

## Appendix 9: Case study - analysis of plastics composition at a secondary level of categorisation

The work on waste categorisation of all collated datasets was limited to the development of a standard set of primary categories. These mainly reflected the material groupings found in the municipal waste stream. All of the collated compositional studies, regardless of which municipal waste stream that they related to, contained a variety of detailed sub-categories. There is therefore potential to provide compositional detail beyond the primary level within the national estimate; however, this task involves reconciling a larger number of different descriptors across all collated studies, which represents a challenging task.

In order to assess the potential for working at the secondary level, the full category listings for all plastic fractions from 70 of the collated kerbside studies that combined residual and dry recyclables were examined in detail. A standard set of more detailed categories was drawn-up and the collated results from each of the 70 studies were allocated into these categories (Table A2.1). A number of studies sub-divided the categories further still (e.g. PET clear, PET coloured), but the majority included four subcategories: bottles, non-bottle rigid packaging, non-bottle rigid non packaging and a combined category for bags and film. Beyond this level of categorisation it was difficult to work a common system across the different studies as there was little consistency in how categories were further sub-divided, (particularly so with plastic packaging film, bags and sacks). The basic four categories were therefore adopted for the secondary level classification of plastics.

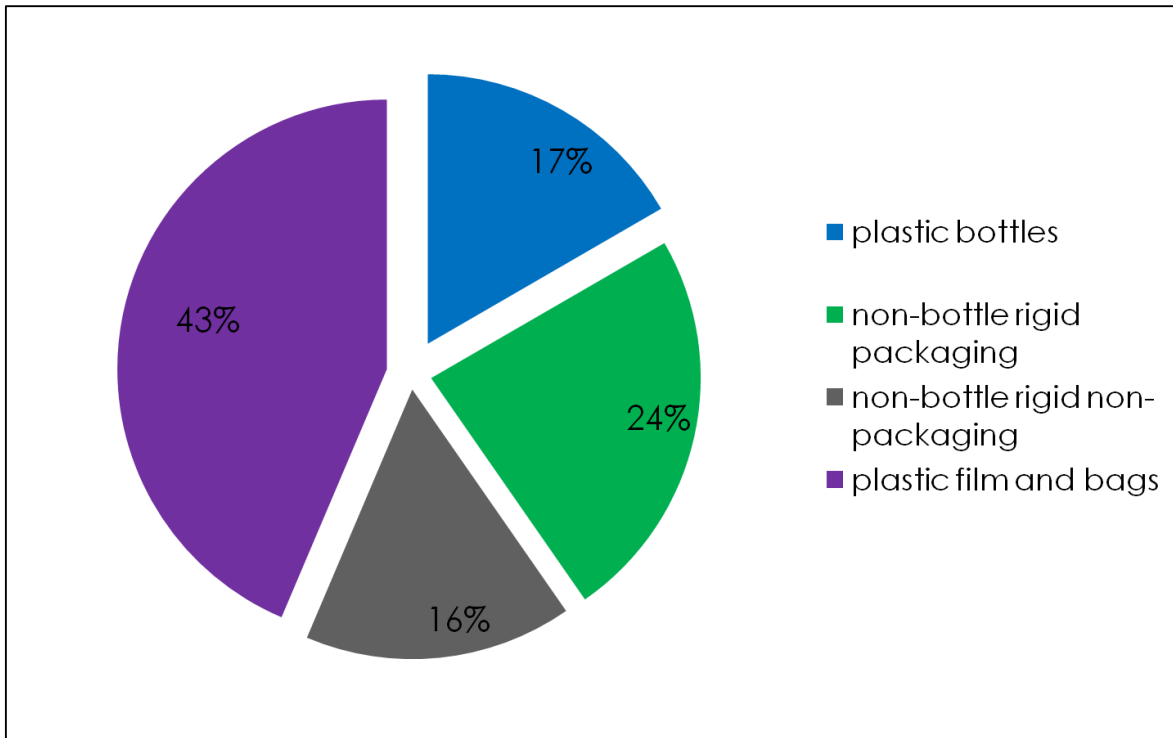
**Table 9.1 Listing of secondary level plastics categories**

<b>Dense plastics</b>	<b>1. Bottles</b>  PET HDPE PVC
	<b>2. Non bottle packaging</b> <b>3. Non bottle non packaging</b>
<b>Film</b>	<b>4. Bags / sacks and other film</b>

