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**Litter Strategy Monitoring
Wave 74 – Nov 2017
Report**

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Project No: 10705

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Section 1

Introduction

- 1.1 This document has been prepared by McGregor Tan Research to report on Wave 74 of the quarterly KESAB Litter Monitor. Surveys for the current wave were conducted in South Australia during Nov 2017.

Background

- 1.2 Regular monitoring of the litter stream is necessary in order to maintain a clear picture of its components, such as the various material types that contribute to the litter stream as well as the distribution of litter across different area types. Keep South Australia Beautiful (KESAB) had been monitoring the State's litter stream for many years, but the level of detail required during the South Australian Government's moratorium on changes to Container Deposit Legislation was considerably greater than previously recorded.
- 1.3 An expanded monitoring program commenced in February 1998, and McGregor Tan Research was commissioned at that time to undertake the actual count and to report regularly on the outcomes. This expanded program was continued throughout 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017 and is planned to continue.
- 1.4 The count was completed quarterly, with the exception of August 2002, carried out in February, May, August and November of each year until 2015. Since then, the data has been counted twice a year, in May and November.
- 1.5 During each Wave of the survey, litter counts are undertaken at 151 sites across South Australia. In conjunction with the national litter count, a review of all South Australian sites showed that 11 of the sites surveyed were disproportionately represented in the data. These original sites were found to be unusual in nature, and were replaced with 11 revised sites.
- 1.6 The data collection form utilised for the count was jointly developed by McGregor Tan Research and KESAB. A copy of this form is provided in Appendix 2.
- 1.7 In January 2003, Container Deposit Legislation (CDL) was extended to cover most beverages under 1 litre, such as juice cartons, fruit boxes, flavoured milk cartons, etc. As a result, a new method of analysing the data had to be adopted so that the changes to the CDL, and the effect on the total litter stream could be evaluated.

- 1.8 Prior to the August 2004 Litter Count, the data collection form was re-evaluated and re-designed to take into account the changes to the CDL and also to incorporate new categories for litter items that were previously coded as 'other' or in an inappropriate category. The changes that were made to the data collection form include:
- Plastic bags were separated into 3 types of litter:
 - Supermarket type lightweight shopping bags
 - Heavier glossy, typically branded carry bags
 - Sacks, sheeting and other bags
 - Bottle and can tops were moved and separated from the Miscellaneous Category into both 'plastic bottle top' and 'metal bottle and can tops'.
 - The following four litter types were also added to the Plastic Category:
 - Bread bag tags
 - Lollipop sticks
 - Spoons/ cutlery
 - Drink pouches
 - The Metal Cans category name was changed to Metal.
 - Foil take away was moved from Miscellaneous to Metal.
 - Cigarette butts were separated from the Miscellaneous Category.
 - Two extra items were added to the Paper/paperboard Category:
 - Paper bags
 - Shopper docket & related shopping paper
- 1.9 In previous waves, the data collection form separated each litter type into CDL and non-CDL categories. However, extended Container Deposit Legislation (CDL) has now meant that the litter categories alone (e.g. Flavoured milk, < 1 litre) can be used to establish whether or not beverage containers are covered under CDL or not.
- 1.10 In order to determine the effectiveness of the current CDL (as of January 2003,) and for comparative purposes, it was necessary to re-calculate the number of current CDL items from the waves prior to the extension. References to CDL items in Waves prior to Wave 17 (waves 1-16) therefore denote beverage containers that are currently covered by CDL – not the items that were covered by the legislation prior to this time.
- 1.11 During the Wave 29 Monitor estimates of the volumes for each litter item category were defined. The assignments of volume estimates to each litter item category were based on actual measurements of containers/ items, the condition that these items were most commonly found (which was based on the audits of at least three Waves), and the most common or average size of the items that were found within each

category.

- 1.12 The auditors were an important part of the volume formulation process, and they were able to record the number, size and type of different items within each category over a number of waves. Volumes ascribed to each item represented the average size for that category across all site types.
- 1.13 The final volume attributed to each litter item category furthermore took into account the fact that some items were often found crushed and weathered. For example, some drink cans and cartons are often crushed and/ or weathered when they are identified by the auditors and counted. The same volume measurements have been used for all subsequent Waves.
- 1.14 Two noteworthy events that have taken place since the beginning of this longitudinal study include:
- The deposit on drink containers was increased from 5 cents to 10 cents in September 2008.
 - The ban on thin plastic shopping bags came into effect in May 2009.
- 1.15 This document reports on Wave 74 of the longitudinal study. The litter count was conducted during Nov 2017. Section 2 of this report outlines the litter characteristics of the 151 sites, which include 11 revised sites (replacing 11 of the original 151). Appendix 1 contains charts tracking results back across all prior Monitors, and includes weighted results to facilitate meaningful comparison of results established at the 151 original sites with results derived from the 151 revised sites.

Section 2

Wave 74

Executive Summary

The following Executive Summary covers the findings of the Nov 2017 KESAB Litter Monitor (Wave 74). Where possible, results have been tracked against those derived from any previous Waves which incorporated revised sites. All 151 sites were counted during the Nov 2017 count.

Items Counted

A total of 7,246 litter items were counted across the 151 South Australian sites during Wave 74. This figure is less than the previous monitors in May 2017 (9,354), November 2016 (8,310), May 2016 (11,044) and November 2015 (12,019).

Cigarette butts remained the main contributor (32%) to the litter count with 2,295 butts counted in Wave 74, down from Wave 73 (3,214) in May 2017, Wave 72 (2,766) in November 2016, conducted at the same time in the previous year.

The overall reduction in number of items counted was demonstrated by several litter types in Wave 74, including:

- PAPER/PAPERBOARD – Newspapers & magazines – 14 items, down from 28 items in Wave 73 (50% decrease)
- MISCELLANEOUS – Tyres & pieces – 21 items, down from 38 items in Wave 73 (45% decrease)
- PAPER/PAPERBOARD – Packages & boxes – 117 items, down from 209 items in Wave 73 (44% decrease)
- PLASTIC – Takeaway & cups – 155 items, down from 270 items in Wave 73 (43% decrease)
- CIGARETTE BUTTS - Cigarette butts – 2,295 items down from 3,214 items in Wave 73 (29% decrease)
- PAPER/PAPERBOARD – Other paper (including tissues) – 1,152 items, down from 1,633 items in Wave 73 (29% decrease)
- PLASTIC – Other plastic – 717 items, down from 968 items in Wave 73 (26% decrease)
- PLASTIC - Snack bags & confectionery wrappers – 303 items, down from 400 items in Wave 73 (24% decrease)

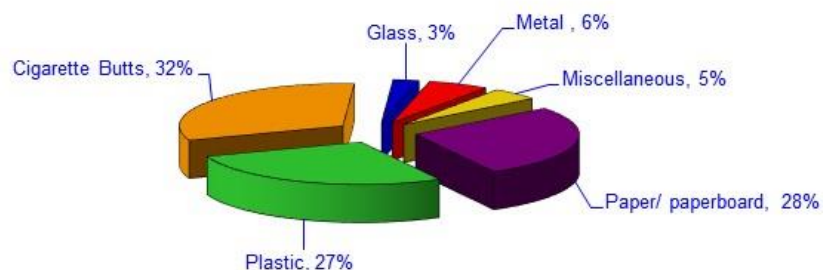
Litter types that experienced an increase in the number of items in Wave 74 included:

- GLASS – Beer, all colours of glass, 750ml+ – 64 items, up from 31 items in Wave 73 (106% increase)
- METAL – Metal pieces – 99 items, up from 71 items in Wave 73 (39% increase)
- PAPER/PAPERBOARD – Shopper dockets & related shopping paper (e.g. lists) – 134 items, up from 120 items in Wave 73 (12% increase)
- PLASTIC – Lollipop sticks – 59 items, up from 49 items in Wave 73 (20% increase)
- PLASTIC – Spoons/cutlery – 65 items, up from 40 items in Wave 73 (63% increase)
- PLASTIC – Straws – 211 items, up from 181 items in Wave 73 (17% increase)

Cigarette butts accounted for the largest proportion of all litter items counted (32%), down from 34% in Wave 73, and 33% in Wave 72, counted at the same time in the previous year. Other material types represented the following proportions of the litter items counted:

- Plastic items (27%, unchanged from 27% in Wave 73)
- Paper/ paperboard (28%, unchanged from 28% in Wave 73)
- Metal items (6%, up from 5% in Wave 73)
- Miscellaneous items (5%, up from 4% in Wave 73)
- Glass items (3%, up from 2% in Wave 73)

Items as Proportions of Total by Material Type



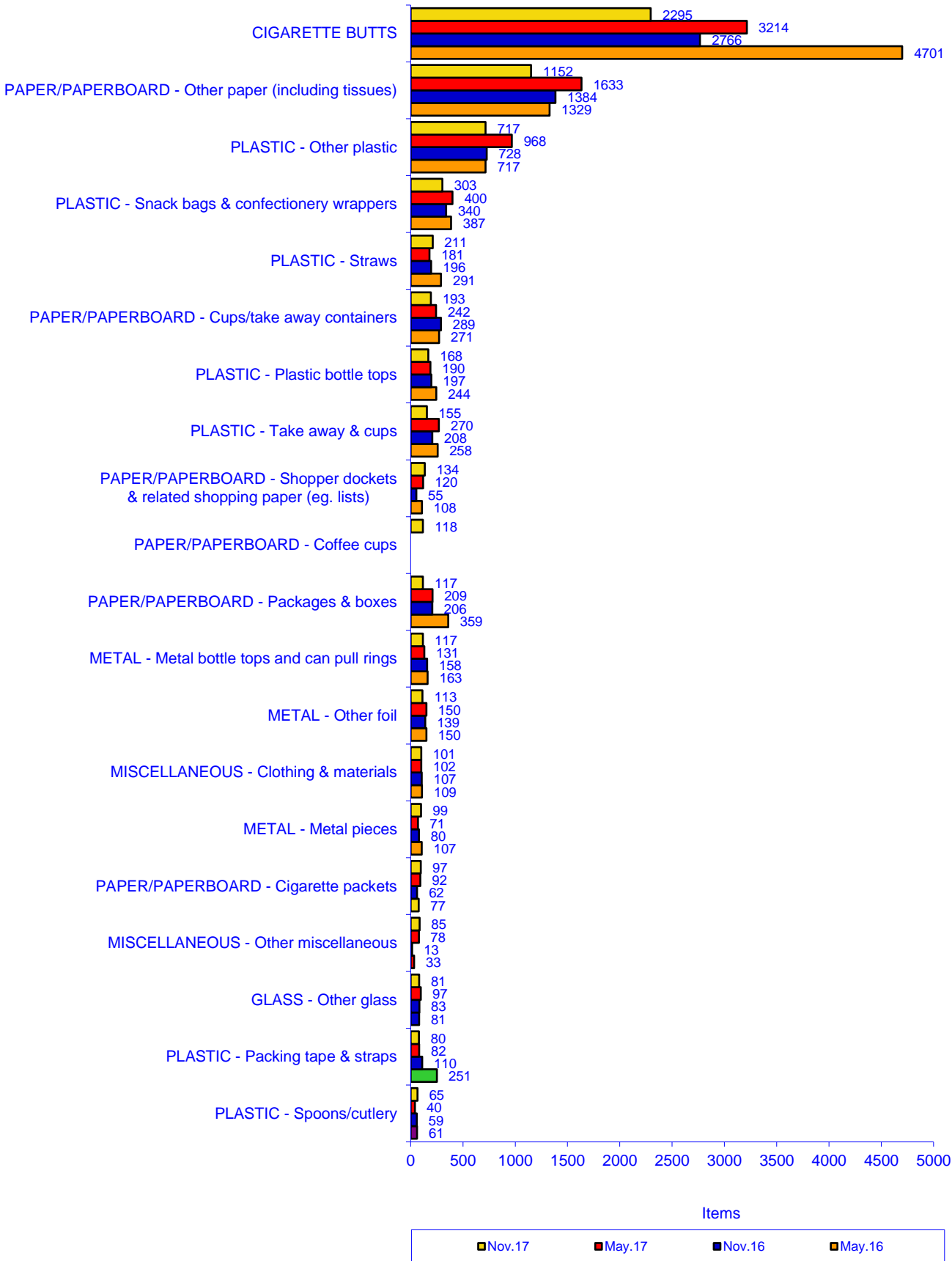
The top 20 ranking of litter type by number of items in Wave 74 was similar to the results for Wave 73, with new items entering the Top 20:

- PAPER/PAPERBOARD – Coffee cups
- PLASTIC – Spoons/cutlery

With new entrants, there are always those items that exit from the top 20 item list, in Wave 74 these items were:

- PAPER/PAPERBOARD – Paper bags
- MISCELLANEOUS - Rubber pieces (not tyres)

TOP 20 CATEGORIES - HIGHEST COUNTS



Litter Volume

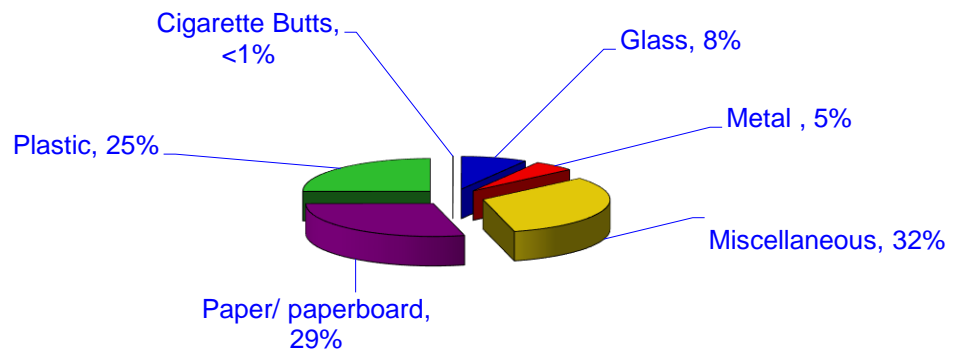
The total volume of litter recorded in Nov 2017 amounted to 0.934 cubic metres, 15% lower than the estimated litter volume of May 2017 (1.094m³), and 20% lower than November 2016 (1.164m³) conducted at the same time in the previous year.

The largest proportion of litter volume for Wave 74 was contributed by miscellaneous items, with 32% of the total estimated volume (down from 33% in Wave 73).

Other material types represented the following proportions of the total volume of litter items counted:

- Plastic items (25%, down from 29% in Wave 73)
- Paper/ paperboard items (29%, up from 25% in Wave 73)
- Metal (5%, down from 7% in Wave 73)
- Glass (8%, up from 5% in Wave 73)
- Cigarette butts (<1%, unchanged from Wave 73)

Litter Volume as a Proportion of Total Volume



MISCELLANEOUS - Illegal dumping accounted for the highest volume of litter in Wave 74, with an estimated volume of 0.288m³ (down from 0.336m³ in Wave 73). Other items associated with large estimated litter volumes in Wave 74 included:

- PAPER/PAPERBOARD - Cups/take away containers - 0.141m³ (down from 0.176m³ in Wave 73)
- PLASTIC – Containers, industrial, e.g. oil - 0.067m³ (up from nil in Wave 73)
- PLASTIC - Containers, domestic type - 0.067m³ (down from 0.175m³ in Wave 73)
- GLASS - Beer, all colours of glass, 750ml+ - 0.058m³ (up from 0.028m³ in Wave 73)
- PAPER/PAPERBOARD – Coffee cups - 0.058m³ (introduced in Wave 74)
- PAPER/PAPERBOARD – Cigarette packets - 0.021m³ (up from 0.020m³ in Wave 73)
- PAPER/PAPERBOARD – Newspapers & magazines - 0.017m³ (down from 0.033m³ in Wave 73)
- GLASS - Beer, all colours of glass, <750ml+ - 0.016m³ (down from 0.017m³ in Wave 73)

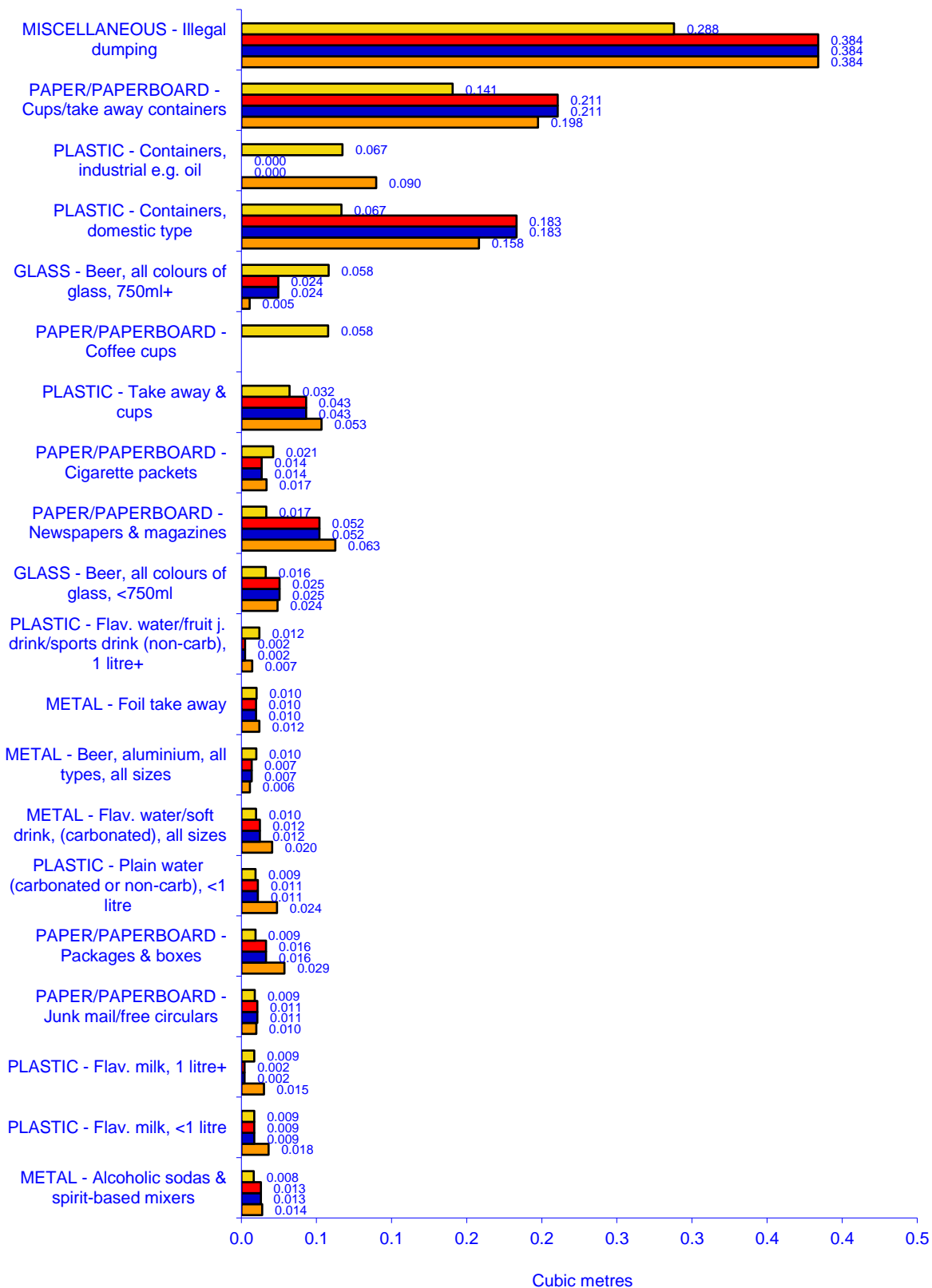
The top 20 ranking of litter items by volume in Wave 74 was similar to the results for Wave 73, with five new items entering the Top 20. These items were:

- PLASTIC – Flav. milk, 1 litre+
- METAL – Beer, aluminium, all types, all sizes
- PLASTIC – Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+
- PAPER/PAPERBOARD – Coffee cups
- PLASTIC – Containers, industrial e.g. oil

With new entrants, there are always those items that exit from the top 20 volume list, in Wave 74 the following items were removed:

