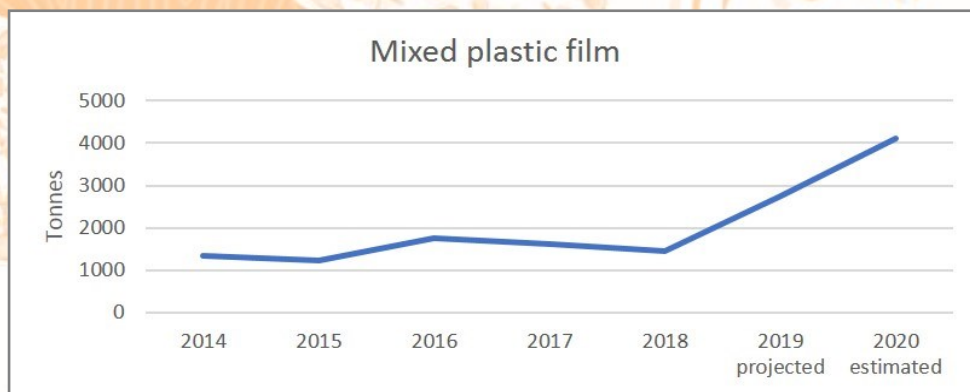
This upgrade, which is operating since April 2019, is **recovering an additional 50 tonnes of mixed plastic film each week** (2,600 t/year). See graph right:

## PLASTIC FILM PRODUCT

Our mixed plastic film was exported to 6 different outlets in 2018 / 2019 in Portugal, Turkey and United Kingdom. One of the outlets is granulating the film and making a black PE irrigation pipe for the domestic market. The 100% recycled pipe has an expected working life of 15 years and can be fully recycled when it is replaced.

Our sorted MRF film has a high percentage LDPE which makes it attractive to producers of PE products.

We will continue to focus on finding European based plastic recycling facilities to recycle this product.

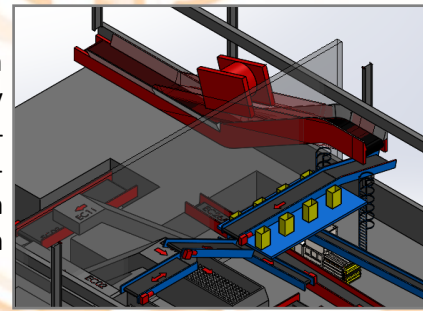




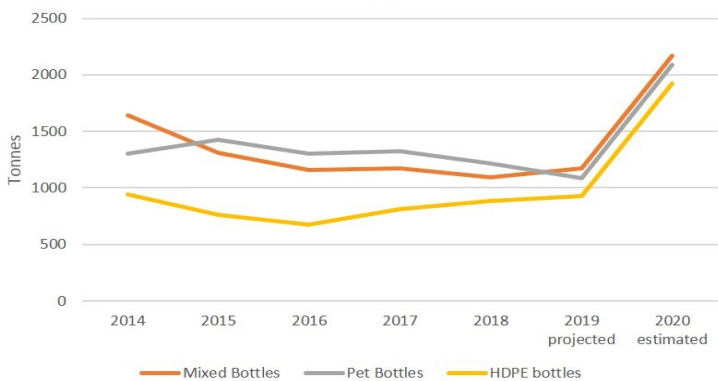
## 2019 UPGRADES

### Commercial Recycling Pre-treatment

In October 2019 we will install a new processing line designed specifically to deal with mixed dry recyclables sourced from commercial outlets. This material is significantly more contaminated than household sourced material so we added a front-end feed, metering drum, picking station and baler to allow us remove as much contamination as possible before the commercial material enters the main plant. The upgrade will add **an extra 12 staff per day** to our current operation and we estimate an **improvement in throughput of 2t/hr** in the MRF thanks to this pre-treatment.



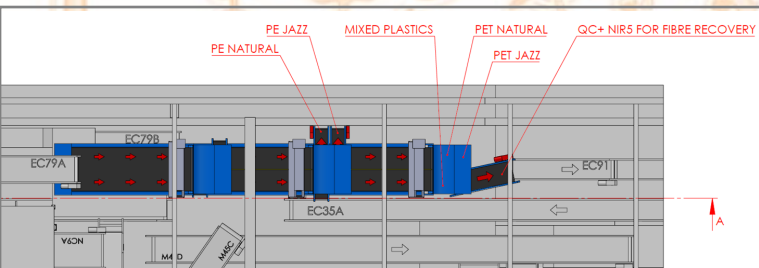
3D Line upgrade



### 3D Line Upgrade

In November 2019 we will install €1.5M worth of new equipment to upgrade our 3D line. The project involves replacing our 900mm wide Eddy currents with two new 1.5M wide Eriez eddy currents and we will replace the American-made "Aladdin" optical separators with 3 new Tomra optical separators. The second two optical separators in the series will be tracked, allowing us recover 5 different types of plastic from the stream (HDPE natural, HDPE coloured, PET clear, PET coloured, Pots/Tubs/Trays).

IPR sent sample bags of unsorted 3D material to Tomra's test facility in Germany in December 2018 and used the results of the trial to design this upgrade. We know our existing optical separators allow approximately 700kg/hr of plastic enter our plant waste, they are very inefficient. The upgrade will **recover at least 500kg/hr** of this material, produce much cleaner product and give us the ability to respond to the world plastic markets. This upgrade is expected to produce an **extra 3,000-4,000 more tonnes per year of 3D plastics**.



## Renes Recycling

### Building relationships, growing the business.

In September 2018 Beauparc acquired Renes, a commercial recycling company based in Rotterdam. Renes is a very well established and highly reputable organisation that has been in business for over 60 years. The paper and plastic side of the business handles over 60,000 tonnes of material each year but Renes also services the largest fruit and vegetable distribution park in Europe. They offer a bespoke service to fruit distribution companies whereby both packaged and unpackaged fruit and vegetables are collected and processed to remove the packaging for recycling while the remaining product is sent for anaerobic digestion, then converted to biogas for electricity and heat. That part of Renes business processes more than 50,000 tonnes per year.

The acquisition of Renes has opened many new outlets for paper and plastic products exported from Ireland. In **May 2019, for the first time ever, 100% of the mixed paper product sold by the MRF in Ballymount was processed by paper mills within the EU.** The mixed paper is clean enough to compete with source-segregated paper in the European market.

