



Keep Scotland  
Beautiful

# Composition of litter in Scotland



Survey by Keep Scotland Beautiful  
Commissioned by INCPEN

2016



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# 1. Introduction

**In 2013 the Scottish Government consulted on a new national litter strategy, Towards a Litter-Free Scotland. The final version of the strategy was published in summer 2014. Assuming that the strategy follows the approach set out in the consultation, INCPEN is very supportive of its comprehensive approach to tackling all types of litter, incorporating education, enforcement and provision of infrastructure and cleaning.**

It is important to obtain data, not only to provide a benchmark against which achievements can be measured, but also so that targeted plans can be designed to reduce the incidence of deliberate, thoughtless litter and to clear up careless, accidental littering.

## 2. Aim

**To provide an understanding of the composition and distribution of litter by recording the type and number of littered items in a representative selection of sites and to compare the results of two surveys conducted in 2014 and 2016.**

## 3. Background

**Keep Scotland Beautiful have been collecting data on local environmental quality and cleanliness from the Shetland Islands to the Scottish Borders for the past twelve years using LEAMS (Local Environmental Audit and Management System). This was originally developed to help individual local authorities meet their obligations under the Environmental Protection Act 1990 and is a vital element for improving the health and wellbeing of Scotland's communities.**

Due to the proven experiences and capabilities, INCPEN (The Industry Council for research on Packaging & the Environment) commissioned Keep Scotland Beautiful to survey a number of representative sites and record the amount and composition of packaging related litter in order to provide information to help tackle the problem.

## 4. Survey method

**Keep Scotland Beautiful used the same methodology first used in 2014, for its presence/absence surveys. A survey of 120 sites (30 each in Edinburgh, Falkirk, Renfrewshire, Inverness) was carried out in October 2016.**

Sampling was split between land use types defined in the Code of Practice on Litter and Refuse (Scotland) 2006:

- Zone 1 Town centres, major transport routes, education centres > 1,000 students/pupils
- Zone 2 High density residential areas, education centres < 1,000 students/pupils
- Zone 3 Low density residential areas
- Zone 7 Rural roads linking towns and villages

## 5. Summary of 2014 and 2016 survey results

We appreciate that a count of littered items does not distinguish between 'freshly-thrown' litter and accumulated litter. Chewing gum and cigarette ends are particularly difficult to clear and therefore do accumulate.

The table below shows the total litter count per category, the percentage compared to overall item count and the difference in results between years 2014 and 2016.

**Table 1 - Number of smoking related litter items**

| Type of litter        | Number of items in 2016 | Number of items in 2014 | % of overall litter in 2016 | % of overall litter in 2014 | Actual increase or decrease | % increase or decrease |
|-----------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|
| Cigarette ends        | 1,974                   | 1,982                   | 35.0                        | 35.5                        |                             |                        |
| Cigarette litter      | 61                      | 62                      | 1.1                         | 1.1                         |                             |                        |
| Matches               | 11                      | 63                      | 0.2                         | 1.1                         |                             |                        |
| Other smoking related | 4                       | 94                      | 0.1                         | 1.7                         |                             |                        |
| <b>Total smoking</b>  | <b>2,050</b>            | <b>2,201</b>            | <b>36.4</b>                 | <b>39.4</b>                 | <b>-151</b>                 | <b>-6.9%</b>           |

**Table 2 - Number of non-alcoholic drink related litter items**

| Type of litter                    | Number of items in 2016 | Number of items in 2014 | % of overall litter in 2016 | % of overall litter in 2014 | Actual increase or decrease | % increase or decrease |
|-----------------------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|
| Soft drink cans                   | 84                      | 103                     | 1.5                         | 1.8                         |                             |                        |
| Drinks cups                       | 27                      | 42                      | 0.5                         | 0.8                         |                             |                        |
| Drinks carton                     | 10                      | 35                      | 0.2                         | 0.6                         |                             |                        |
| Plastics soft drinks bottles      | 84                      | 92                      | 1.5                         | 1.6                         |                             |                        |
| Soft drink bottle tops            | 29                      | 21                      | 0.5                         | 0.4                         |                             |                        |
| Drinking straws                   | 23                      | 26                      | 0.4                         | 0.5                         |                             |                        |
| Other drinks related              | 5                       | 11                      | 0.1                         | 0.2                         |                             |                        |
| <b>Total non-alcoholic drinks</b> | <b>262</b>              | <b>330</b>              | <b>4.6</b>                  | <b>5.9</b>                  | <b>-68</b>                  | <b>-20.6%</b>          |