- METAL – Food cans (including pet food)
- PLASTIC – Flav. water/soft drink (carbonated), <1 litre
- MISCELLANEOUS – Construction materials
- MISCELLANEOUS – Tyres & pieces
- METAL – Industrial cans – all types

TOP 20 CATEGORIES - LARGEST VOLUMES

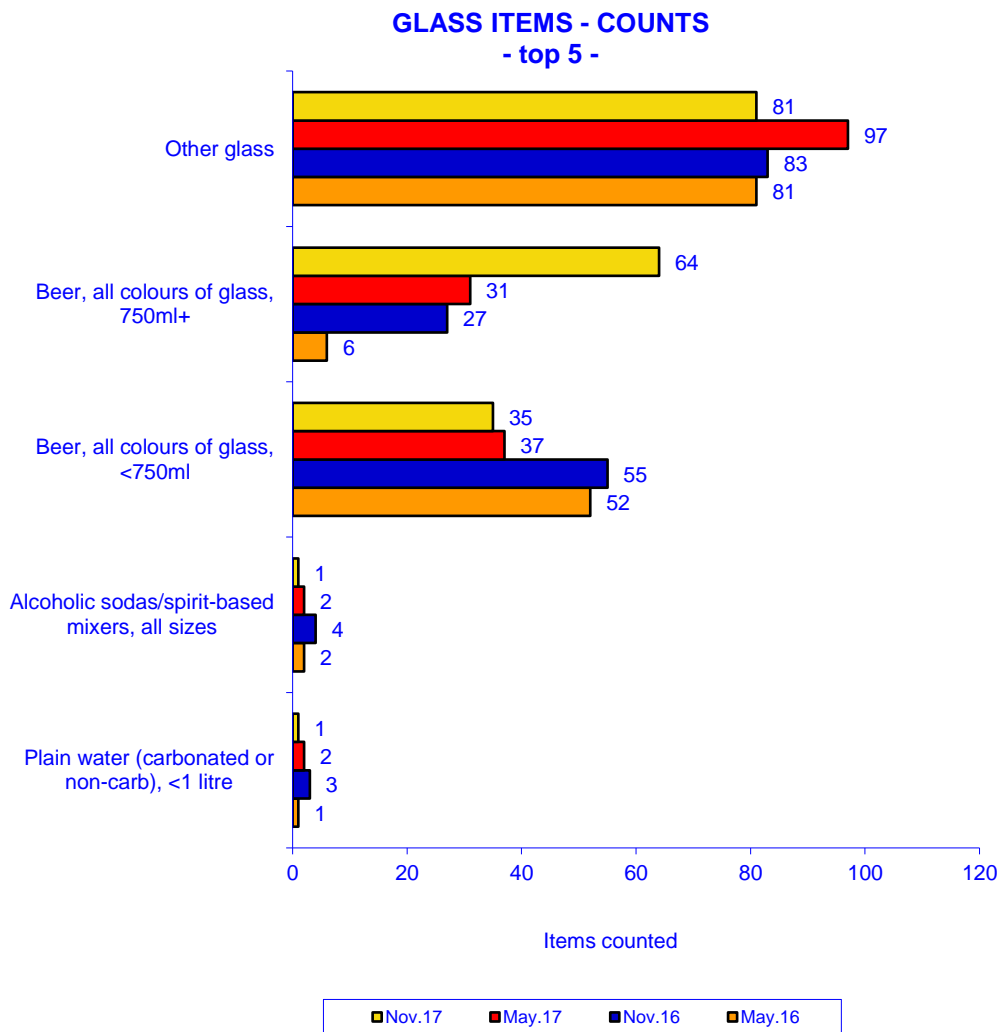


3.1 Glass

Items

A total of 185 glass litter items (up from 183 items in Wave 73) were counted during Wave 74. The most frequently recorded glass items included:

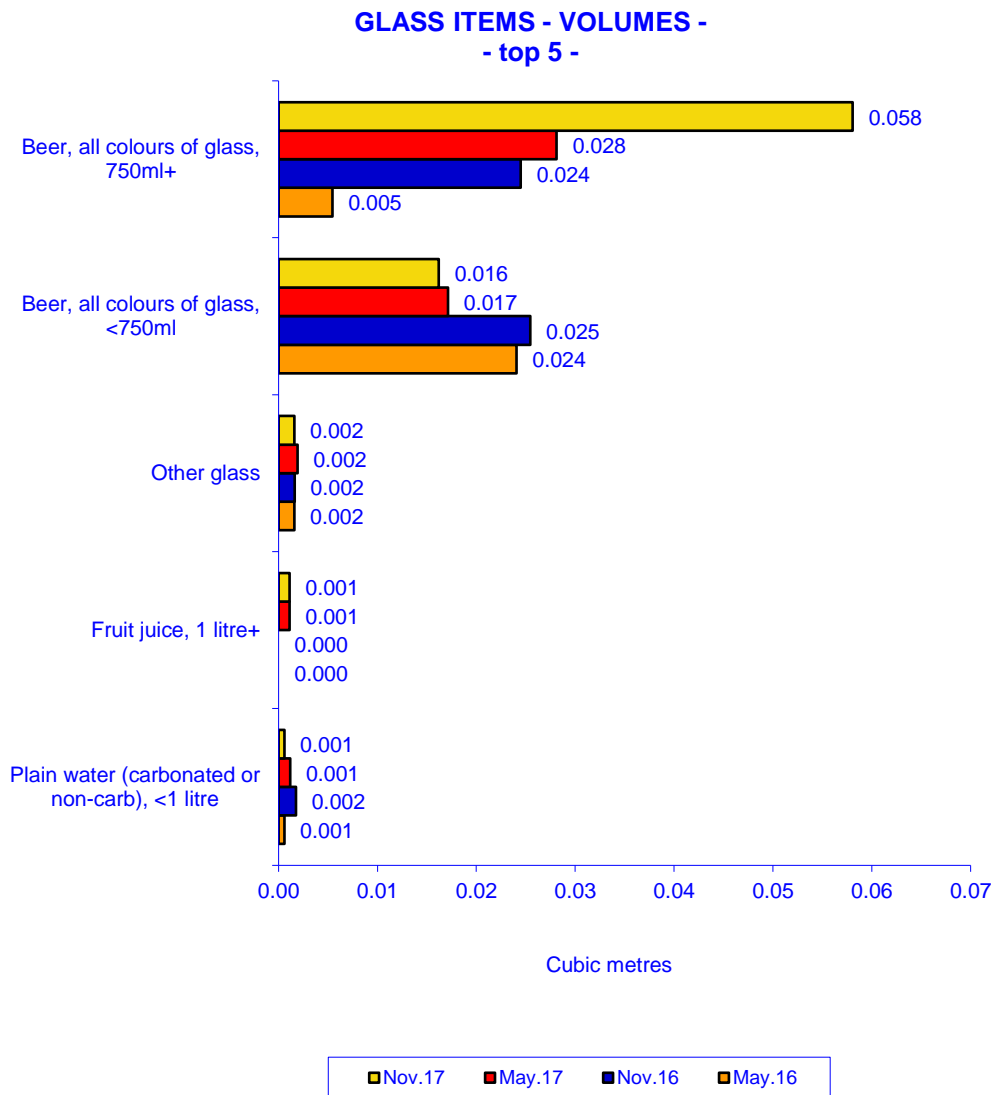
- Other glass (81 items, down from 97 items in Wave 73)
- Beer, all colours of glass 750ml+ (64 items, up from 31 items in Wave 73)
- Beer, all colours of glass <750ml (35 items, down from 37 items in Wave 73)
- Alcoholic sodas/spirit-based mixers, all sizes (1 item, down from 2 items in Wave 73)
- Plain water (carbonated or non-carb), <1 litre (1 item, down from 2 items in Wave 73)



Volume

Glass litter items accounted for 0.079m³, (up from 0.059m³ in Wave 73) in estimated litter volume during Wave 74. Glass items which contributed the largest volumes to the total included:

- Beer, all colours of glass 750ml+ (0.058m³, up from 0.028m³ in Wave 73)
- Beer, all colours of glass <750ml (0.016m³, down from 0.017m³ in Wave 73)
- Other glass (0.002m³, unchanged from 0.002m³ in Wave 73)
- Fruit juice, 1 litre+ (0.001m³, unchanged from 0.001m³ in Wave 73)
- Plain water (carbonated or non-carb), <1 litre (0.001m³, unchanged from 0.001m³ in Wave 73)

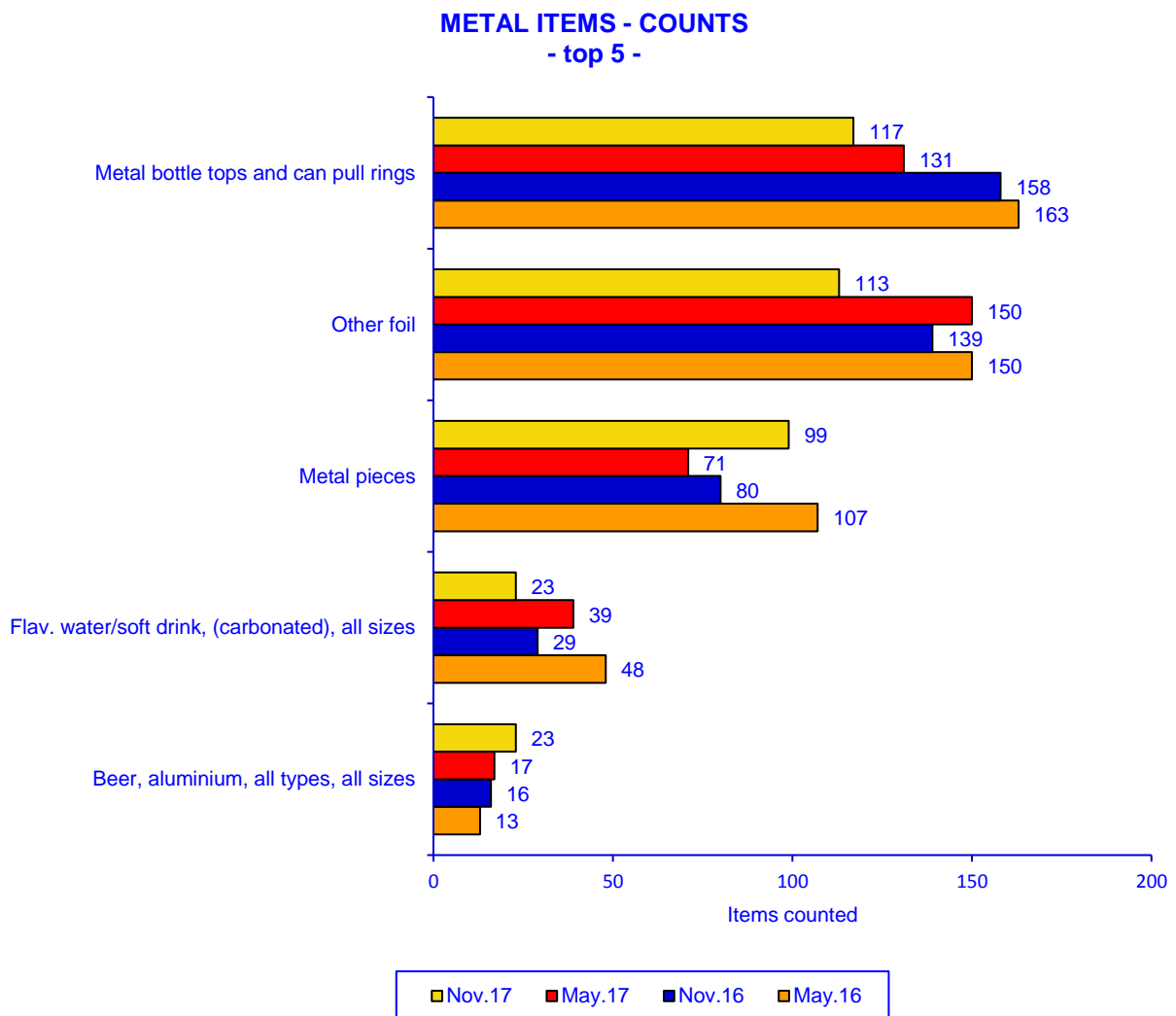


3.2 Metal

Items

A total of 435 metal litter items (down from 491 items in Wave 73) were counted during Wave 74. The most frequently counted metal litter items included:

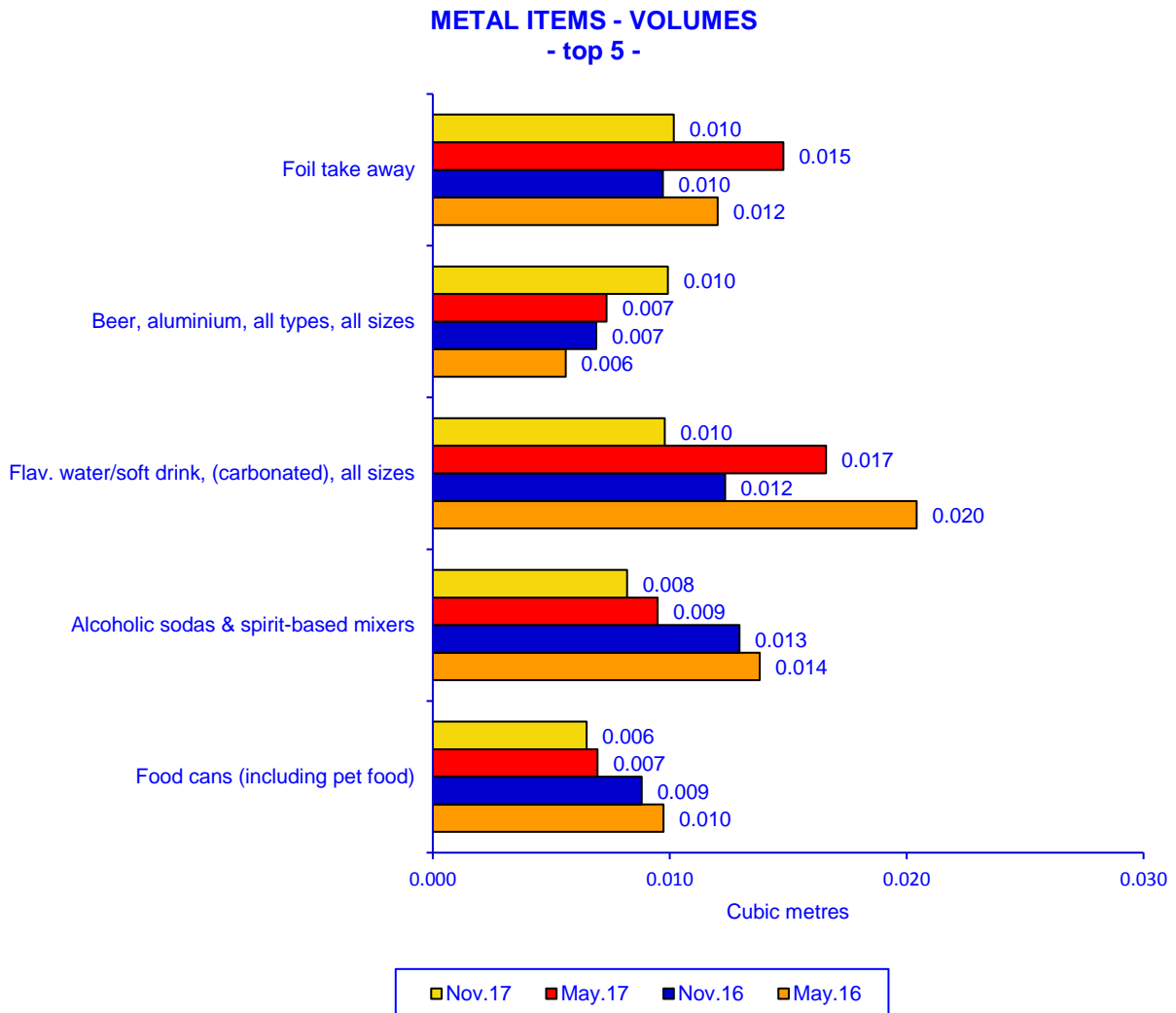
- Metal bottle tops and can pull rings (117 items, down from 131 items in Wave 73)
- Other foil (113 items, down from 150 items in Wave 73)
- Metal pieces (99 items, up from 71 items in Wave 73)
- Flavoured water/soft drink (carbonated), all sizes (23 items, down from 39 items in Wave 73)
- Beer, aluminium, all types, all sizes (23 items, up from 17 items in Wave 73)



Volume

Metal litter items accounted for a total estimated litter volume of 0.049m³ (down from 0.080m³ in Wave 73). The metal items associated with the largest estimated volumes of litter during Wave 74 included:

- Foil take away (0.010m³, down from 0.015m³ in Wave 73)
- Beer, aluminium, all types, all sizes (0.010m³, up from 0.007m³ in Wave 73)
- Flavoured water/soft drink (carbonated), all sizes (0.010m³, down from 0.017m³ in Wave 73)
- Alcoholic sodas & spirit-based mixers (0.008m³, down from 0.009m³ in Wave 73)
- Food cans (including pet food) (0.006m³, down from 0.007m³ in Wave 73)

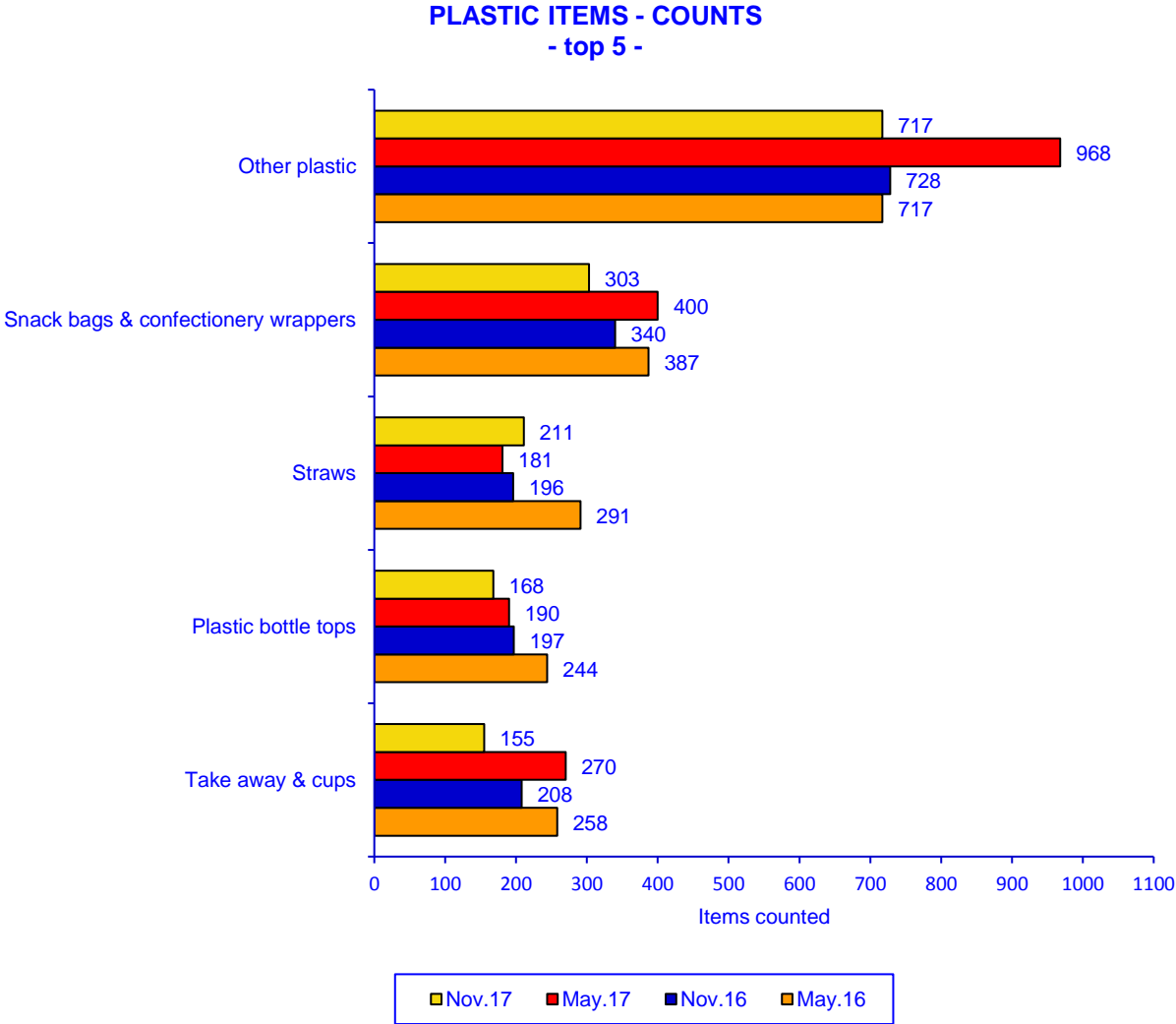


3.3 Plastic

Items

A total of 1,983 plastic litter items (down from 2,502 items in Wave 73) were counted during Wave 74. The most frequently counted plastic litter items included:

