

Veolia Hollingdean MRF - Update 01/2021

Plastics Pots, Tubs and Trays Recycling

1. Executive Summary

Hollingdean Materials Recovery Facility started to operate in 2008, servicing primarily East Sussex County Council and Brighton and Hove City Council. Currently, this facility sorts circa 20,000 tonnes per year of Dry Mixed Recycling (DMR) into Cardboard, Mixed Paper, Mixed Bottles, Ferrous Materials and Non Ferrous Materials.

The Waste Collection Authority in Brighton and Hove City Council has requested Veolia to update options to include plastic Pots, Tubs and Trays (PTTs) into the household kerbside collection.

Veolia has reviewed the market conditions and the technical requirements that such a change would entail.

According to Veolia's experience in other municipal contracts, the inclusion of PTT into the recycling bin would represent an increase of up to 2% of the total input material, of which only 0.5% is valuable PP plastics. The rest of the PTT (Polystyrene, composite plastics, etc) would need to go to energy recovery or landfill.

Additionally, the addition of plastic PTT would likely impact the quality of the fibre due to organic cross contamination and plastic contamination but also the mixed bottles which would then contain other types of plastics.

This report provides an overview of the capital and operational costs required to adapt the Hollingdean MRF process in order to provide the ability to recover the PP fraction from the additional PTT fraction.

2. PTT Stream Characterisation

Based on existing Veolia municipal contracts, it has been calculated that the PTT stream will add additional tonnages (up to 2% of the total input stream) with the composition as described in the table below.

Breakdown of Consumer Packaging by Format and Polymer						
Post-Consumer PTT	PP	PET	PS	PVC	Other	Total
	22%	60%	10%	7%	1%	100%
Source - "PlasFlow 2017" Report (WRAP / VALPAK)						

As mentioned above, only the PP has a stable recycling market in the UK and on the continent. Despite recent effort, of which Veolia is taking part, the recyclability of the PET Trays has not yet been demonstrated at scale. The PS and the PVC are not recyclable and no infrastructure is planned for it as the industry guidance is to avoid these polymers as much as possible.

It is important to note that the vast majority of the plastic PTT is placed on the market to package food. Veolia's experience is that adding PTT would, despite communication effort, inevitably add food waste contamination in the MRF input and cause quality issues for the mixed fibre grade.

3. CAPEX and OPEX estimates

A preliminary assessment of the equipment required for the process to cope with the new materials had been investigated. The current setup with one 2m optical sorter to extract plastics and a picking cabin with space for 2 operatives does not allow the efficient extraction of additional plastic material and its quality control. Due to the increased plastic content in the input, the optical sorter is operating above its design capacity. Adding further plastic into the plant would certainly impact the plastic recovery efficiency of all plastics (including the bottles) and more plastics would reach the following optical sorter which controls the quality of part of the fibre.

Additionally, there is a concern that large plastic trays, or films, would find its way into the fibre via the trommel. This would require, at the minimum, additional operatives to control the fibre quality on each line.

The addition of plastic PTT into the input stream would then require the upgrade of the optical sorter (to a 2.8m wide unit) along with the extension of the existing picking cabin. This is mainly due to the additional volume which is, in the main due to the low density of plastic, consequently the costs are:

- Total CAPEX: c.£700,000
- Total OPEX: c. £80,000 per annum (4 additional operatives per shift)

Any upgrade of the plant will require shutdown of the facility for an estimated 15 working days.

4. Risks identified

Increasing the plastic content of the input has some risks attached summarised below:

- a. Overload of the 3D line with potential to decrease recovery and / or quality of Mixed bottles, Mixed Paper, Ferrous and Non Ferrous.
- b. Mixed Paper quality will be put at risk since the last unit of the process recovers Mixed Paper without manual Quality Control.
- c. Mixed Bottle Quality will be at risk. More PTTs will make their way to the bunker, decreasing the quality of the product.
- d. Quality requirements for Plastic and Paper are very strict and likely to demand higher quality products in the forthcoming months (Basel Convention Change). A decrease in quality of these commodities might compromise current outputs or revenues.

- e. Mixed Paper Quality decrease represents a higher risk than Mixed Bottles because of the volume produced (8,859 tpa vs 1,115 tpa of Mixed Bottles)
- f. Feasibility of the installation of a bigger optical unit needs to be probed.
- g. Mixed Paper upgrade planned for Hollingdean MRF is likely to compromise the feasibility of this modification due space constrictions.
- h. Residue Rate will increase because of cross contamination and non-recovered PTT.
- i. Output storage capacity shall be increased to accommodate at least 1 load of baled PP, which will require additional outdoor storage considering the very limited storage indoors.

5. Conclusion

Having considered all the risks identified and impact on net revenues from the inclusion of the PTTs into the recycling bin, Veolia would not, from an economical and compliance point of view, recommend the adaptation of Hollingdean MRF to accept PTTs into the Dry Mixed Recycling.

The market requirement in terms of quality for the fibre and plastic grades are getting regularly increased and further restrictions on exports to come (i.e. Basel Convention) could mean that a mixed bottles grade containing other polymers than HDPE, PET and PP would be banned from export.

However, Veolia will continue to work with Brighton and Hove City Council to explore whether there is an alternative approach for the collection of PTT as we have been doing thus far.