**Table 3 - Number of alcoholic drink related litter items**

| Type of litter                | Number of items in 2016 | Number of items in 2014 | % of overall litter in 2016 | % of overall litter in 2014 | Actual increase or decrease | % increase or decrease |
|-------------------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|
| Alcoholic drinks cans         | 16                      | 13                      | 0.3                         | 0.2                         |                             |                        |
| Alcoholic bottle tops         | 2                       | 8                       | 0.0                         | 0.1                         |                             |                        |
| Glass alcohol bottles         | 8                       | 4                       | 0.1                         | 0.1                         |                             |                        |
| Other                         | 5                       | 4                       | 0.1                         | 0.1                         |                             |                        |
| <b>Total alcoholic drinks</b> | <b>31</b>               | <b>29</b>               | <b>0.5</b>                  | <b>0.5</b>                  | <b>+2</b>                   | <b>+6.9</b>            |

**Table 4 - Number of food packaging and food related litter items**

| Type of litter                       | Number of items in 2016 | Number of items in 2014 | % of overall litter in 2016 | % of overall litter in 2014 | Actual increase or decrease | % increase or decrease |
|--------------------------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|
| Confectionery packaging              | 94                      | 177                     | 1.7                         | 3.2                         |                             |                        |
| Lolly/ice cream related              | 6                       | 4                       | 0.1                         | 0.1                         |                             |                        |
| Snack packaging                      | 32                      | 14                      | 0.6                         | 0.3                         |                             |                        |
| Fast food packaging                  | 33                      | 54                      | 0.6                         | 1.0                         |                             |                        |
| Food and drink                       | 12                      | 5                       | 0.2                         | 0.1                         |                             |                        |
| other                                | 6                       | 5                       | 0.1                         | 0.1                         |                             |                        |
| <b>Total food packaging and food</b> | <b>183</b>              | <b>259</b>              | <b>3.2</b>                  | <b>4.6</b>                  | <b>-76</b>                  | <b>-29.3%</b>          |

**Table 5 - Number of gum related litter items**

| Type of litter   | Number of items in 2016 | Number of items in 2014 | % of overall litter in 2016 | % of overall litter in 2014 | Actual increase or decrease | % increase or decrease |
|------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|
| Gum staining     | 2,770                   | 2,480                   | 49.1                        | 44.4                        |                             |                        |
| Gum wrappers     | 2                       | 20                      | 0.0                         | 0.4                         |                             |                        |
| Solid gum        | 0                       | 18                      | 0.0                         | 0.3                         |                             |                        |
| <b>Total gum</b> | <b>2772</b>             | <b>2518</b>             | <b>49.2</b>                 | <b>45.1</b>                 | <b>+254</b>                 | <b>+10.1%</b>          |