- Other plastic (717 items, down from 968 items in Wave 73)
- Snack bags & confectionery wrappers (303 items, down from 400 items in Wave 73)
- Straws (211 items, up from 181 items in Wave 73)
- Plastic bottle tops (168 items, down from 190 items in Wave 73)
- Take away & cups (155 items, down from 270 items in Wave 73)

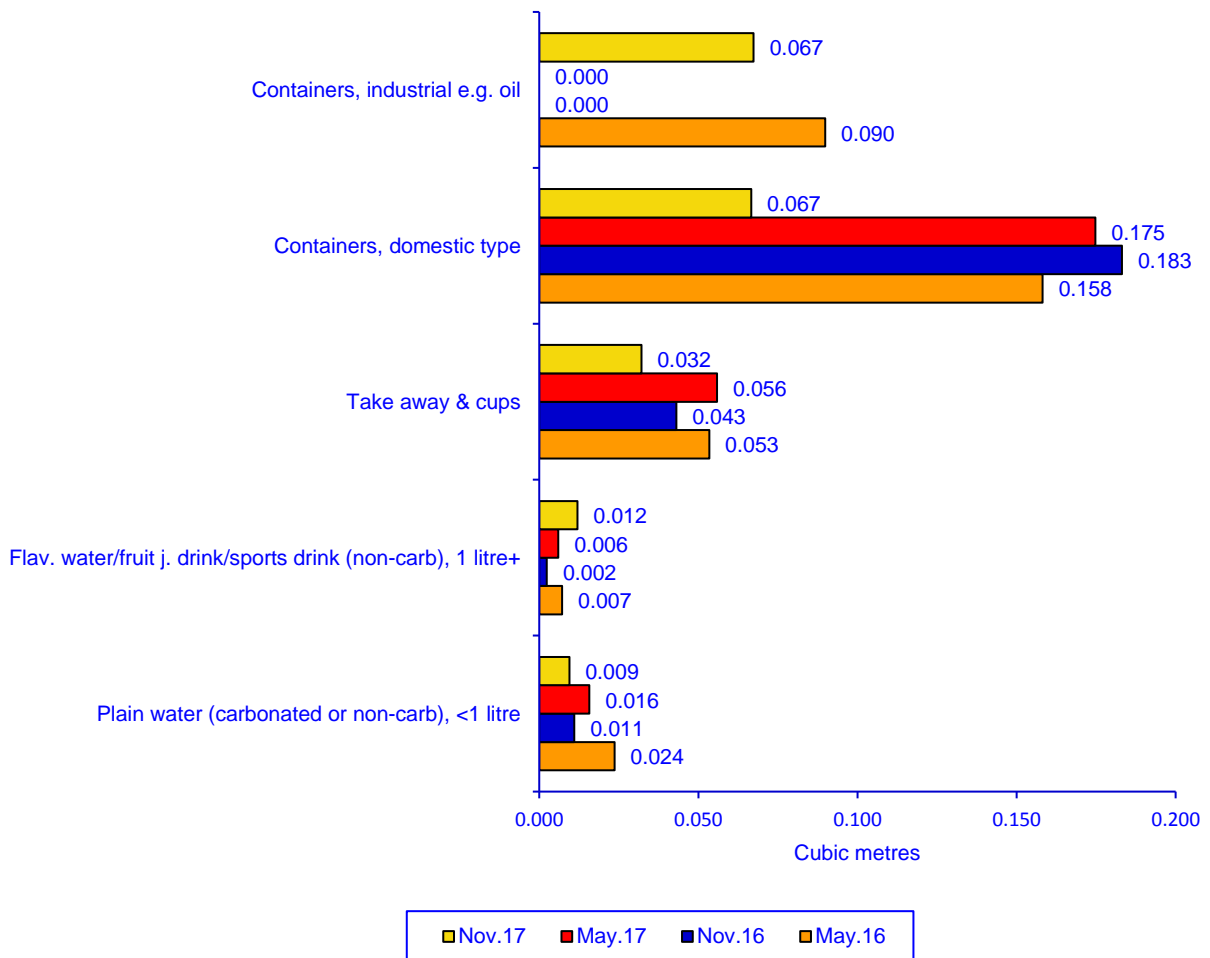


Volume

Plastic items were associated with an estimated litter volume of 0.234m³ (down from 0.317m³ in Wave 73). Items which represented the largest volumes within the Wave 74 litter count included:

- Containers, industrial e.g. oil (0.067m³, up from nil in Wave 73)
- Containers, domestic type (0.067m³, down from 0.175m³ in Wave 73)
- Take away & cups (0.032m³, down from 0.056m³ in Wave 73)
- Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+ (0.012m³, up from 0.006m³ in Wave 73)
- Plain water (carbonated or non-carb), <1 litre (0.009m³, down from 0.016m³ in Wave 73)

**PLASTIC ITEMS - VOLUMES
- top 5 -**



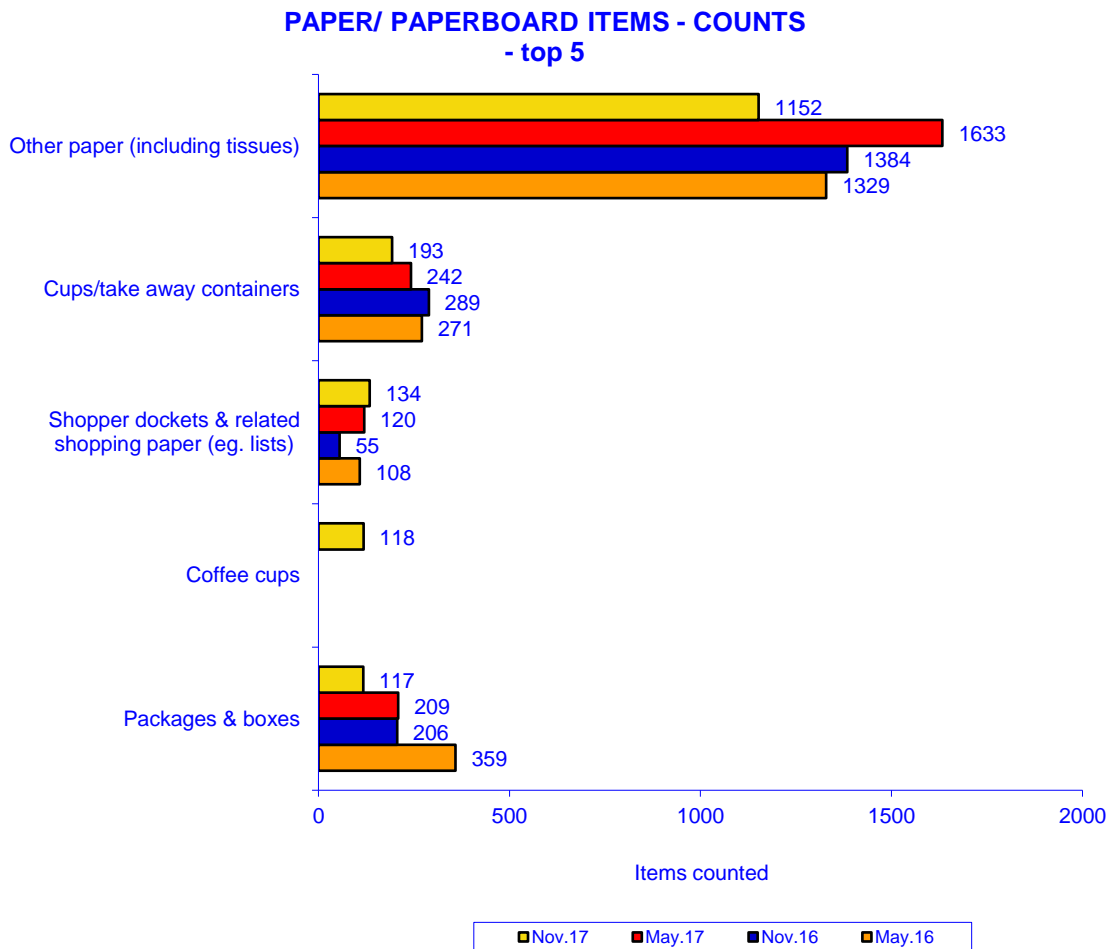
3.4 Paper/ Paperboard

Items

A total of 2,006 paper/paperboard litter items (down from 2,587 items in Wave 73) were recorded during Wave 74.

The most frequently identified items within this material type were:

- Other paper – including tissues (1,152 items, down from 1,633 items in Wave 73)
- Cups/ take away containers (193 items, down from 242 items in Wave 73)
- Shopper docket & related shopping paper (e.g. lists) (134 items, up from 120 items in Wave 73)
- Coffee cups (introduced in Wave 74)
- Packages & boxes (117 items, down from 209 items in Wave 73)



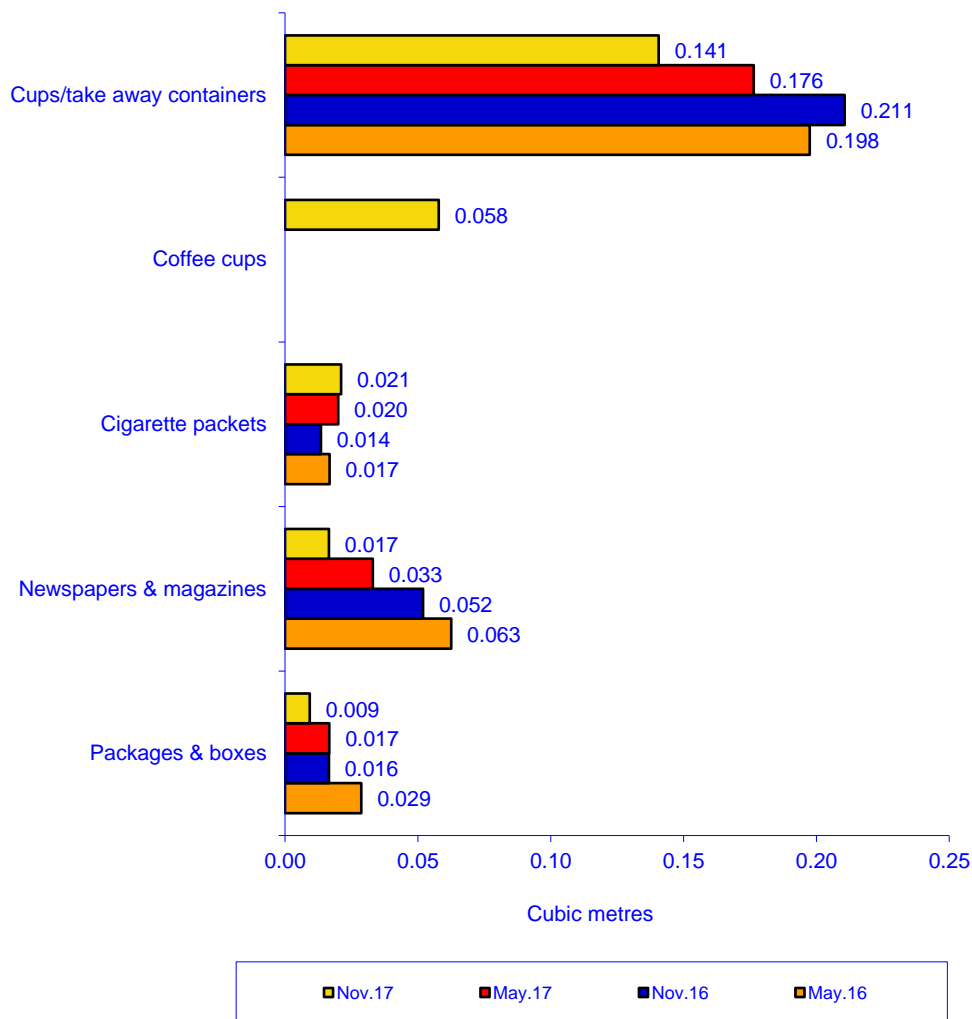
Volume

Paper/ Paperboard items accounted for 0.270m³ in estimated litter volume (down from 0.277m³ in Wave 73) in November 2017.

Paper/ paperboard items which contributed the largest volumes to the total included:

- Cups/take away containers (0.141m³, down from 0.176m³ in Wave 73)
- Coffee cups (0.058m³, introduced in Wave 74)
- Cigarette packets (0.021m³, up from 0.020m³ in Wave 73)
- Newspapers & magazines (0.017m³, down from 0.033m³ in Wave 73)
- Packages & boxes (0.009m³, down from 0.017m³ in Wave 73)

**PAPER/ PAPERBOARD ITEMS - VOLUMES
- top 5**



3.5 Miscellaneous

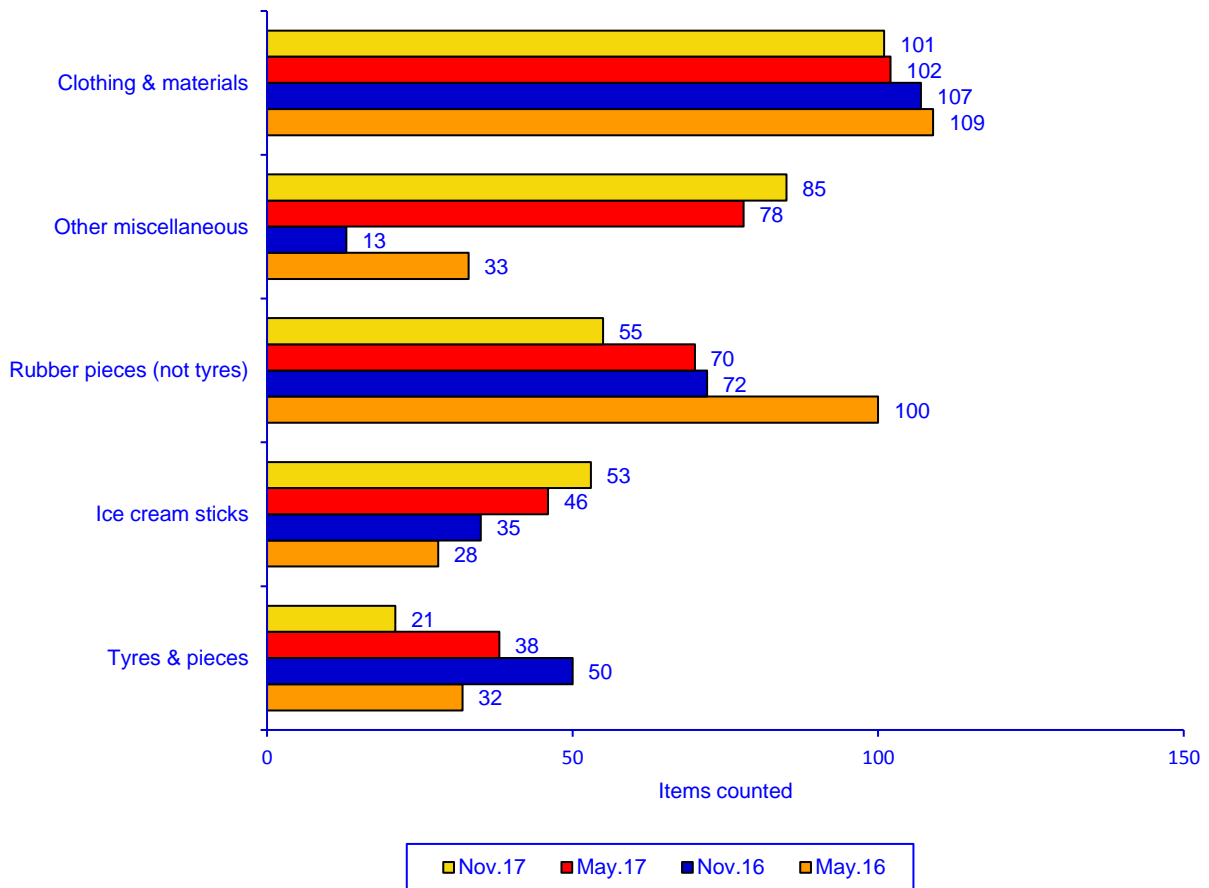
Items

A total of 342 miscellaneous items (down from 377 items in Wave 73) were counted during Wave 74.

The most frequently recorded items included:

- Clothing & materials (101 items, down from 102 items in Wave 73)
- Other miscellaneous (85 items, up from 78 items in Wave 73)
- Rubber pieces – not tyres (55 items, down from 70 items in Wave 73)
Rubber pieces in this category include vehicle rubber mouldings, hose pipes and tubing, bicycle handle bar grips and casings, pram mouldings and strips.
- Ice cream sticks (53 items, up from 46 items in Wave 73)
- Tyres & pieces (21 items, down from 38 items in Wave 73)

MISCELLANEOUS LITTER ITEMS - COUNTS
- top 5 -



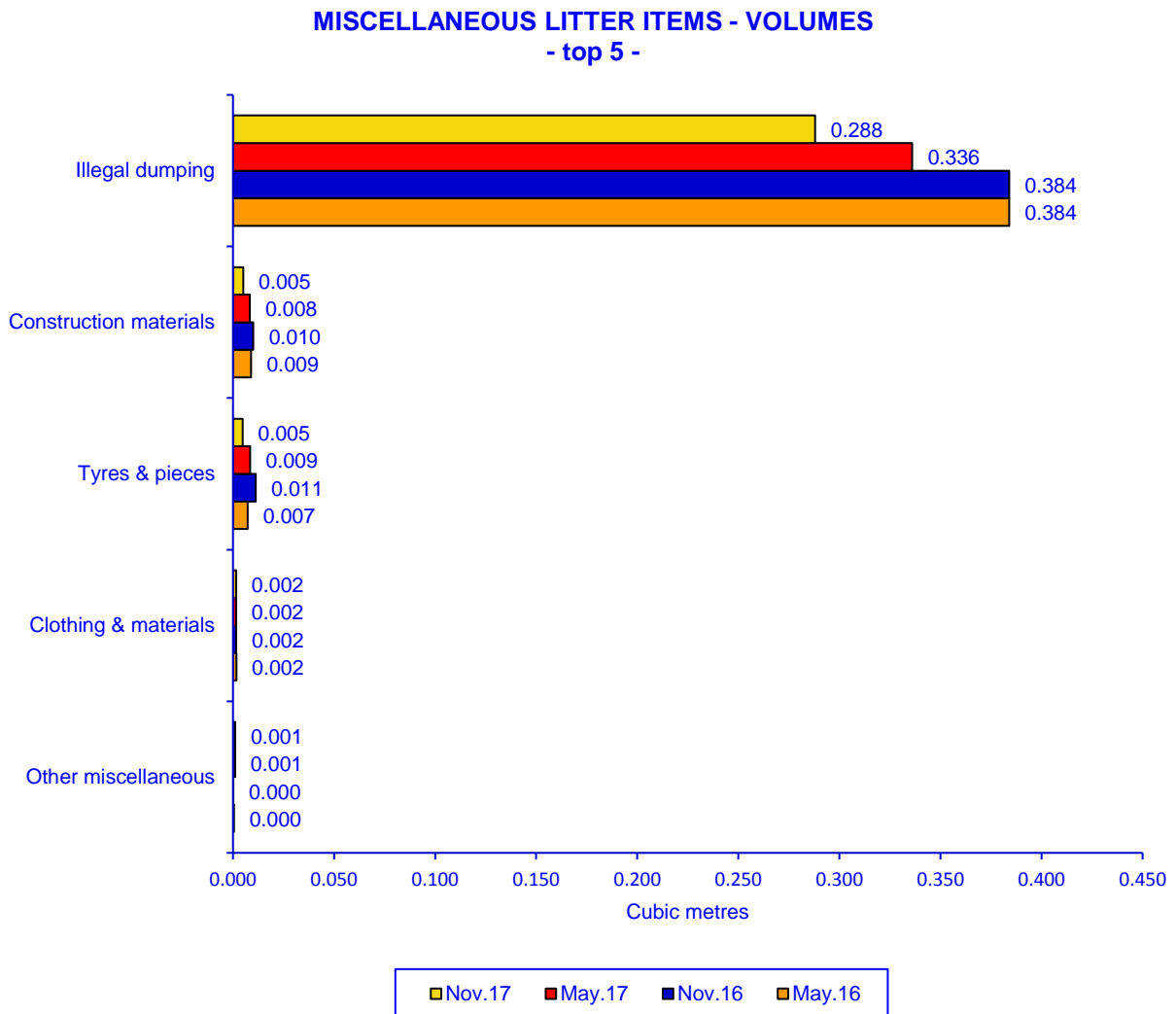
Volume

Miscellaneous litter was associated with an estimated litter volume of 0.302m³ (down from 0.360m³ in Wave 73) during Wave 74.