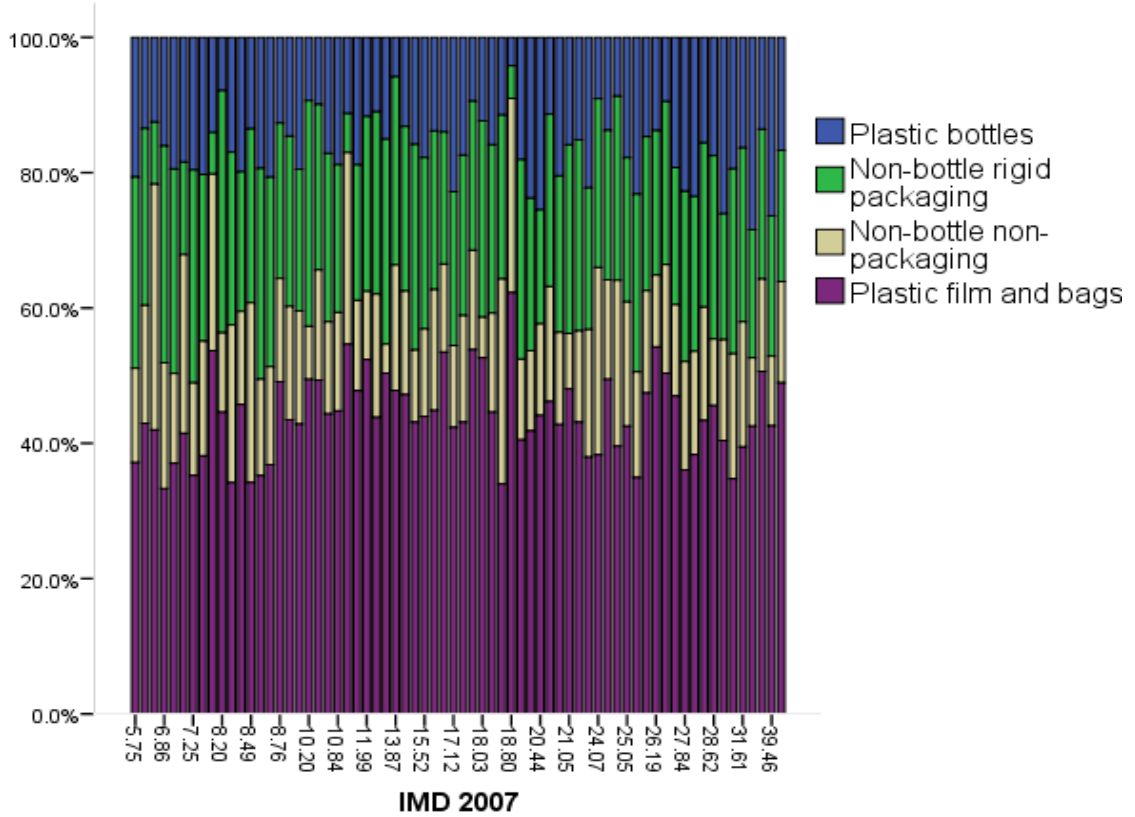
Figure 9.1 provides a breakdown of % weight across these five secondary categories. Plastic bottles, the category most likely to be targeted for recycling, only accounted for 17% by weight. The analysis suggested that the dominant fraction was plastic film and bags (43%), followed by non-bottle rigid packaging (e.g. yogurt pots, margarine tubs, plastic food trays).

Having compiled a standard set of plastics categories at the secondary level, the data were analysed for any patterns in the variation of plastic categories by district type. In Appendix 4.1.2 it was found that the primary plastics category showed little variation across the collated kerbside studies, indicating perhaps that the variability is greater at the secondary level. Figure 9.2 presents variation in % weight across the four fractions by IMD score, with bottles at the top and film at the bottom. No pattern emerges between IMD gradient and plastic composition.

**Figure 9.1: Plastics composition split into four secondary level categories (% wt), 70 English kerbside studies**



**Figure 9.2 Plastics composition split into four secondary level categories (% wt), 70 English kerbside studies, by IMD score 2007 (higher deprivation to right)**



A final piece of analysis tested the relationship between the collection system classification (see Appendix 4.1.2) and the composition of plastics in samples taken from dry recyclable kerbside collections; see Figure 9.3 below. From this it was concluded that schemes that targeted bottles only, receive significant quantities of non-bottle rigid plastics, including non-packaging materials.

This case study in secondary level categorisation has shown the potential for more information to be gleaned from the collated studies than can be gained from primary level categories. In this case, the analysis has produced some insights into the kerbside composition of plastics and the non-target materials that 'bottle only' collections receive.

**Figure 9.3 Yield of different plastics categories by recycling system type**