**Table 6 - Number of mixed litter items**

| Type of litter            | Number of items in 2016 | Number of items in 2014 | % of overall litter in 2016 | % of overall litter in 2014 | Actual increase or decrease | % increase or decrease |
|---------------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|
| ATM slips                 | 9                       | 1                       | 0.2                         | 0.0                         |                             |                        |
| Lottery related           | 4                       | 4                       | 0.1                         | 0.1                         |                             |                        |
| Till receipts             | 15                      | 15                      | 0.3                         | 0.3                         |                             |                        |
| Travel tickets            | 3                       | 7                       | 0.1                         | 0.1                         |                             |                        |
| Post Office elastic bands | 22                      | 16                      | 0.4                         | 0.3                         |                             |                        |
| Supermarket bags          | 11                      | 8                       | 0.2                         | 0.1                         |                             |                        |
| Other retail bags         | 6                       | 18                      | 0.1                         | 0.3                         |                             |                        |
| Newspaper/magazines       | 1                       | 15                      | 0.0                         | 0.3                         |                             |                        |
| Other paper               | 125                     | 25                      | 2.2                         | 0.4                         |                             |                        |
| Paper tissues             | 56                      | 44                      | 1.0                         | 0.8                         |                             |                        |
| Clothing                  | 1                       | 4                       | 0.0                         | 0.1                         |                             |                        |
| Warehousing               | 0                       | 3                       | 0.0                         | 0.1                         |                             |                        |
| Dog faeces                | 4                       | 13                      | 0.1                         | 0.2                         |                             |                        |
| Bagged dog faeces         | 0                       | 1                       | 0.0                         | 0.0                         |                             |                        |
| General packaging         | 11                      | 5                       | 0.2                         | 0.1                         |                             |                        |
| Commercial packaging      | 10                      | 5                       | 0.2                         | 0.1                         |                             |                        |
| Other litter              | 62                      | 68                      | 1.1                         | 1.2                         |                             |                        |
| <b>Total mixed</b>        | <b>340</b>              | <b>252</b>              | <b>6.0</b>                  | <b>4.5</b>                  | <b>+88</b>                  | <b>+34.9%</b>          |

**Table 7 - Total number of litter items**

| Type of litter      | Number of items in 2016 | Number of items in 2014 | % of overall litter in 2016 | % of overall litter in 2014 | Actual increase or decrease | % increase or decrease |
|---------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|
| <b>Total Litter</b> | <b>5,638</b>            | <b>5,589</b>            | <b>100</b>                  | <b>100</b>                  | <b>+49</b>                  | <b>+0.9%</b>           |

Table 8 - Number of all litter items

| Type of litter                       | Number of items in 2016 | % of overall litter in 2016 |
|--------------------------------------|-------------------------|-----------------------------|
| Cigarette ends                       | 1,974                   | 35.0                        |
| Cigarette litter                     | 61                      | 1.1                         |
| Matches                              | 11                      | 0.2                         |
| Other smoking related                | 4                       | 0.1                         |
| <b>Total smoking</b>                 | <b>2,050</b>            | <b>36.4</b>                 |
| Soft drink cans                      | 84                      | 1.5                         |
| Drinks cups                          | 27                      | 0.5                         |
| Drinks carton                        | 10                      | 0.2                         |
| Plastics soft drinks bottles         | 84                      | 1.5                         |
| Soft drink bottle tops               | 29                      | 0.5                         |
| Drinking straws                      | 23                      | 0.4                         |
| Other drinks related                 | 5                       | 0.1                         |
| <b>Total non-alcoholic drinks</b>    | <b>262</b>              | <b>4.6</b>                  |
| Alcoholic drinks cans                | 16                      | 0.3                         |
| Alcoholic bottle tops                | 2                       | 0.0                         |
| Glass alcohol bottles                | 8                       | 0.1                         |
| Other                                | 5                       | 0.1                         |
| <b>Total alcoholic drinks</b>        | <b>31</b>               | <b>0.5</b>                  |
| Confectionery packaging              | 94                      | 1.7                         |
| Lolly/ice cream related              | 6                       | 0.1                         |
| Snack packaging                      | 32                      | 0.6                         |
| Fast food packaging                  | 33                      | 0.6                         |
| Food and drink                       | 12                      | 0.2                         |
| Other                                | 6                       | 0.1                         |
| <b>Total food and food packaging</b> | <b>183</b>              | <b>3.2</b>                  |
| Gum staining                         | 2,770                   | 49.2                        |
| Gum wrappers                         | 2                       | 0.2                         |
| Solid gum                            | 0                       | 0.1                         |
| <b>Total gum</b>                     | <b>2,772</b>            | <b>0.3</b>                  |
| ATM slips                            | 9                       | 0.1                         |
| Lottery related                      | 4                       | 0.4                         |
| Till receipts                        | 15                      | 0.2                         |
| Travel tickets                       | 3                       | 0.1                         |
| Post Office elastic bands            | 22                      | 0.4                         |
| Supermarket bags                     | 11                      | 0.2                         |
| Other retail bags                    | 6                       | 0.1                         |
| Newspaper/magazines                  | 1                       | 0.0                         |
| Other paper                          | 125                     | 2.2                         |
| Paper tissues                        | 56                      | 1.0                         |
| Clothing                             | 1                       | 0.0                         |
| Warehousing                          | 0                       | 0.0                         |
| Dog faeces                           | 4                       | 0.1                         |
| Bagged dog faeces                    | 0                       | 0.0                         |
| General packaging                    | 11                      | 0.2                         |
| Commercial packaging                 | 10                      | 0.2                         |
| Other litter                         | 62                      | 1.1                         |
| <b>Total mixed</b>                   | <b>340</b>              | <b>6.0</b>                  |
| <b>Total Litter</b>                  | <b>5,638</b>            | <b>100</b>                  |