Illegal dumping remained the major contributor to the total volume of miscellaneous items, with an estimated total volume of 0.288m³ (down from 0.336m³ in Wave 73).

Other miscellaneous items which contributed to the litter stream volume included:

- Construction materials (0.005m³, down from 0.008m³ in Wave 73)
- Tyres & pieces (0.005m³, down from 0.009m³ in Wave 73)
- Clothing and materials (0.002m³, unchanged from Wave 73)
- Other miscellaneous (0.001m³, unchanged from Wave 73)



3.6 Cigarette Butts

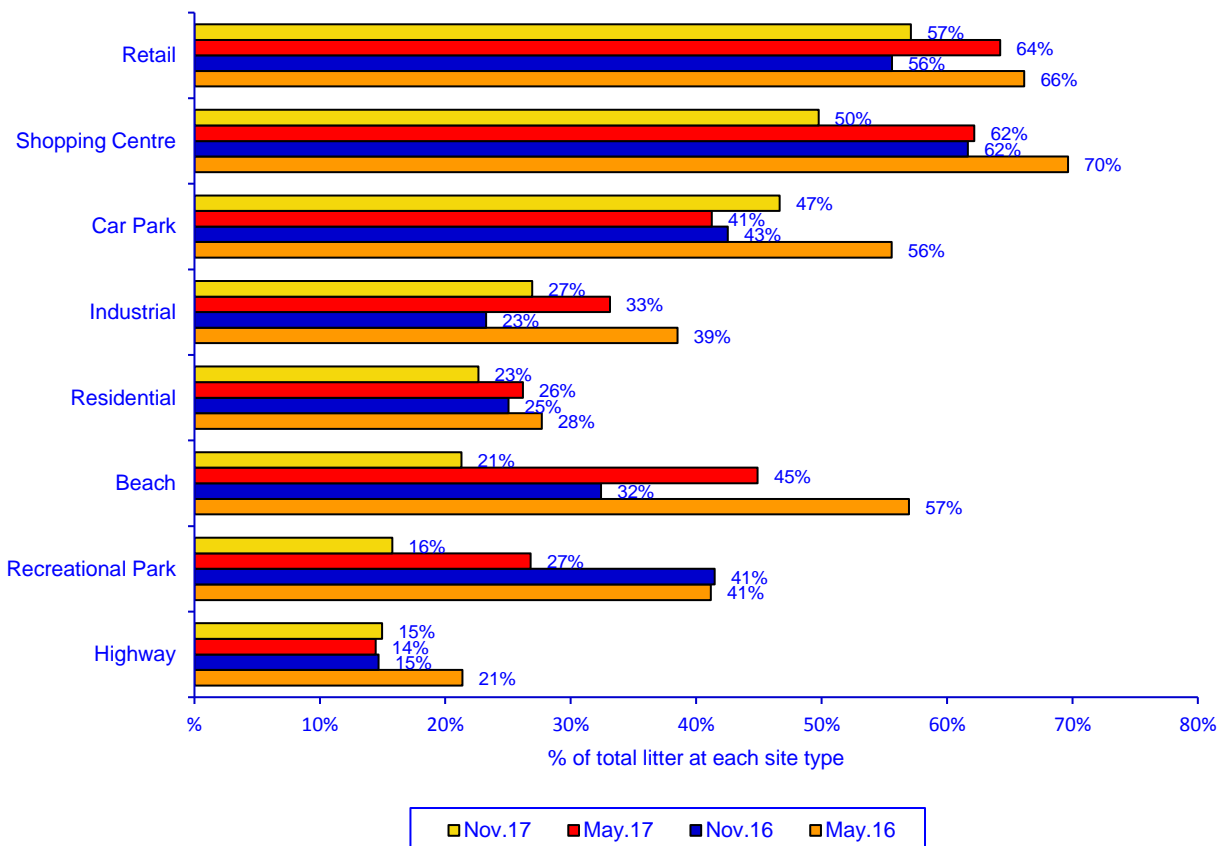
Items

The total number of cigarette butts recorded during Wave 74 was 2,295, down from 3,214 in Wave 73 and 2,766 in Wave 72, at the same time the previous year.

The proportion of cigarette butts against the total number of litter items was highest at retail sites (57%, down from 64% in Wave 73), and shopping centres (50%, down from 62% in Wave 72). Cigarette butts also contributed the following proportions of total litter at the following site types:

- Industrial sites (27%, down from 33% in Wave 73)
- Beaches (21%, down from 45% in Wave 73)
- Car parks (47%, up from 41% in Wave 73)
- Highway sites (15%, up from 14% in Wave 73)
- Recreational parks (16%, down from 27% in Wave 73)
- Residential sites (23%, down from 26% in Wave 73)

CIGARETTE BUTTS AS A PROPORTION OF TOTAL LITTER AT EACH SITE TYPE



Volume

Despite cigarette butts being the most numerous type of litter item, they accounted for less than 1% of the total volume of litter recorded during the current Wave.

3.7 Dispersion of Litter by Site Type

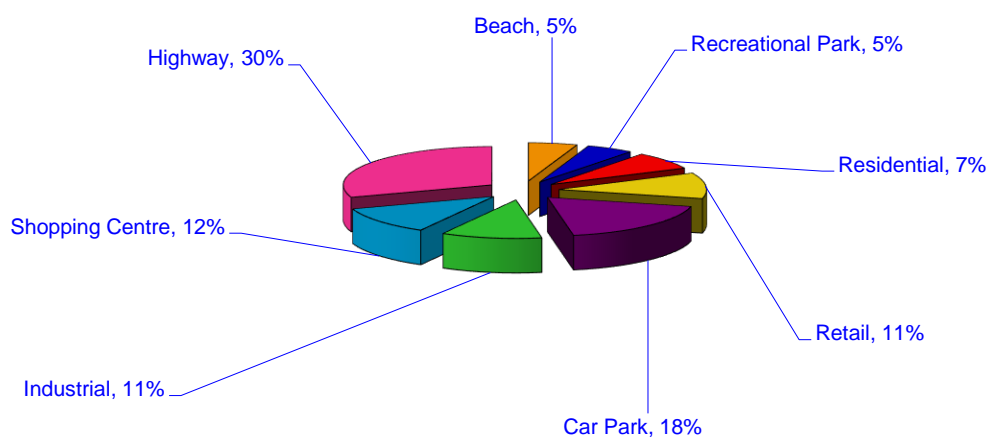
Items

Highways remained the most significant contributor to the total number of litter items counted in Nov 2017 with 30% (up from 29% in Wave 73) of the total litter items counted at highway locations.

Other sites contributed the following proportions of the total number of litter items counted during Wave 74:

- Shopping Centre (12%, up from 10% in Wave 73)
- Industrial (11%, down from 17% in Wave 73)
- Car Park (18%, up from 15% in Wave 73)
- Retail (11%, up from 10% in from Wave 73)
- Residential (7%, down from 8% in Wave 73)
- Recreational Park (5%, down from 7% in Wave 73)
- Beach (5%, up from 4% from Wave 73)

PROPORTION OF TOTAL LITTER ITEMS COUNTED WITHIN SITE TYPE



A comparison of the proportions of litter items found at each site type revealed that highway locations, car parks and shopping centres contributed large amounts to the total number of litter items in the November Monitor, based on the proportion of the number of these sites as outlined below:

- Highway sites represented only 18% of the total number of sites surveyed and contributed 30% (up from 29% in Wave 73) of the total litter items counted in Wave 74.
- Car parks incorporated 15% of the sites surveyed and contributed 18% (up from 15% in Wave 73) of the litter items counted in Wave 74.
- Shopping centres - incorporated 9% of the sites surveyed and contributed 12% (up from 10% in Wave 73) of the litter items counted in Wave 74.

Conversely, residential locations and beaches contributed smaller proportions of litter items to the total litter count than anticipated based upon the proportion of these sites within the overall sample of locations as detailed below:

- Residential areas incorporated 17% of the sites surveyed, but contributed only 7% (down from 8% in Wave 73) of the litter items counted in Wave 74.
- Beaches represented 11% of the sites surveyed, but contributed only 5% (up from 4% in Wave 73) of the litter counted in Wave 74.

The remaining sites contributed around the expected proportions of litter based on the proportion of these sites among the overall number of sites counted during Nov 17, the proportions were:

- Retail areas - incorporated 10% of the sites surveyed and contributed 11% (up from 10% in Wave 73) of the litter items counted in Wave 74.
- Industrial sites incorporated 11% of the sites surveyed, and contributed 11% (down from 17% in Wave 73) of the total litter items counted in Wave 74.
- Recreational Parks represented 9% of sites surveyed and contributed 5% (down from 7% in Wave 73) of the litter counted in Wave 74.

PROPORTION OF TOTAL LITTER ITEMS COUNTED WITHIN SITE TYPE
- tracking -



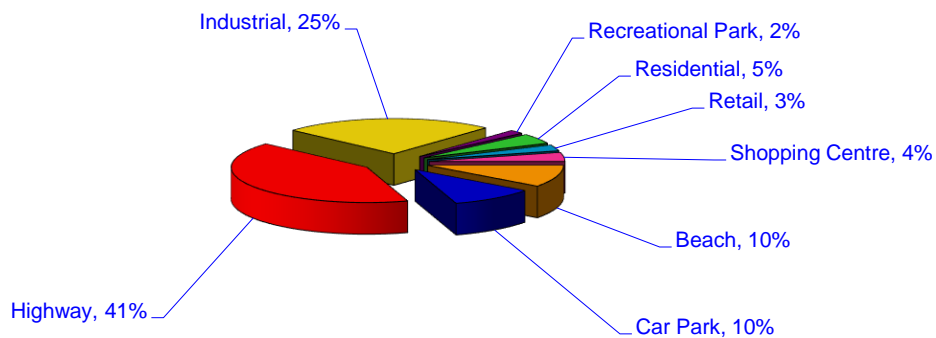
Volume

Almost half (41%, down from 46% in Wave 73) of the total volume of litter estimated during Wave 74 was associated with litter items in highway locations, while a quarter (25%, down from 27% in Wave 73) was associated with litter items in industrial sites.

Moderate volumes of litter were contributed to the overall litter volume by car park sites (10%, up from 6% in Wave 73) and beaches (10%, up from 6% in Wave 73), during November 2017.

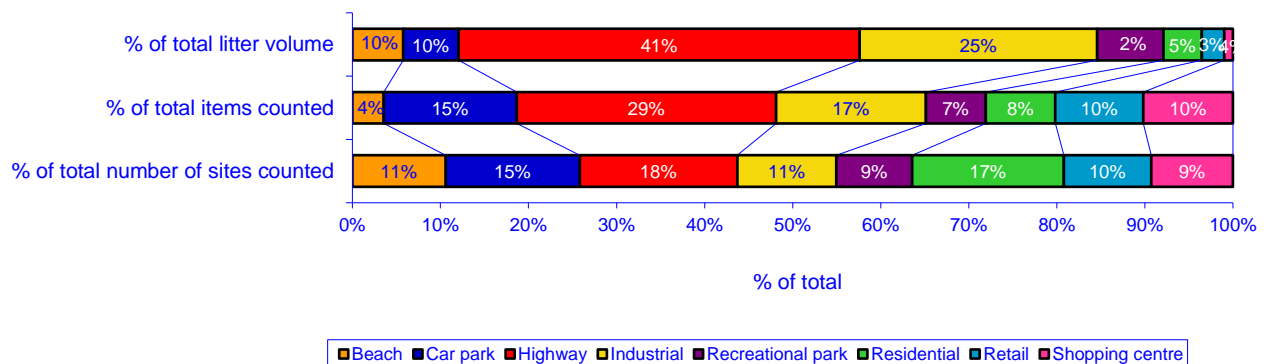
Lower volumes of litter were contributed to the total litter volume by residential sites (5%, up from 4% in Wave 73), shopping centres (4%, up from 1% in Wave 73), retail sites (3%, unchanged from Wave 73), and recreational park sites (2%, down from 8% in Wave 73) during Wave 74.

PROPORTION OF TOTAL LITTER VOLUME BY SITE TYPE



A comparison of the litter volume, number of litter items and proportion of sites represented within location types shows that highway locations contributed a larger number and volume of litter items than would be expected given their representations within the sample.

NUMBER AND VOLUME OF LITTER BY SITE TYPE AS PROPORTIONS OF TOTALS



3.8 CDL Beverage Containers

The majority (97%, unchanged from Wave 73) of litter items counted in November 2017 were non-beverage items.

The total number of CDL beverage containers counted was 244 items, down from 278 items in Wave 73.

CDL beverage containers accounted for 96% (down from 97% in Wave 73) of all beverage containers counted during Wave 74.

Data Summary - Items

KESAB - Litter Strategy Monitoring Wave 74 - November 2017			Items										
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS
CIGARETTE BUTTS		NBEV	82	622	328	213	59	123	449	419	1433	862	2295
GLASS	Alcoholic sodas/spirit-based mixers, all sizes	CDL			1							1	1
	Beer, all colours of glass, <750ml	CDL		1	18	4	1	9	2		14	21	35
	Beer, all colours of glass, 750ml+	CDL		1	33	26	1	3			1	63	64
	Cider/fruit based etc.	CDL											0
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL											0
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL											0
	Flav. water/soft drink (carbonated), <1 litre	CDL											0
	Flav. water/soft drink (carbonated), 1 litre+	CDL											0
	Fruit juice, <1 litre	CDL		1							1		1
	Fruit juice, 1 litre+	BEV			1						1		1
	Other glass	NBEV	1	10	32	12	4	12	7	3	62	19	81
	Plain water (carbonated or non-carb), <1 litre	CDL			1							1	1
	Plain water (carbonated or non-carb), 1 litre+	CDL											0
	Wine & spirit, all sizes	BEV											0
Wine cooler, all sizes	CDL	1								1		1	
TOTAL			2	13	86	42	6	24	9	3	80	105	185
METAL	Aerosols - pressure packs	NBEV			3	1					3	1	4
	Alcoholic sodas & spirit-based mixers	CDL	3		16						10	9	19
	Beer, aluminium, all types, all sizes	CDL	8		10	4				1	13	10	23
	Cider/fruit based etc.	CDL			1						1		1
	Flav. water/soft drink, (carbonated), all sizes	CDL	3	4	16						17	6	23
	Flav. water/soft drink, (non-carb), all sizes	CDL											0
	Foil take away	NBEV		4	5	4	4	1	2	2	9	13	22
	Food cans (including pet food)	NBEV			9	2		2	1		9	5	14
	Industrial cans - all types	NBEV											0
	Metal bottle tops and can pull rings	NBEV	2	12	58	15	9	7	7	7	71	46	117
	Metal pieces	NBEV	1	11	51	25		9	2		57	42	99
	Other foil	NBEV	15	16	22	14	13	11	13	9	82	31	113
TOTAL			32	47	191	65	26	30	25	19	272	163	435

KESAB - Litter Strategy Monitoring Wave 74 - November 2017			Items											
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS	
MISCELLANEOUS	Clothing & materials	NBEV		10	56	19	3	6	4	3	58	43	101	
	Condoms	NBEV											0	
	Construction materials	NBEV		3	2	3	1	3	2		11	3	14	
	Disposable nappies	NBEV	1								1		1	
	Ice cream sticks	NBEV	3	17	15		5	5	3	5	31	22	53	
	Illegal dumping	NBEV	3		2	7					12		12	
	Other miscellaneous	NBEV	11	11	23	11	3	20	2	4	71	14	85	
	Rubber pieces (not tyres)	NBEV	1	7	37	3	4	1	1	1	41	14	55	
	Syringes	NBEV												0
	Tyres & pieces	NBEV		1	16	1		3			12	9	21	
TOTAL			19	49	151	44	16	38	12	13	237	105	342	
PAPER/PAPERBOARD	Cartons, flavoured milk, <1 litre	CDL		1	6			1		1	7	2	9	
	Cartons, flavoured milk, 1 litre+	BEV											0	
	Cartons, fruit juice, <1 litre	CDL								1	1		1	
	Cartons, fruit juice, 1 litre+	BEV			1						1		1	
	Cartons, milk, plain (white), all sizes	BEV			1						1		1	
	Cigarette packets	NBEV	2	13	44	18	2	12	3	3	56	41	97	
	Cups/take away containers	NBEV	6	37	92	10	6	8	17	17	144	49	193	
	Coffee cups	NBEV	8	21	65	7	6		4	7	71	47	118	
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL		3							3		3	
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL												0
	Ice cream wrappers	NBEV	5	2	7		2	4	2	1	15	8	23	
	Junk mail/free circulars	NBEV		8	3	12		21	3	4	32	19	51	
	Newspapers & magazines	NBEV		1	5	3		3		2	10	4	14	
	Other paper (including tissues)	NBEV	76	186	358	140	77	103	109	103	952	200	1152	
	Packages & boxes	NBEV	1	4	72	25	2	4	2	7	58	59	117	
	Paper bags	NBEV	5	6	19	12	3	3	7	6	42	19	61	
Shopper docketts & related shopping paper (eg. lists)	NBEV	3	37	9	4		8	21	52	108	26	134		
Tickets, e.g. bus, ATM, vending machine etc.	NBEV		4	3		4	3	2	15	29	2	31		
TOTAL			106	323	685	231	102	170	170	219	1530	476	2006	

KESAB - Litter Strategy Monitoring Wave 74 -November 2017			Items										
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS
PLASTIC	6 ring can holders	NBEV			11			5	1		4	13	17
	Bags - heavier glossy typically branded carry bags	NBEV		4	4	1	1				5	5	10
	Bags - supermarket type light weight carry bags	NBEV	4	5	28	6	3	2		4	40	12	52
	Bread bag tags	NBEV		2			8	4	1		10	5	15
	Containers, domestic type	NBEV		4	2			1		1	7	1	8
	Containers, industrial e.g. oil	NBEV			3						1	2	3
	Drink pouches	CDL		3						1	3	1	4
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL	1		3				1		5		5
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL	1		5	4					9	1	10
	Flav. water/soft drink (carbonated), <1 litre	CDL		1	5	2		1		1	8	2	10
	Flav. water/soft drink (carbonated), 1 litre+	CDL			2						2		2
	Flavoured milk, <1 litre	CDL			13			1		2	12	4	16
	Flavoured milk, 1 litre+	BEV			4						4		4
	Fruit juice, <1 litre	CDL				1					1		1
	Fruit juice, 1 litre+	BEV											0
	Lollipop sticks	NBEV	12	15	4	3	10	9	3	3	45	14	59
	Other plastic	NBEV	53	76	315	83	49	56	38	47	559	158	717
	Packing tape & straps	NBEV		9	39	19	5	4	2	2	57	23	80
	Plain water (carbonated or non-carb), <1 litre	CDL			6			3	2	1	10	2	12
	Plain water (carbonated or non-carb), 1 litre+	CDL		1	1						2		2
	Plastic bottle tops	NBEV	10	31	52	18	15	14	11	17	137	31	168
	Sacks - sheeting - other bags	NBEV		3	16	7		2	1		25	4	29
	Snack bags & confectionery wrappers	NBEV	28	61	63	17	40	29	23	42	240	63	303
	Spoons/cutlery	NBEV	12	9	27	1	7	2	6	1	37	28	65
	Straws	NBEV	11	31	80	12	20	13	13	31	129	82	211
	Styrene foam boxes, sheets, etc.	NBEV		6	11	2		3		1	14	9	23
	Take away & cups	NBEV	11	18	57	20	4	9	20	16	106	49	155
	White milk, all sizes	BEV						1				1	1
Wine cask bladders	BEV	1								1		1	
TOTAL		144	279	751	196	165	158	121	169	1473	510	1983	
GRAND TOTAL		385	1333	2192	791	374	543	786	842	5025	2221	7246	

Data Summary - Volumes

KESAB - Litter Strategy Monitoring Wave 74 -November 2017			Volume - Cubic Metres										
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS
CIGARETTE BUTTS		NBEV	0.000009	0.000072	0.000038	0.000024	0.000007	0.000014	0.000052	0.000048	0.00016	0.000099	0.000264
GLASS	Alcoholic sodas/spirit-based mixers, all sizes	CDL			0.000374							0.000374	0.000374
	Beer, all colours of glass, <750ml	CDL		0.000463	0.008333	0.001852	0.000463	0.004166	0.000926		0.006481	0.009721	0.016202
	Beer, all colours of glass, 750ml+	CDL		0.000907	0.029941	0.023590	0.000907	0.002722			0.000907	0.057159	0.058067
	Cider/fruit based etc.	CDL											0.000000
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL											0.000000
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL											0.000000
	Flav. water/soft drink (carbonated), <1 litre	CDL											0.000000
	Flav. water/soft drink (carbonated), 1 litre+	CDL											0.000000
	Fruit juice, <1 litre	CDL		0.000424							0.000424		0.000424
	Fruit juice, 1 litre+	BEV			0.001110						0.001110		0.001110
	Other glass	NBEV	0.000020	0.000196	0.000628	0.000236	0.000079	0.000236	0.000137	0.000059	0.001218	0.000373	0.001591
	Plain water (carbonated or non-carb), <1 litre	CDL			0.000581							0.000581	0.000581
	Plain water (carbonated or non-carb), 1 litre+	CDL											0.000000
	Wine & spirit, all sizes	BEV											0.000000
Wine cooler, all sizes	CDL	0.000374								0.000374		0.000374	
TOTAL		0.000394	0.001991	0.040968	0.025677	0.001449	0.007124	0.001063	0.000059	0.010515	0.068209	0.078724	
METAL	Aerosols - pressure packs	NBEV			0.002053	0.000684					0.002053	0.000684	0.002737
	Alcoholic sodas & spirit-based mixers	CDL	0.001294		0.006902						0.004314	0.003883	0.008197
	Beer, aluminium, all types, all sizes	CDL	0.003451		0.004314	0.001726				0.000431	0.005608	0.004314	0.009922
	Cider/fruit based etc.	CDL			0.000431						0.000431		0.000431
	Flav. water/soft drink, (carbonated), all sizes	CDL	0.001277	0.001702	0.006809						0.007234	0.002553	0.009787
	Flav. water/soft drink, (non-carb), all sizes	CDL											0.000000
	Foil take away	NBEV		0.001850	0.002312	0.001850	0.001850	0.000462	0.000925	0.000925	0.004161	0.006011	0.010172
	Food cans (including pet food)	NBEV			0.004174	0.000928		0.000928	0.000464		0.004174	0.002319	0.006493
	Industrial cans - all types	NBEV											0.000000
	Metal bottle tops and can pull rings	NBEV	0.000008	0.000048	0.000232	0.000060	0.000036	0.000028	0.000028	0.000028	0.000284	0.000184	0.000468
	Metal pieces	NBEV	0.000011	0.000117	0.000541	0.000265		0.000095	0.000021		0.000604	0.000445	0.001049
	Other foil	NBEV	0.000023	0.000025	0.000034	0.000022	0.000020	0.000017	0.000020	0.000014	0.000128	0.000048	0.000176
TOTAL		0.006064	0.003741	0.027802	0.005534	0.001906	0.001531	0.001458	0.001398	0.028992	0.020442	0.049434	

KESAB - Litter Strategy Monitoring Wave 74 -November 2017			Volume - Cubic Metres											
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS	
MISCELLANEOUS	Clothing & materials	NBEV		0.000153	0.000857	0.000291	0.000046	0.000092	0.000061	0.000046	0.000887	0.000658	0.001545	
	Condoms	NBEV											0.000000	
	Construction materials	NBEV		0.001080	0.000720	0.001080	0.000360	0.001080	0.000720		0.003960	0.001080	0.005040	
	Disposable nappies	NBEV	0.001125								0.001125		0.001125	
	Ice cream sticks	NBEV	0.000003	0.000016	0.000014		0.000005	0.000005	0.000003	0.000005	0.000029	0.000020	0.000049	
	Illegal dumping	NBEV	0.072000		0.048000	0.168000					0.288000		0.288000	
	Other miscellaneous	NBEV	0.000149	0.000149	0.000311	0.000149	0.000041	0.000270	0.000027	0.000054	0.000958	0.000189	0.001148	
	Rubber pieces (not tyres)	NBEV	0.000000	0.000001	0.000006	0.000000	0.000001	0.000000	0.000000	0.000000	0.000007	0.000002	0.000009	
	Syringes	NBEV												0.000000
	Tyres & pieces	NBEV		0.000225	0.003600	0.000225		0.000675			0.002700	0.002025	0.004725	
TOTAL			0.073276	0.001623	0.053507	0.169745	0.000452	0.002122	0.000811	0.000105	0.297666	0.003974	0.301641	
PAPER/PAPERBOARD	Cartons, flavoured milk, <1 litre	CDL		0.000672	0.004035			0.000672		0.000672	0.004707	0.001345	0.006052	
	Cartons, flavoured milk, 1 litre+	BEV											0.000000	
	Cartons, fruit juice, <1 litre	CDL								0.000625	0.000625		0.000625	
	Cartons, fruit juice, 1 litre+	BEV			0.002070						0.002070		0.002070	
	Cartons, milk, plain (white), all sizes	BEV			0.001013						0.001013		0.001013	
	Cigarette packets	NBEV	0.000436	0.002832	0.009586	0.003922	0.000436	0.002614	0.000654	0.000654	0.012201	0.008933	0.021133	
	Cups/take away containers	NBEV	0.004374	0.026971	0.067063	0.007290	0.004374	0.005832	0.012392	0.012392	0.104969	0.035719	0.140687	
	Coffee cups	NBEV	0.003920	0.010291	0.031852	0.003430	0.002940		0.001960	0.003430	0.034792	0.023031	0.057823	
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL		0.000907							0.000907		0.000907	
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL											0.000000	
	Ice cream wrappers	NBEV	0.000012	0.000005	0.000017		0.000005	0.000010	0.000005	0.000002	0.000036	0.000019	0.000055	
	Junk mail/free circulars	NBEV		0.001392	0.000522	0.002088		0.003654	0.000522	0.000696	0.005568	0.003306	0.008874	
	Newspapers & magazines	NBEV		0.001180	0.005900	0.003540		0.003540		0.002360	0.011800	0.004720	0.016520	
	Other paper (including tissues)	NBEV	0.000257	0.000629	0.001210	0.000473	0.000260	0.000348	0.000368	0.000348	0.003218	0.000676	0.003894	
	Packages & boxes	NBEV	0.000080	0.000320	0.005760	0.002000	0.000160	0.000320	0.000160	0.000560	0.004640	0.004720	0.009360	
	Paper bags	NBEV	0.000053	0.000063	0.000201	0.000127	0.000032	0.000032	0.000074	0.000063	0.000444	0.000201	0.000645	
	Shopper docketts & related shopping paper (eg. lists)	NBEV	0.000006	0.000075	0.000018	0.000008		0.000016	0.000043	0.000106	0.000219	0.000053	0.000272	
Tickets, e.g. bus, ATM, vending machine etc.	NBEV		0.000004	0.000003		0.000004	0.000003	0.000002	0.000013	0.000026	0.000002	0.000027		
TOTAL			0.009138	0.045341	0.129250	0.022878	0.008210	0.017041	0.016180	0.021922	0.187234	0.082724	0.269958	

KESAB - Litter Strategy Monitoring Wave 74 -November 2017			Volume - Cubic Metres										
			BEACH	CAR PARK	HIGHWAY	INDUSTRIAL	RECREATIONAL PARK	RESIDENTIAL	RETAIL	SHOPPING CENTRE	METROPOLITAN	REGIONAL	TOTAL ITEMS
PLASTIC	6 ring can holders	NBEV			0.000017			0.000008	0.000002		0.000006	0.000020	0.000026
	Bags - heavier glossy typically branded carry bags	NBEV		0.000350	0.000350	0.000088	0.000088				0.000438	0.000438	0.000876
	Bags - supermarket type light weight carry bags	NBEV	0.000136	0.000170	0.000950	0.000204	0.000102	0.000068		0.000136	0.001358	0.000407	0.001765
	Bread bag tags	NBEV		0.000000			0.000002	0.000001	0.000000		0.000002	0.000001	0.000003
	Containers, domestic type	NBEV		0.033296	0.016648			0.008324		0.008324	0.058268	0.008324	0.066592
	Containers, industrial e.g. oil	NBEV			0.067374						0.022458	0.044916	0.067374
	Drink pouches	CDL		0.000259						0.000086	0.000259	0.000086	0.000345
	Flav. water/fruit j. drink/sports drink (non-carb), <1 litre	CDL	0.000738		0.002213				0.000738		0.003688		0.003688
	Flav. water/fruit j. drink/sports drink (non-carb), 1 litre+	CDL	0.001201		0.006006	0.004804					0.010810	0.001201	0.012011
	Flav. water/soft drink (carbonated), <1 litre	CDL		0.000622	0.003111	0.001244		0.000622		0.000622	0.004977	0.001244	0.006221
	Flav. water/soft drink (carbonated), 1 litre+	CDL			0.003308						0.003308		0.003308
	Flavoured milk, <1 litre	CDL			0.006925			0.000533		0.001065	0.006392	0.002131	0.008523
	Flavoured milk, 1 litre+	BEV			0.008547						0.008547		0.008547
	Fruit juice, <1 litre	CDL				0.000400					0.000400		0.000400
	Fruit juice, 1 litre+	BEV											0.000000
	Lollipop sticks	NBEV	0.000006	0.000008	0.000002	0.000002	0.000005	0.000005	0.000002	0.000002	0.000024	0.000007	0.000031
	Other plastic	NBEV	0.000066	0.000095	0.000394	0.000104	0.000061	0.000070	0.000048	0.000059	0.000699	0.000198	0.000896
	Packing tape & straps	NBEV		0.000002	0.000011	0.000005	0.000001	0.000001	0.000001	0.000001	0.000015	0.000006	0.000022
	Plain water (carbonated or non-carb), <1 litre	CDL			0.004727		0.002364	0.001576	0.000788		0.007879	0.001576	0.009455
	Plain water (carbonated or non-carb), 1 litre+	CDL		0.001542	0.001542						0.003083		0.003083
	Plastic bottle tops	NBEV	0.000080	0.000248	0.000416	0.000144	0.000120	0.000112	0.000088	0.000136	0.001097	0.000248	0.001345
	Sacks - sheeting - other bags	NBEV		0.000001	0.000005	0.000002		0.000001	0.000000		0.000008	0.000001	0.000009
	Snack bags & confectionery wrappers	NBEV	0.000219	0.000478	0.000493	0.000133	0.000313	0.000227	0.000180	0.000329	0.001879	0.000493	0.002372
	Spoons/cutlery	NBEV	0.000115	0.000086	0.000259	0.000010	0.000067	0.000019	0.000058	0.000010	0.000355	0.000269	0.000624
	Straws	NBEV	0.000045	0.000128	0.000330	0.000050	0.000083	0.000054	0.000054	0.000128	0.000532	0.000338	0.000870
	Styrene foam boxes, sheets, etc.	NBEV		0.000225	0.000413	0.000075		0.000113		0.000038	0.000525	0.000338	0.000863
	Take away & cups	NBEV	0.002277	0.003726	0.011800	0.004140	0.000828	0.001863	0.004140	0.003312	0.021944	0.010144	0.032088
	White milk, all sizes	BEV						0.002137				0.002137	0.002137
Wine cask bladders	BEV	0.000460								0.000460		0.000460	
TOTAL		0.005344	0.041237	0.135840	0.011404	0.004034	0.015732	0.006097	0.014247	0.159411	0.074523	0.233934	
GRAND TOTAL		0.094225	0.094005	0.387404	0.235262	0.016057	0.043563	0.025661	0.037779	0.683983	0.249972	0.933955	

Appendix 1: Tracking Graphs

Weighting of Previous Results

Since February 2006 (Wave 32), 11 revised sites have been surveyed concurrently with the 151 original sites included within the litter monitor program since its inception in February 1998. The new and old sites were surveyed simultaneously across four Waves of the monitor.

These 11 revised sites have previously been surveyed concurrently with the 151 original sites to replace 11 of the original sites that were found to be unusual in nature, and analyses have typically focused on results for the 151 sites including the 11 new sites and the 151 sites including the 11 old sites separately.

However, in counts since the February 2007 Monitor only the 151 revised sites (incorporating the 11 new locations) have been surveyed. In order to facilitate tracking comparisons, figures prior to February 2007 have been weighted based upon the variations between results corresponding to the 151 sites including the 11 new sites and the 151 sites including the 11 old sites.

Weighting techniques were based upon comparisons of figures for items and volumes recorded during Waves 32, 33, 34 and 35 across all sites incorporating either the 11 original or 11 revised sites. Differences between such figures provided indices of the degree of consistent variation between original and revised site litter data, and reliable weightings were thereby established.

Figures which have been weighted included:

- **Absolute values (counts and volumes) within material categories and site types**, since the inclusion of the revised sites resulted in differences in nearly all absolute values of counted litter.
- **Comparisons between proportional representation of litter across site types**, due to the fact that site revision altered the proportions of litter contributed to the total litter stream within certain site categories whilst others remained unchanged.

However, preliminary investigations demonstrated that proportional contribution to the total litter stream within material types was consistently similar between the original and revised site sets. This finding supports the assumption that whilst the quantities of litter recorded differed between old and new sites, the types of materials present within such litter were relatively consistent. For this reason, proportional figures within material types did not require weighting.

Items within material categories across all 151 sites including either 11 original or 11 revised sites	Wave 32				Wave 33				Wave 34				Wave 35			
	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old
Glass	419	311	108	0.74224344	349	293	56	0.83954155	321	281	40	0.87538941	305	249	56	0.81639344
Metal	1505	1218	287	0.80930233	1450	1099	351	0.75793103	1440	1086	354	0.75416667	1517	1183	334	0.77982861
Plastic	5447	3819	1628	0.70111988	5261	3866	1395	0.73484128	5057	3575	1482	0.70694087	5332	3827	1505	0.71774194
Paper/ paperboard	4299	2969	1330	0.69062573	3820	3003	817	0.78612565	4017	2961	1056	0.73711725	3616	2752	864	0.76106195
Miscellaneous	1286	975	311	0.75816485	1057	814	243	0.77010407	1025	815	210	0.79512195	1150	944	206	0.82086957
Cigarette Butts	7600	5744	1856	0.75578947	9606	6814	2792	0.70934832	10950	6959	3991	0.63552511	10875	6474	4401	0.59531034
TOTAL	20556	15036	5520	0.73146527	21543	15889	5654	0.73754816	22810	15677	7133	0.68728628	22795	15429	7366	0.67685896
AVERAGE New as % of Old				0.74124442				0.76220572				0.74164965				0.73829497
OVERALL Mean New as % of Old	0.7458															

Items within site type across all 151 sites including either 11 original or 11 revised sites		Residential	Beach	Industrial	Car Park	Shopping Centre	Retail	Recreational Park	Highway	Metropolitan	Regional	TOTAL
Wave 32	Old	1187	1016	2395	2194	1261	1517	617	10369	17020	3536	20556
	New	1187	1016	2196	2064	1292	1517	617	5147	11500	3536	15036
	Diff	0	0	199	130	-31	0	0	5222	5520	0	5520
	New as % of Old	1	1	0.92	0.94	1.02	1	1	0.50	0.68	1	7.3786248
Wave 33	Old	1227	737	2573	3142	2323	1659	590	9292	17788	3755	21543
	New	1227	737	2428	2722	1919	1659	590	4607	12134	3755	15889
	Diff	0	0	145	420	404	0	0	4685	5654	0	5654
	New as % of Old	1	1	0.94	0.87	0.83	1	1	0.50	0.68	1	7.1318625
Wave 34	Old	1185	721	2498	3365	1853	1670	479	11039	18749	4061	22810
	New	1185	721	2077	2724	1155	1670	479	5666	11616	4061	15677
	Diff	0	0	421	641	698	0	0	5373	7133	0	7133
	New as % of Old	1	1	0.83	0.81	0.62	1	1	0.51	0.62	1	6.7775595
Wave 35	Old	1134	728	2705	2601	2232	1801	729	10865	18640	4155	22795
	New	1134	728	2399	2156	1157	1801	729	5325	11274	4155	15429
	Diff	0	0	306	445	1075	0	0	5540	7366	0	7366
	New as % of Old	1	1	0.89	0.83	0.52	1	1	0.49	0.60	1	6.7242631
Average New as % of Old		1	1	0.89	0.86	0.75	1	1	0.50	0.65	1	7.0030775