The table below shows the results without gum and cigarette ends to give an indication of the number and type of items that are larger and therefore more visible.

**Table 9 - Number of litter items without cigarette ends and gum (solid and staining)**

| Type of litter                                     | Number of items in 2016 | % of overall litter in 2016 |
|--|-------------------------|-----------------------------|
| Cigarette litter                                   | 61                      | 4.2                         |
| Matches  | 11                      | 0.8                         |
| Other smoking related                              | 4                       | 0.3                         |
| <b>Total smoking (without ends)</b>                | <b>76</b>               | <b>5.9</b>                  |
| Soft drink cans                                    | 84                      | 5.8                         |
| Drinks cups  | 27                      | 1.9                         |
| Drinks carton                                      | 10                      | 0.7                         |
| Plastics soft drinks bottles                       | 84                      | 5.8                         |
| Soft drink bottle tops                             | 29                      | 2.0                         |
| Drinking straws                                    | 23                      | 1.6                         |
| Other drinks related                               | 5                       | 0.3                         |
| <b>Total non-alcoholic drinks</b>                  | <b>262</b>              | <b>18.0</b>                 |
| Alcoholic drinks cans                              | 16                      | 1.1                         |
| Alcoholic bottle tops                              | 2                       | 0.1                         |
| Glass alcohol bottles                              | 8                       | 0.5                         |
| Other  | 5                       | 0.3                         |
| <b>Total Alcoholic drinks</b>                      | <b>31</b>               | <b>2.1</b>                  |
| Confectionery packaging                            | 94                      | 6.4                         |
| Lolly/ice cream related                            | 6                       | 0.4                         |
| Snack packaging                                    | 32                      | 2.2                         |
| Fast food packaging                                | 33                      | 2.3                         |
| Food and drink                                     | 12                      | 0.8                         |
| Other  | 6                       | 0.4                         |
| <b>Total food and food packaging</b>               | <b>183</b>              | <b>12.6</b>                 |
| Gum wrappers                                       | 2                       | 0.1                         |
| ATM slips  | 9                       | 0.6                         |
| Lottery related                                    | 4                       | 0.3                         |
| Till receipts                                      | 15                      | 1.0                         |
| Travel tickets                                     | 3                       | 0.2                         |
| Post Office elastic bands                          | 22                      | 1.5                         |
| Supermarket bags                                   | 11                      | 0.8                         |
| Other retail bags                                  | 6                       | 0.4                         |
| Newspaper/magazines                                | 1                       | 0.1                         |
| Other paper  | 125                     | 8.6                         |
| Paper tissues                                      | 56                      | 3.8                         |
| Clothing   | 1                       | 0.1                         |
| Warehousing  | 0                       | 0.0                         |
| Dog faeces   | 4                       | 0.3                         |
| Bagged dog faeces                                  | 0                       | 0.076                       |
| General packaging                                  | 11                      | 0.8                         |
| Commercial packaging                               | 10                      | 0.7                         |
| Other litter                                       | 62                      | 4.3                         |
| <b>Total mixed</b>                                 | <b>340</b>              | <b>23.3</b>                 |
| <b>Total litter without gum and cigarette ends</b> | <b>894</b>              | <b>100</b>                  |