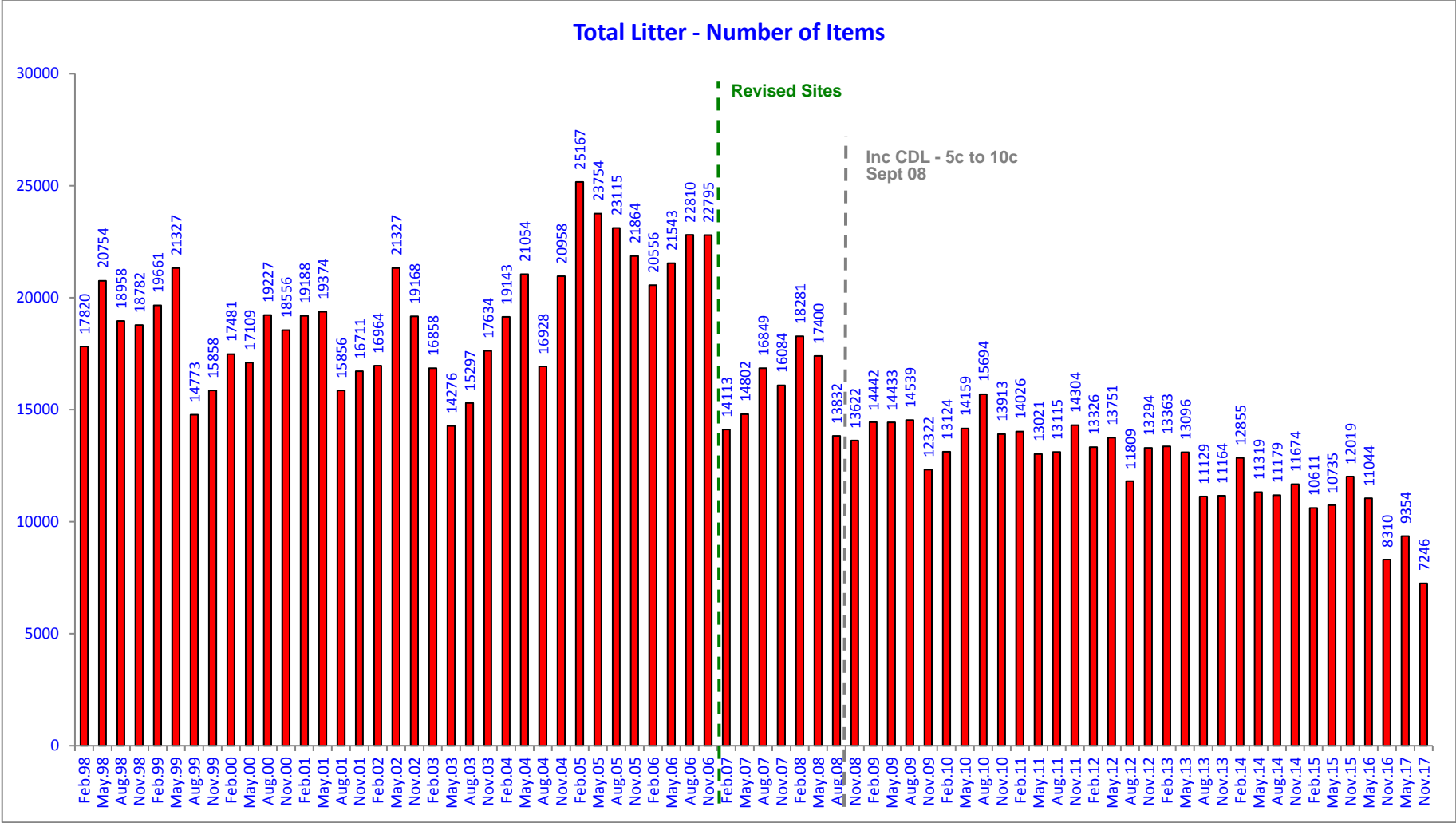
Proportions of total items within site type across all 151 sites including either 11 original or 11 revised sites		Residential	Beach	Industrial	Car Park	Shopping Centre	Retail	Recreational Park	Highway	Metropolitan	Regional	TOTAL
Wave 32	Old	1187	1016	2395	2194	1261	1517	617	10369	17020	3536	20556
	New	1187	1016	2196	2064	1292	1517	617	5147	11500	3536	15036
	Old % of total items	5.8%	4.9%	11.7%	10.7%	6.1%	7.4%	3.0%	50.4%	82.8%	17.2%	
	New % of total items	7.9%	6.8%	14.6%	13.7%	8.6%	10.1%	4.1%	34.2%	76.5%	23.5%	
	% change from Old to New	2.1%	1.8%	3.0%	3.1%	2.5%	2.7%	1.1%	-16.2%	-6.3%	6.3%	
Wave 33	Old	1227	737	2573	3142	2323	1659	590	9292	17788	3755	21543
	New	1227	737	2428	2722	1919	1659	590	4607	12134	3755	15889
	Old % of total items	5.7%	3.4%	11.9%	14.6%	10.8%	7.7%	2.7%	43.1%	82.6%	17.4%	
	New % of total items	7.7%	4.6%	15.3%	17.1%	12.1%	10.4%	3.7%	29.0%	76.4%	23.6%	
	% change from Old to New	2.0%	1.2%	3.3%	2.5%	1.3%	2.7%	1.0%	-14.1%	-6.2%	6.2%	
Wave 34	Old	1185	721	2498	3365	1853	1670	479	11039	18749	4061	22810
	New	1185	721	2077	2724	1155	1670	479	5666	11616	4061	15677
	Old % of total items	5.2%	3.2%	11.0%	14.8%	8.1%	7.3%	2.1%	48.4%	82.2%	17.8%	
	New % of total items	7.6%	4.6%	13.2%	17.4%	7.4%	10.7%	3.1%	36.1%	74.1%	25.9%	
	% change from Old to New	2.4%	1.4%	2.3%	2.6%	-0.8%	3.3%	1.0%	-12.3%	-8.1%	8.1%	
Wave 35	Old	1134	728	2705	2601	2232	1801	729	10865	18640	4155	22795
	New	1134	728	2399	2156	1157	1801	729	5325	11274	4155	15429
	Old % of total items	5.0%	3.2%	11.9%	11.4%	9.8%	7.9%	3.2%	47.7%	81.8%	18.2%	
	New % of total items	7.3%	4.7%	15.5%	14.0%	7.5%	11.7%	4.7%	34.5%	73.1%	26.9%	
	% change from Old to New	2.4%	1.5%	3.7%	2.6%	-2.3%	3.8%	1.5%	-13.2%	-8.7%	8.7%	
Average % difference from Old to New		2%	1%	3%	3%	0%	3%	1%	-14%	-7%	7%	

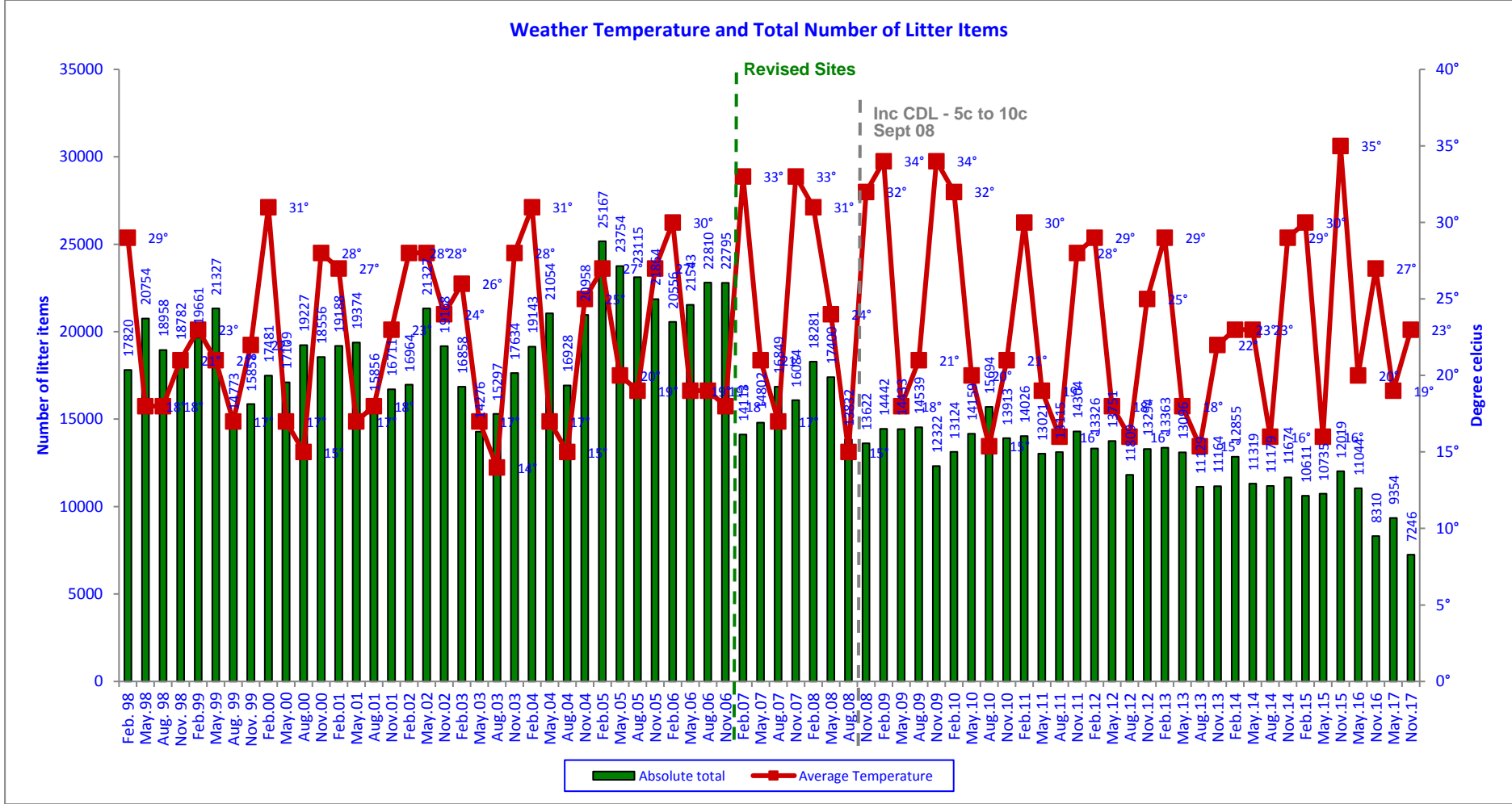
Volumes within material categories across all 151 sites including either 11 original or 11 revised sites	Wave 32				Wave 33				Wave 34				Wave 35			
	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old	Old	New	Diff	New as % of Old
Glass	0.11965	0.09027	0.02939	0.75438	0.08663	0.06859	0.01804	0.79173	0.08559	0.07086	0.01473	0.82789	0.06907	0.05316	0.01591	0.76962
Metal	0.22261	0.19846	0.02415	0.8915	0.15196	0.13181	0.02015	0.86741	0.15085	0.10952	0.04132	0.72605	0.17499	0.15130	0.02369	0.86463
Plastic	1.16278	0.72042	0.44235	0.61957	0.90407	0.71848	0.18559	0.79472	0.93411	0.63312	0.30099	0.67778	0.88814	0.67589	0.21225	0.76102
Paper/ paperboard	0.71375	0.41932	0.29443	0.58749	0.47904	0.36017	0.11888	0.75184	0.54568	0.35535	0.19033	0.6512	0.50410	0.35413	0.14998	0.70249
Miscellaneous	1.11014	0.83415	0.27599	0.75139	0.84900	0.61172	0.23727	0.72052	0.78143	0.71261	0.06882	0.91194	2.14021	1.97182	0.16839	0.92132
Cigarette Butts	0.00009	0.00007	0.00002	0.75515	0.00011	0.00008	0.00003	0.70935	0.00013	0.00008	0.00005	0.63553	0.00013	0.00007	0.00005	0.59531
TOTAL	3.32902	2.26269	1.06633	0.67969	2.47082	1.89085	0.57996	0.76528	2.49778	1.88155	0.61624	0.75329	3.77664	3.20638	0.57026	0.849
AVERAGE New as % of Old				0.71988				0.77155				0.74052				0.78049
OVERALL MEAN DIFFERENCE	0.7531															

Volumes within site type across all 151 sites including either 11 original or 11 revised sites		Residential	Beach	Industrial	Car Park	Shopping Centre	Retail	Recreational Park	Highway	Metropolitan	Regional	TOTAL
Wave 32	Old	0.05441	0.02998	0.57970	0.13090	0.01177	0.01877	0.02922	2.47428	2.54585	0.78318	3.32902
	New	0.05441	0.02998	0.57922	0.17275	0.00965	0.01877	0.02922	1.36868	1.47951	0.78318	2.26269
	Diff			0.00048	-0.04186	0.00212			1.10559	1.06633		
	New as % of Old	1	1	0.99917	1.31979	0.82005	1	1	0.55317	0.58115	1	
Wave 33	Old	0.06600	0.03600	0.54200	0.07100	0.03000	0.02100	0.04100	1.66400	1.85500	0.61500	2.47100
	New	0.06600	0.03600	0.53900	0.07000	0.01000	0.02100	0.04100	1.10700	1.27500	0.61500	1.89000
	Diff			0.00300	0.00100	0.02000			0.55700	0.58000		
	New as % of Old	1	1	0.99446	0.98592	0.33333	1	1	0.66526	0.68733	1	
Wave 34	Old	0.07800	0.06500	0.41100	0.14100	0.05000	0.01200	0.00600	1.73400	1.87300	0.62500	2.49700
	New	0.07800	0.06500	0.40000	0.14000	0.00900	0.01200	0.00600	1.17100	1.25700	0.62500	1.88100
	Diff			0.01100	0.00100	0.04100			0.56300	0.61600		
	New as % of Old	1	1	0.97324	0.99291	0.18000	1	1	0.67532	0.67112	1	
Wave 35	Old	0.17400	0.01700	0.58800	0.13000	0.05300	0.05900	0.01700	2.73700	2.12500	1.65200	3.77500
	New	0.17400	0.01700	0.58600	0.14600	0.03700	0.05900	0.01700	2.16900	1.55500	1.65200	3.20500
	Diff			0.00200	-0.01600	0.01600			0.56800	0.57000		
	New as % of Old	1	1	1.00	1.12	0.70	1	1	0.79	0.73	1	
Average New as % of Old		1	1	0.99	1.11	0.51	1	1	0.67	0.67	1	

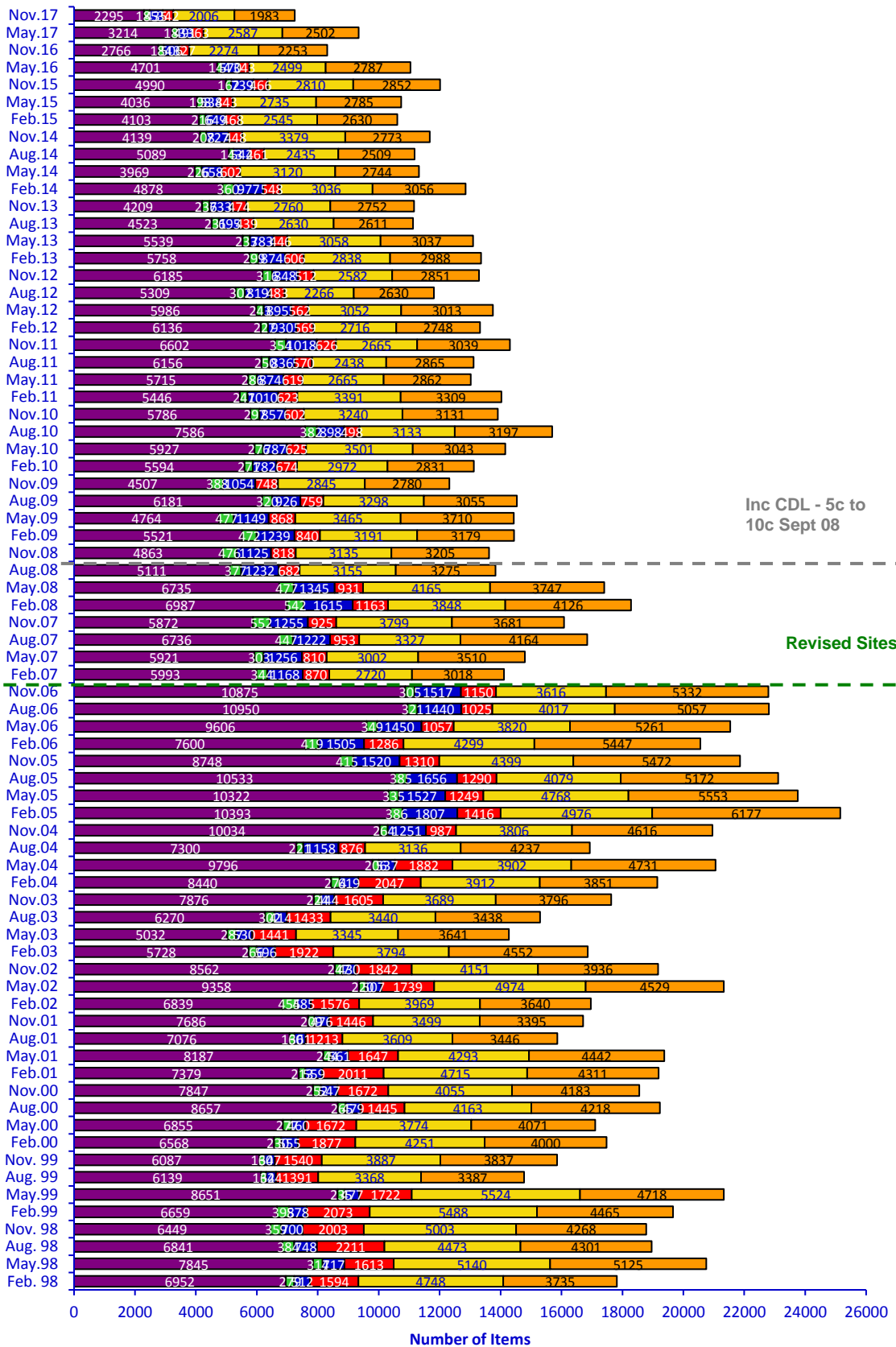
Proportions of total volume within site type across all 151 sites including either 11 original or 11 revised sites		Residential	Beach	Industrial	Car Park	Shopping Centre	Retail	Recreational Park	Highway	Metropolitan	Regional	TOTAL
Wave 32	Old	0.05441	0.02998	0.57970	0.13090	0.01177	0.01877	0.02922	2.47428	2.54585	0.78318	3.32902
	New	0.05441	0.02998	0.57922	0.17275	0.00965	0.01877	0.02922	1.36868	1.47951	0.78318	2.26269
	Old % of total volume	1.6%	0.9%	17.4%	3.9%	0.4%	0.6%	0.9%	74.3%	76.5%	23.5%	
	New % of total volume	2.4%	1.3%	25.6%	7.6%	0.4%	0.8%	1.3%	60.5%	65.4%	34.6%	
	% change from Old to New	0.8%	0.4%	8.2%	3.7%	0.1%	0.3%	0.4%	-13.8%	-11.1%	11.1%	
Wave 33	Old	0.06600	0.03600	0.54200	0.07100	0.03000	0.02100	0.04100	1.66400	1.85500	0.61500	2.47100
	New	0.06600	0.03600	0.53900	0.07000	0.01000	0.02100	0.04100	1.10700	1.27500	0.61500	1.89000
	Old % of total volume	2.7%	1.5%	21.9%	2.9%	1.2%	0.8%	1.7%	67.3%	75.1%	24.9%	
	New % of total volume	3.5%	1.9%	28.5%	3.7%	0.5%	1.1%	2.2%	58.6%	67.5%	32.5%	
	% change from Old to New	0.8%	0.4%	6.6%	0.8%	-0.7%	0.3%	0.5%	-8.8%	-7.6%	7.7%	
Wave 34	Old	0.07800	0.06500	0.41100	0.14100	0.05000	0.01200	0.00600	1.73400	1.87300	0.62500	2.49700
	New	0.07800	0.06500	0.40000	0.14000	0.00900	0.01200	0.00600	1.17100	1.25700	0.62500	1.88100
	Old % of total volume	3.1%	2.6%	16.5%	5.6%	2.0%	0.5%	0.2%	69.4%	75.0%	25.0%	
	New % of total volume	4.1%	3.5%	21.3%	7.4%	0.5%	0.6%	0.3%	62.3%	66.8%	33.2%	
	% change from Old to New	1.0%	0.9%	4.8%	1.8%	-1.5%	0.2%	0.1%	-7.2%	-8.2%	8.2%	
Wave 35	Old	0.17400	0.01700	0.58800	0.13000	0.05300	0.05900	0.01700	2.73700	2.12500	1.65200	3.77500
	New	0.17400	0.01700	0.58600	0.14600	0.03700	0.05900	0.01700	2.16900	1.55500	1.65200	3.20500
	Old % of total volume	4.6%	0.5%	15.6%	3.4%	1.4%	1.6%	0.5%	72.5%	56.3%	43.8%	
	New % of total volume	5.4%	0.5%	18.3%	4.6%	1.2%	1.8%	0.5%	67.7%	48.5%	51.5%	
	% change from Old to New	0.8%	0.1%	2.7%	1.1%	-0.2%	0.3%	0.1%	-4.8%	-7.8%	7.8%	
Average % difference from Old to New		1%	0%	6%	2%	-1%	0%	0%	-9%	-9%	9%	

Unweighted Tracking Graphs - Items

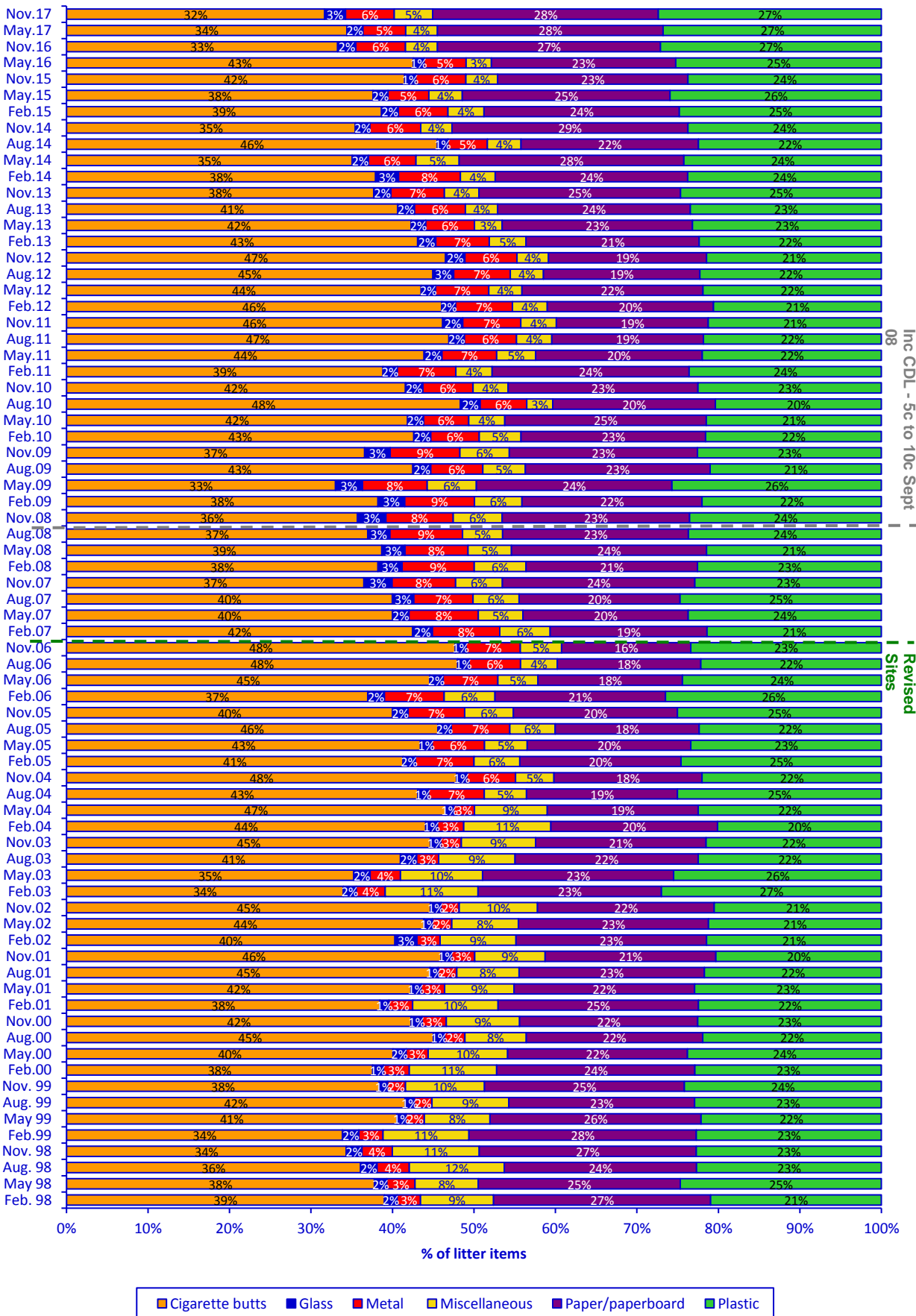




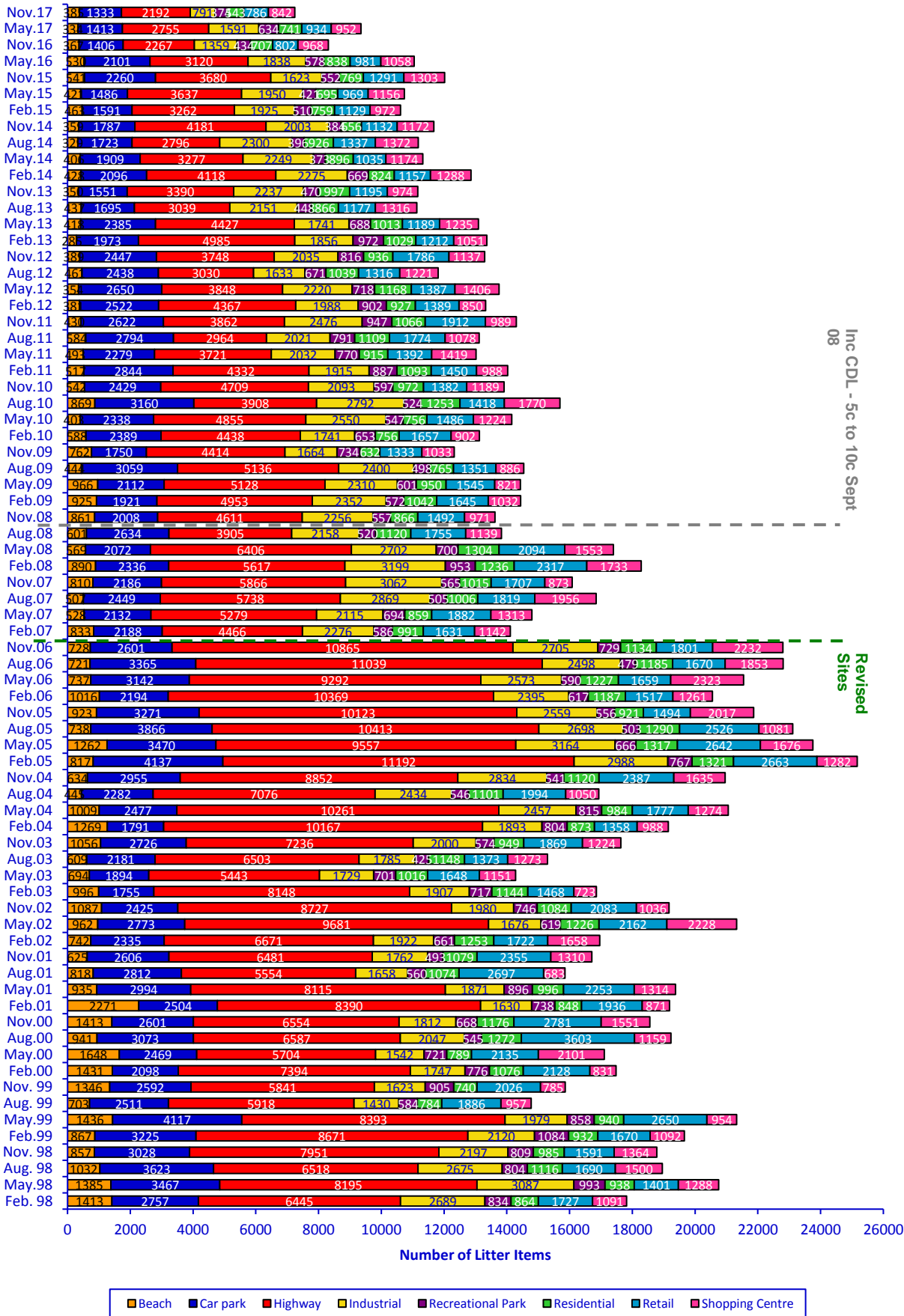
Number of Litter Items by Material Type



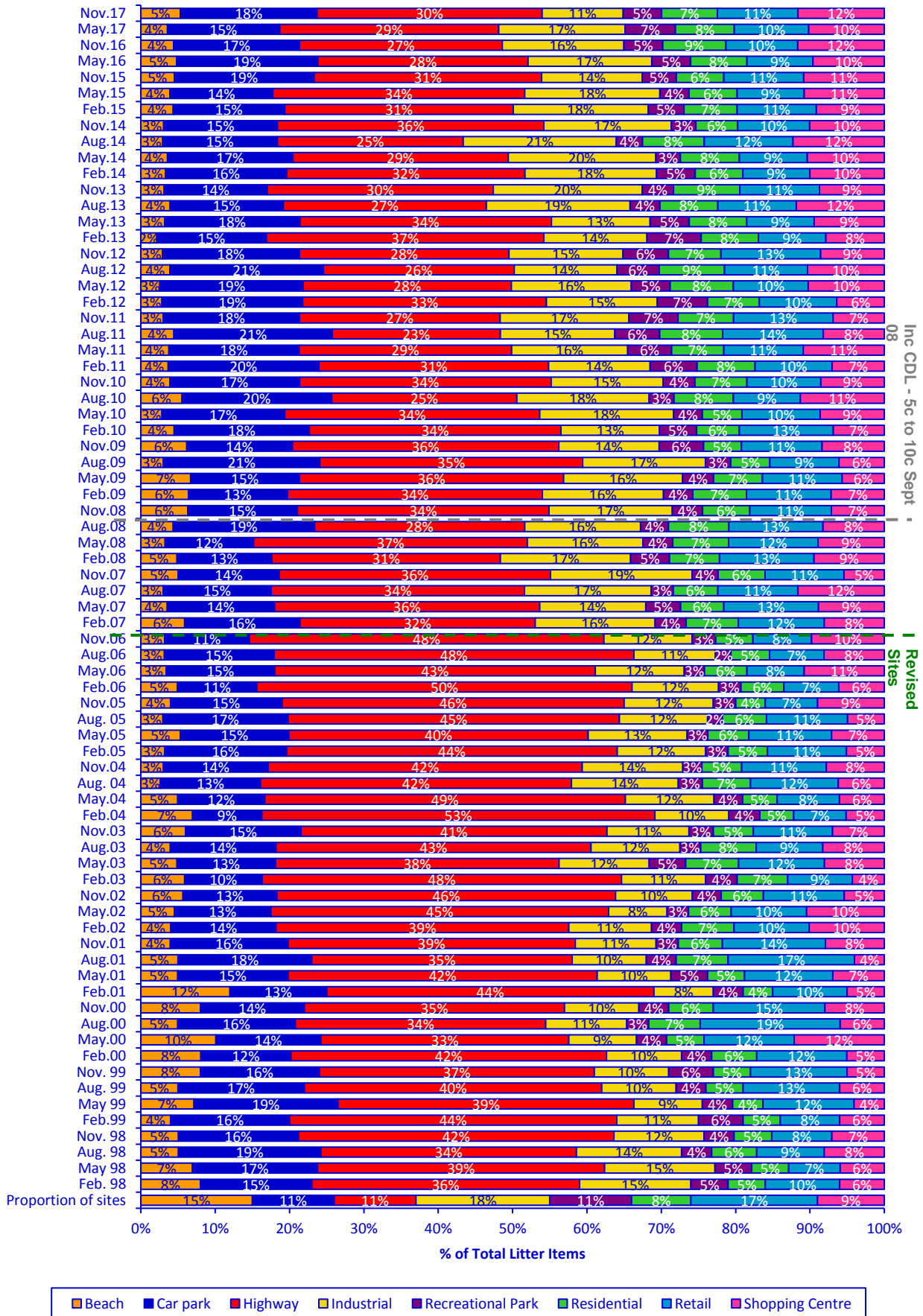
Proportion of Total Litter Stream by Material Type