Figure 1 - Percentage of overall litter by category

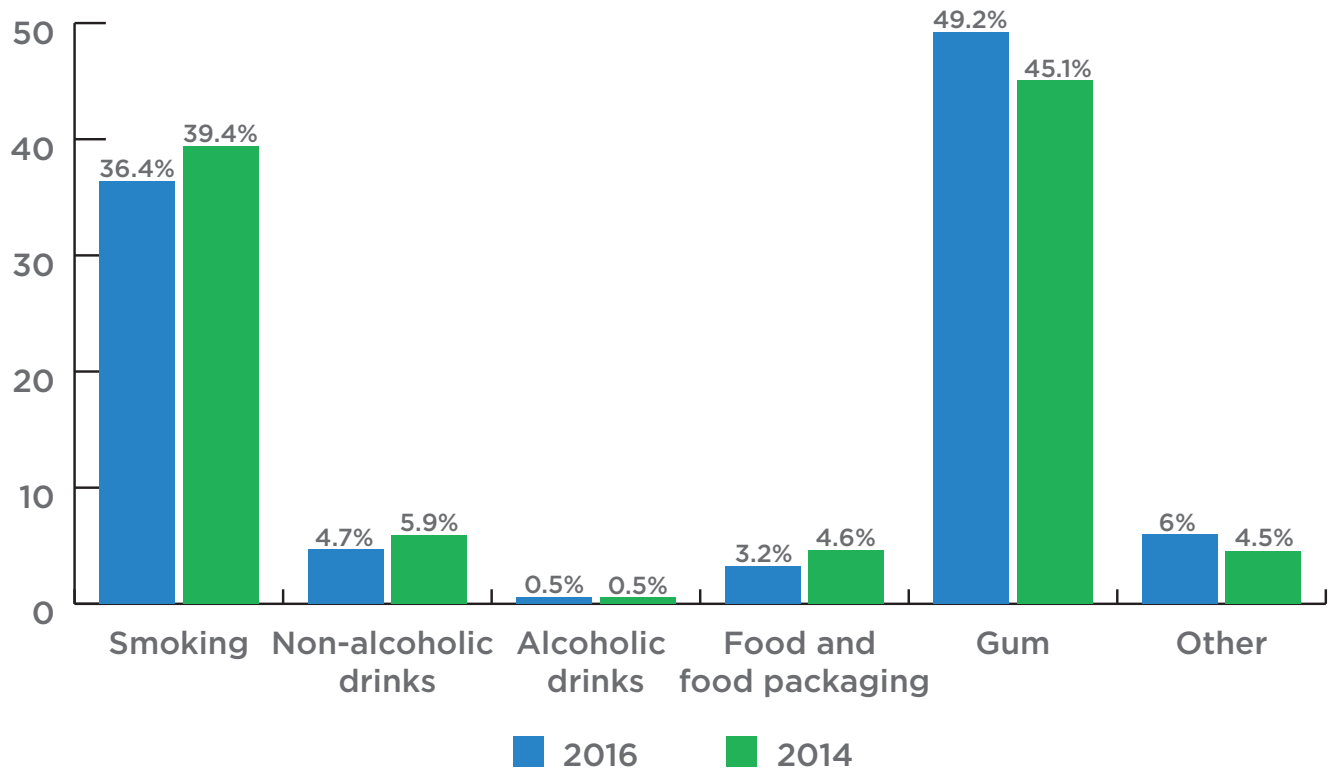
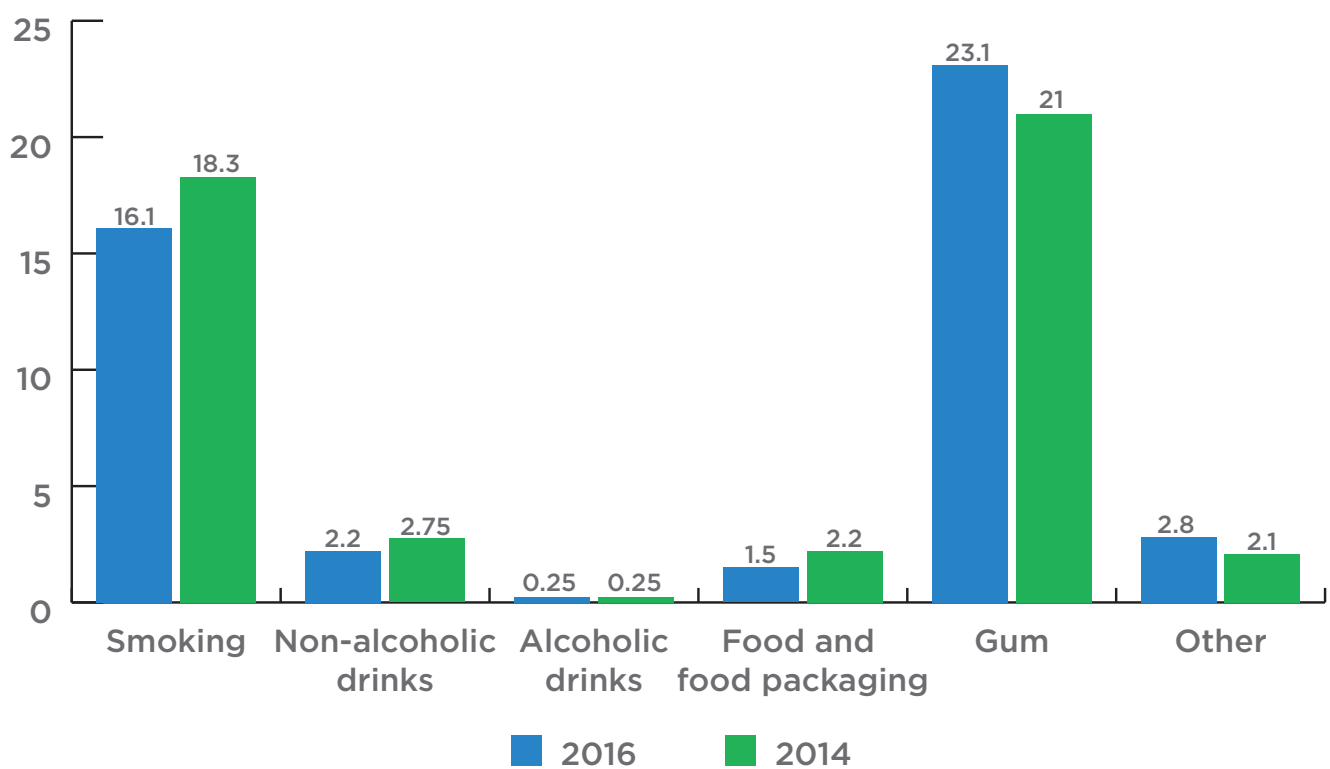


Figure 2 - Average number of litter items per site





## 6. Changes/trends in litter types from 2014 to 2016

### Smoking related

The most frequently found litter types over the 120 transects in both 2014 and 2016 were smoking and gum related litter. During the 2016 survey, cigarette related items were recorded 2,050 times (36%) of which 96.3% were cigarette ends. This is a decrease on the actual number of smoking related items compared to the 2014 survey where 2,201 instances were recorded. However, the percentage of smoking related litter that is cigarette ends has increased in 2016 by 6.3%.

In 2016, on average, for every 200m<sup>2</sup> of hard surface 16 cigarette ends were found, increasing to 23 in town centre areas. A similar result was recorded in 2014 where 16 cigarette ends were found on average for every 200m<sup>2</sup> of hard surface, however this rose to 30 in town centre areas. The 2016 results show an increase in cigarette ends found in more rural areas (zones 2,3 and 7) compared to the 2014 survey.

### Non-alcohol related

The 2016 survey recorded 262 non-alcohol related items which accounted for 4.6% of the total litter count. This is a decrease of 20.6% from the 330 items that were recorded in 2014.

### Alcohol related

Alcohol related items were more frequently observed, with 31 recorded, making up 0.5% of the total litter items. A little over half (51.6%) of those recorded were alcohol drinks cans and a quarter (25.8%) of these were glass alcohol bottles. This is a slight increase on the 2014 results where alcoholic drink cans made up 44.8% and glass bottles accounted for only 13.8% of total alcohol littering.

### Food and food packaging related

The most common found item relating to food and food packaging in both 2014 and 2016 was confectionery packaging. Despite it still being the most common, it has decreased dramatically from 177 items recorded in 2014 to only 94 in 2016.

Snack packaging was recorded in 14 instances in both 2014 and 2016, although this accounted for 5.4% and 17.5% respectively of the overall litter in food and packaging.

### Gum related

The 2016 survey recorded 2,772 instances of gum which accounted for 49.2% of the total litter count. This is an increase of 10.1% from 2014.

In 2016, on average, for every 200m<sup>2</sup> of hard surface, 23 pieces of gum were found, increasing to 47 in town centre areas. A very similar trend was recorded in 2014 where on average for every 200m<sup>2</sup> of hard surface, 21 pieces of gum were found, increasing to 46 in town centre areas.

### Other litter

The highest recorded item in other litter was other paper, recorded in 125 instances in 2016. This made up 2.2% of the overall litter. Paper tissues were recorded in 56 instances in 2016 and 44 in 2014.

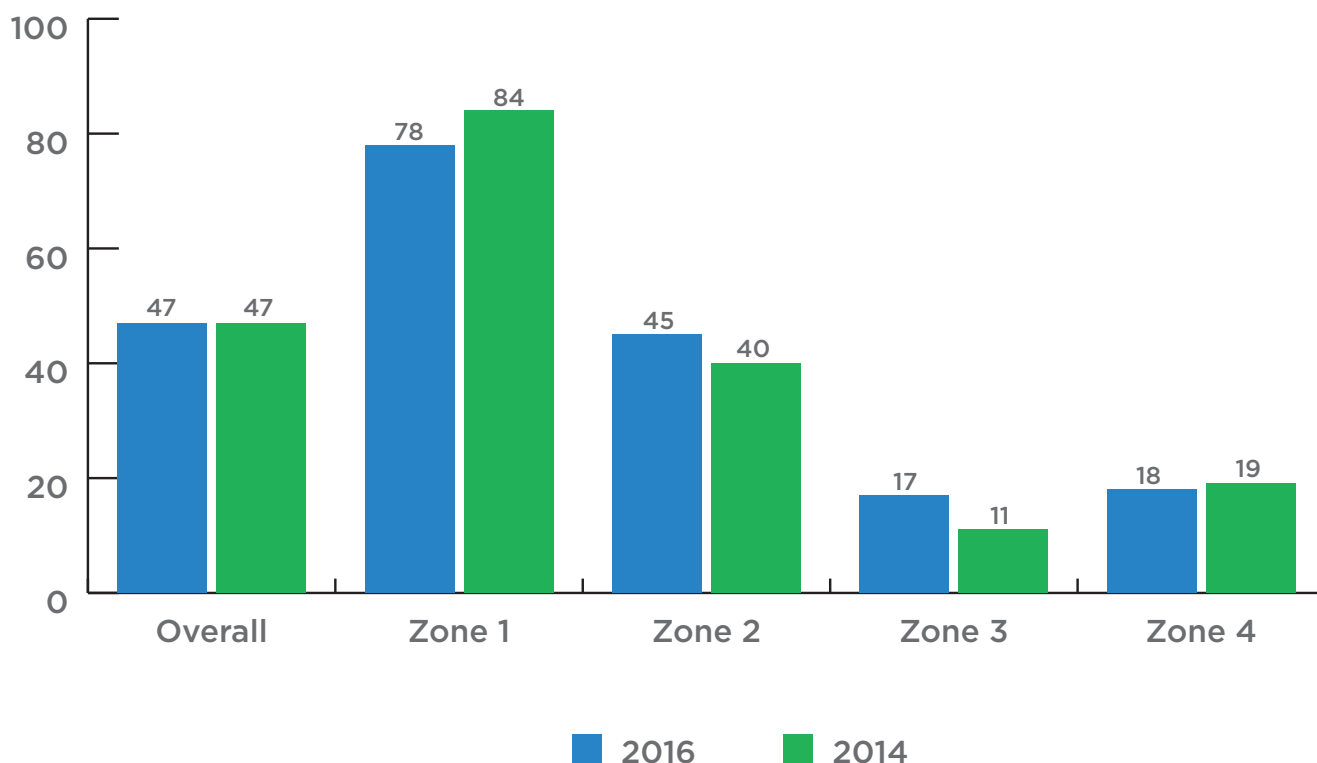
ATM slips have increased from a count of 1 in 2014 to 9 in 2016, whilst till receipts have stayed the same at 15. Supermarket bags have increased by 3, however other retail bags have decreased by two thirds from 18 in 2014 to just 6 in 2016.

Recordings of dog faeces decreased from 13 instances in 2014 to just 4 in 2016. There were no recordings of bagged dog faeces in 2016 and just 1 in 2014.

## 7. Changes/trends in zones from 2014 to 2016

Figure 3 below shows that the average number of litter items over a 200m<sup>2</sup> area have decreased from 2014 to 2016 in zones 1 (town centres and major transport links) and 7 (rural areas), however they have increased in zones 2 (high density residential areas) and 3 (low density residential areas).

Figure 3 - Average number of litter items per zone



## 8. Data used in consultation on the litter strategy

The consultation on Towards a Litter-Free Scotland referred to a study commissioned by Zero Waste Scotland, (ZWS) Scotland’s Litter Problem: The Scale and Cost of Litter and Flytipping, which stated that there are no sources of information from actual surveys of the composition of litter.

The ZWS study therefore made an estimate of amounts of litter based on the composition of municipal waste. Data was calculated by weight of material type because municipal waste is measured by weight.

However, this is not the most useful measure of litter. The weight of litter is usually irrelevant because, for example, 40 grams of plastic could be either 1 bottle or 12 yogurt pots. To tackle litter, it is essential to know the number of items.

## 9. Conclusions

**Despite cigarette ends and chewing gum being the highest recorded litter items, the results show that littering of all items needs to be tackled. Addressing just some items will not clean an area and may therefore encourage more irresponsible behaviour.**

There are still a large number of streets in Scotland recording instances of litter, whether it be a few items or more. This shows that the public is still not engaging with the message that dropping litter is an offence and that there is a need to find a way to change this mindset. This is highlighted in town centre areas where the results show public litter bins are readily available to use and are well serviced by local authorities yet are not being used by everyone.

The levels of smoking related litter in town centres and high density residential areas, throughout the four main areas surveyed has caused, not only an unsightly issue but also an environmental and health issue. Food and drink packaging was widespread and continues to affect environmental quality along strategic routes, highlighting the need for a national campaign aimed at motorists.

There is a slight increase in litter items recorded in 2016, with an increase of items recorded in zones 2 and 3, mainly residential areas. With a slight decrease in zone 1 recorded, this may indicate that litter authorities are focusing on town centres, rather than where people live.



### Keep Scotland Beautiful

Keep Scotland Beautiful is the charity that campaigns, acts and educates on a range of local, national and global environmental issues to change behaviour and improve the quality of people's lives and the places they care for. We are committed to making Scotland clean, green and more sustainable.

### INCPEN

The Industry Council for research on Packaging & the Environment was established in 1974 to study the environmental and social impact of packaging. It draws together an influential group of companies that operate throughout the supply chain and share a common interest in packaging, the environment and sustainable development.

INCPEN has campaigned against littering for many years and anti-littering messages are a key part of INCPEN's highly respected materials for schools.

INCPEN supports Keep Scotland Beautiful's view that preventing litter needs a comprehensive approach that includes educating people, provision of infrastructure, effective cleaning and law enforcement.

Keep Scotland Beautiful is the charity that campaigns, acts and educates on a range of local, national and global environmental issues to change behaviour and improve the quality of people's lives and the places they care for. We are committed to making Scotland clean, green and more sustainable.



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