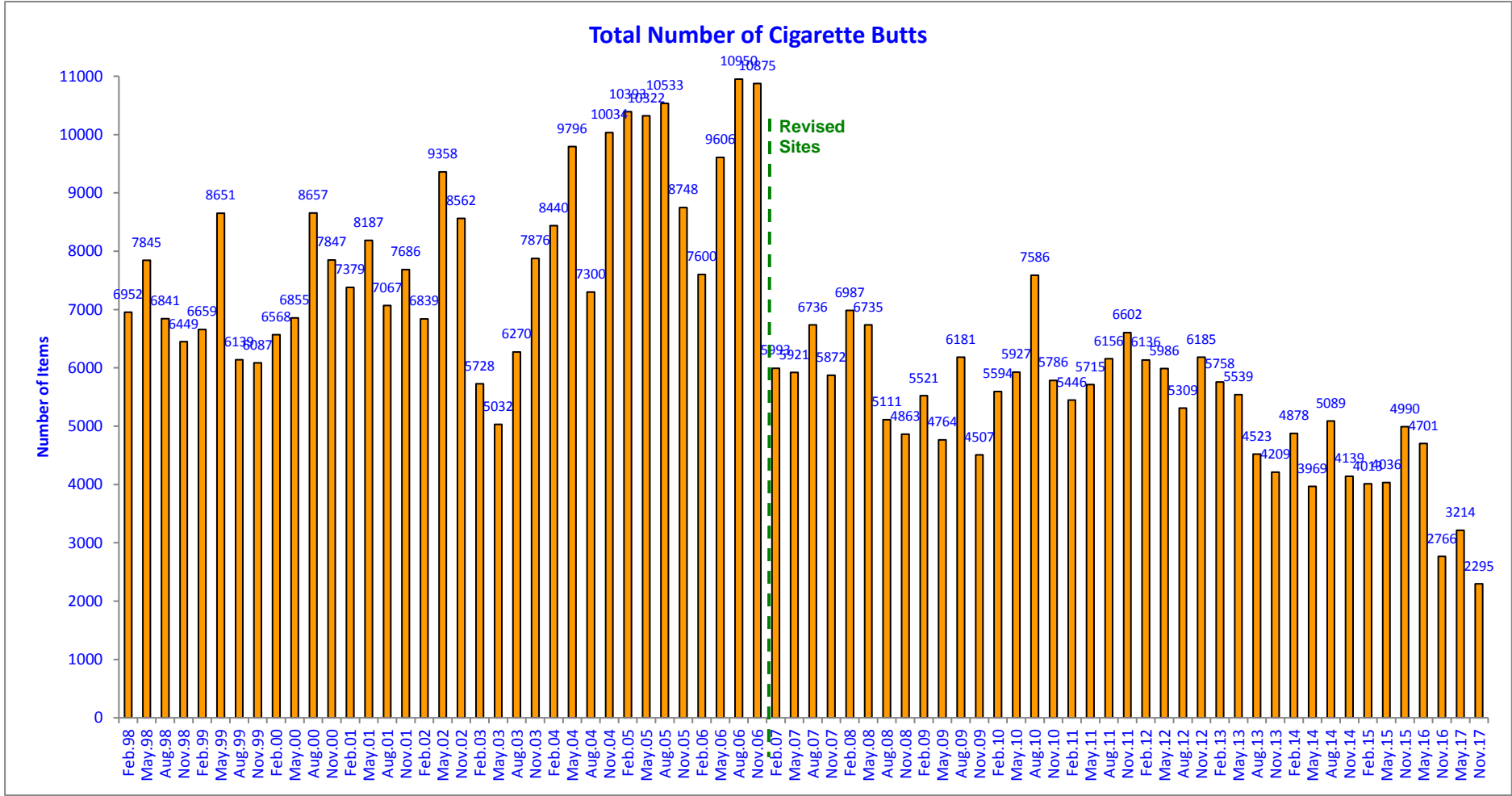


Number of Litter Items by Site Type

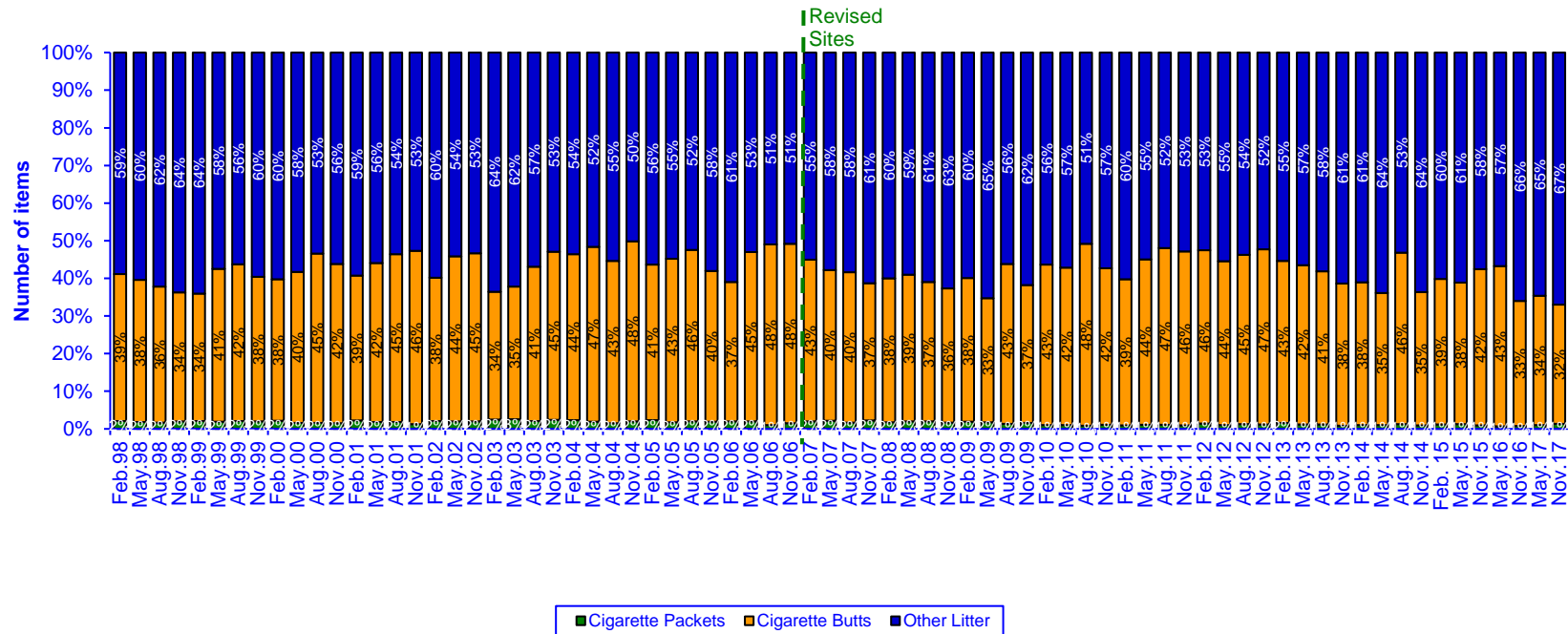


Proportion of Total Litter by Site Type

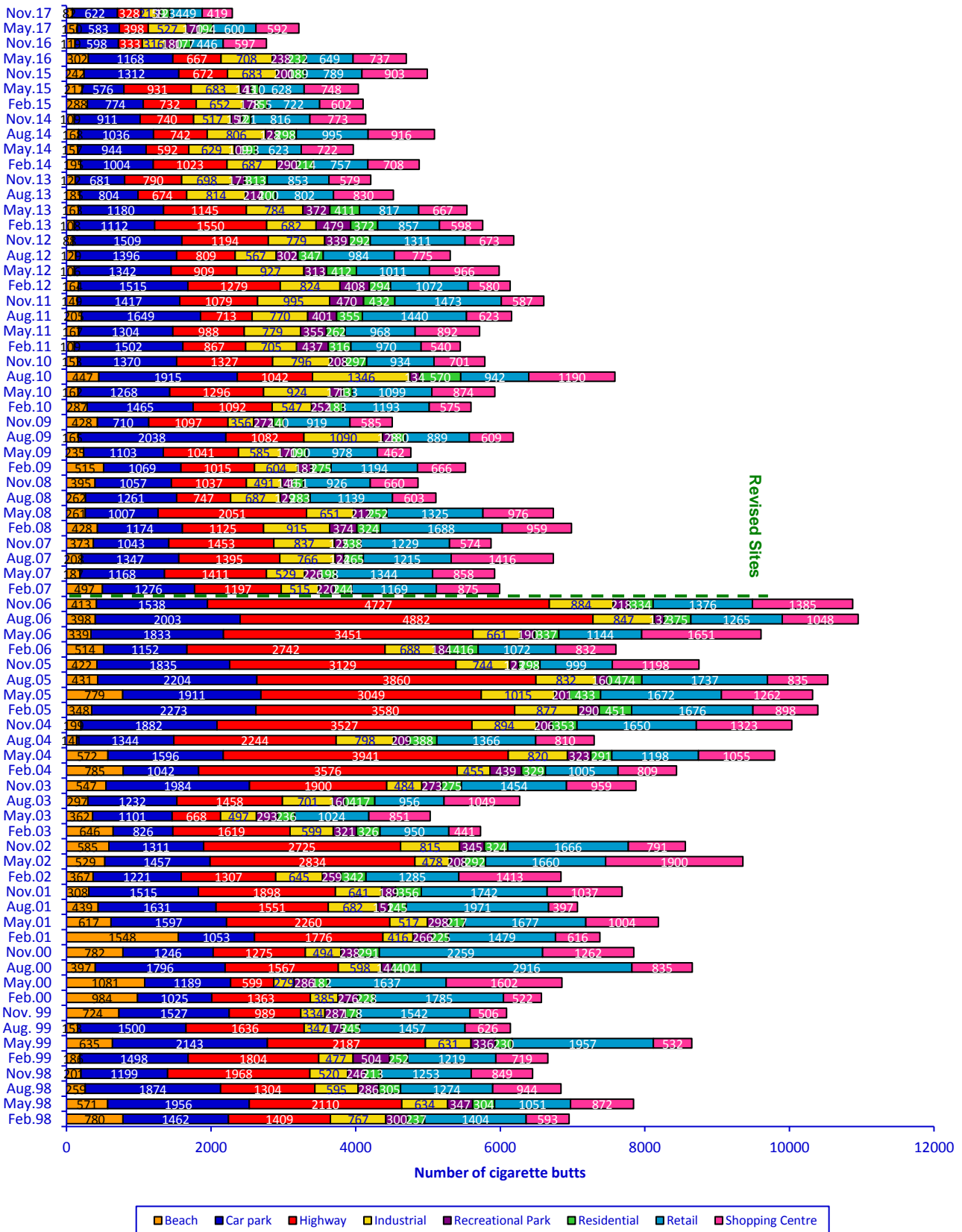




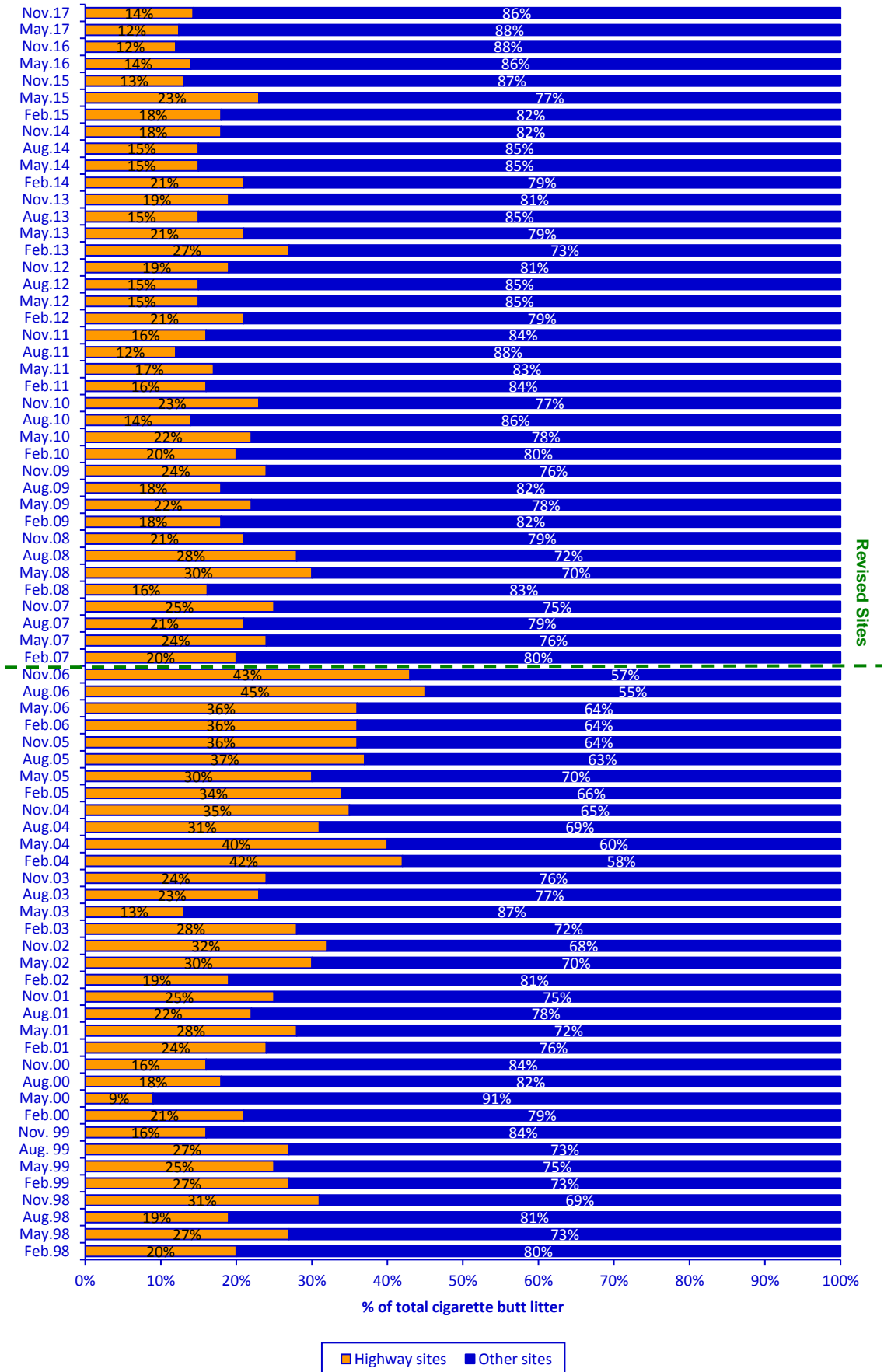
Proportion of Cigarette Related Litter Items in Total Litter Stream

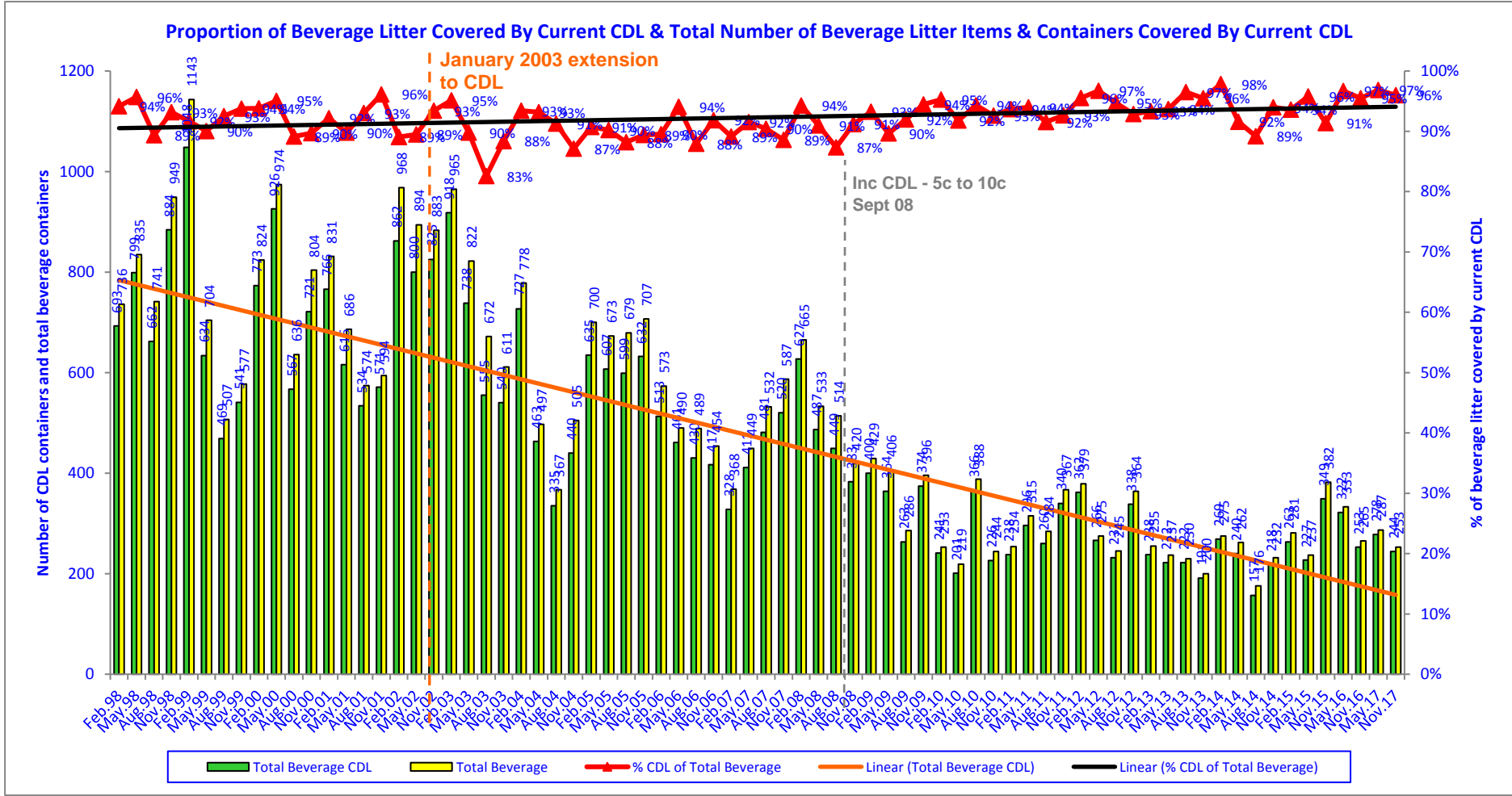


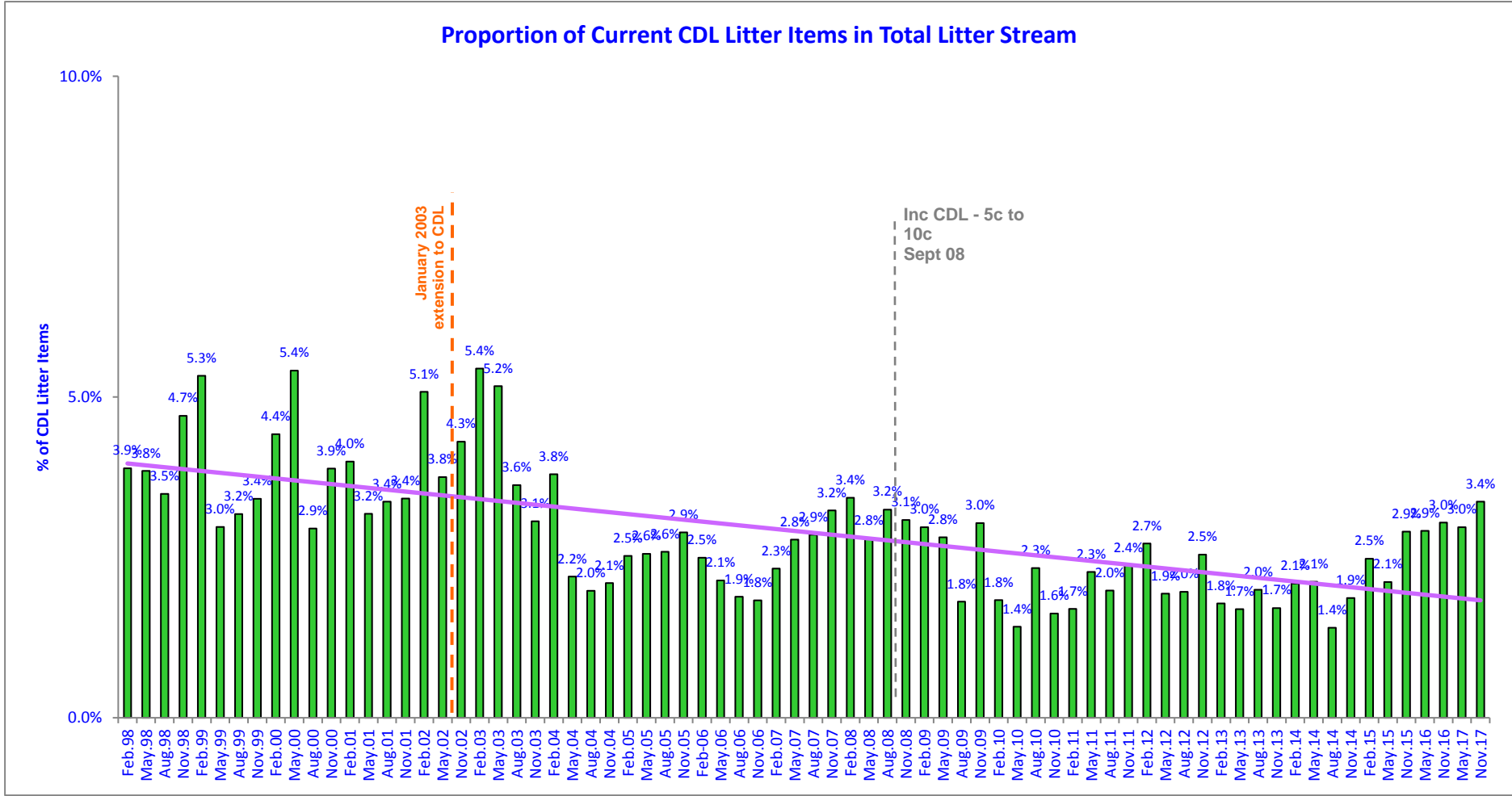
Number of Cigarette Butts by Site Type



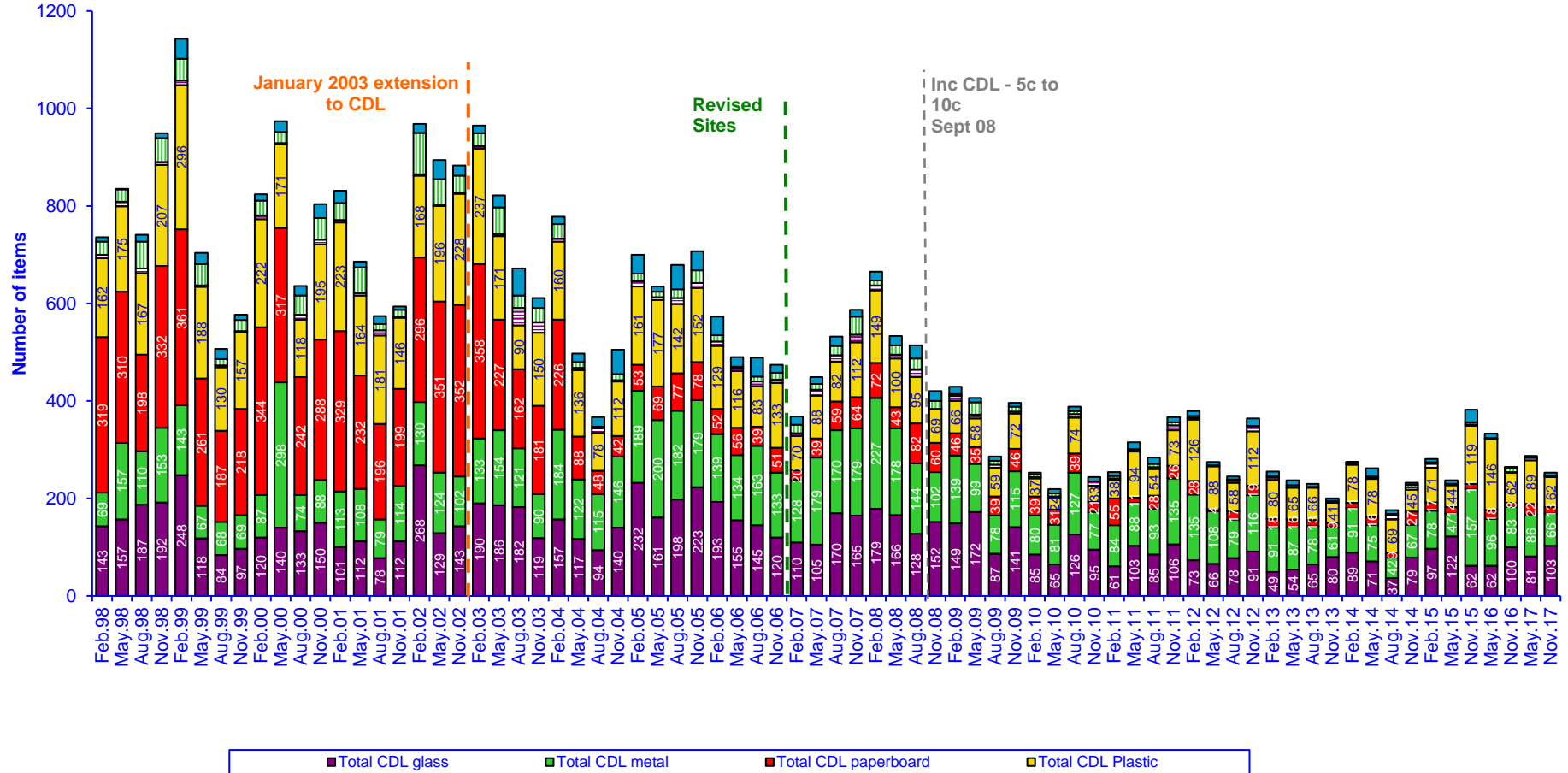
Proportion of Total Cigarette Butt Litter at Highway sites & Other sites



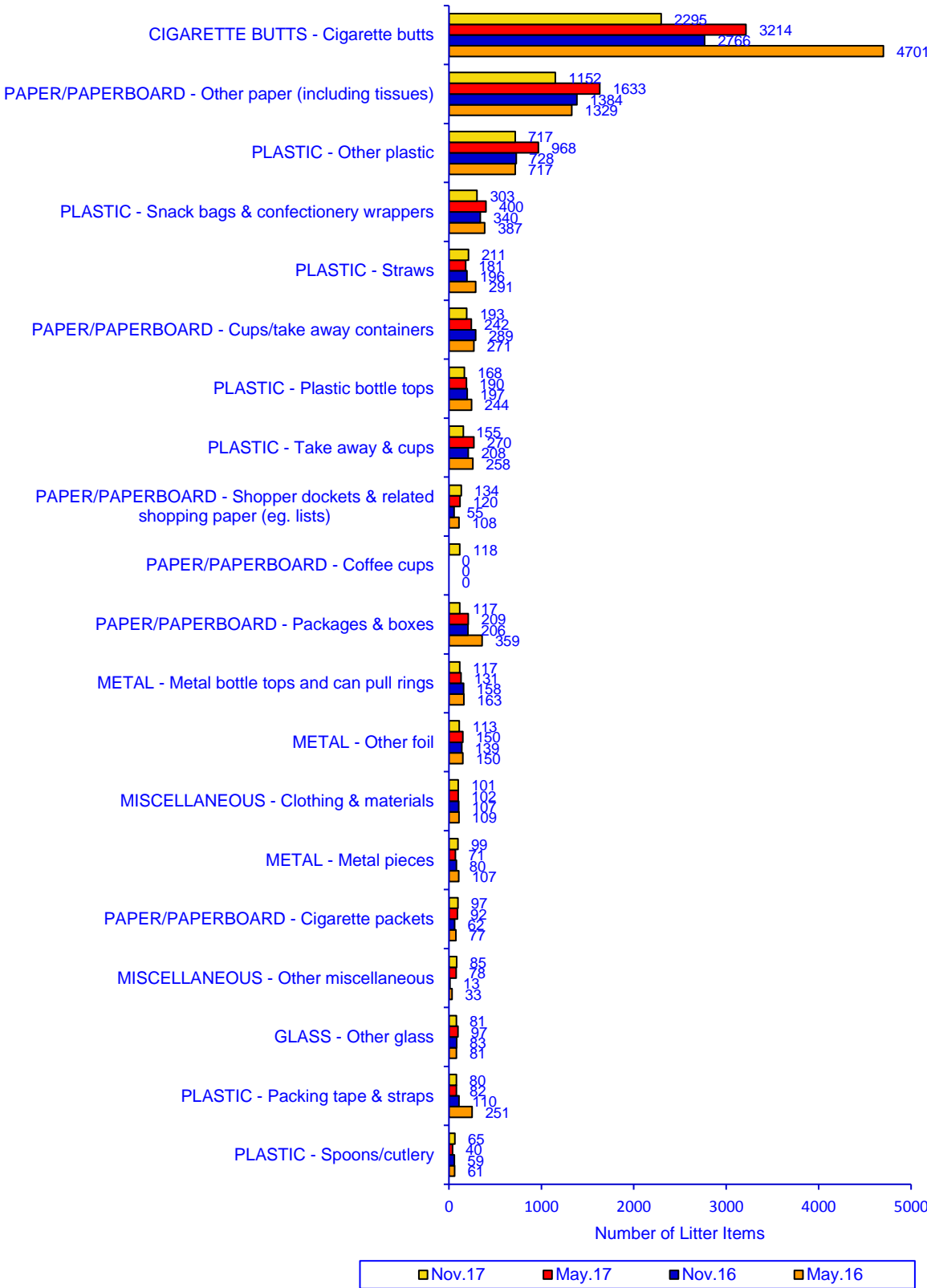




CDL and Non-CDL Beverage Items Within Material Categories

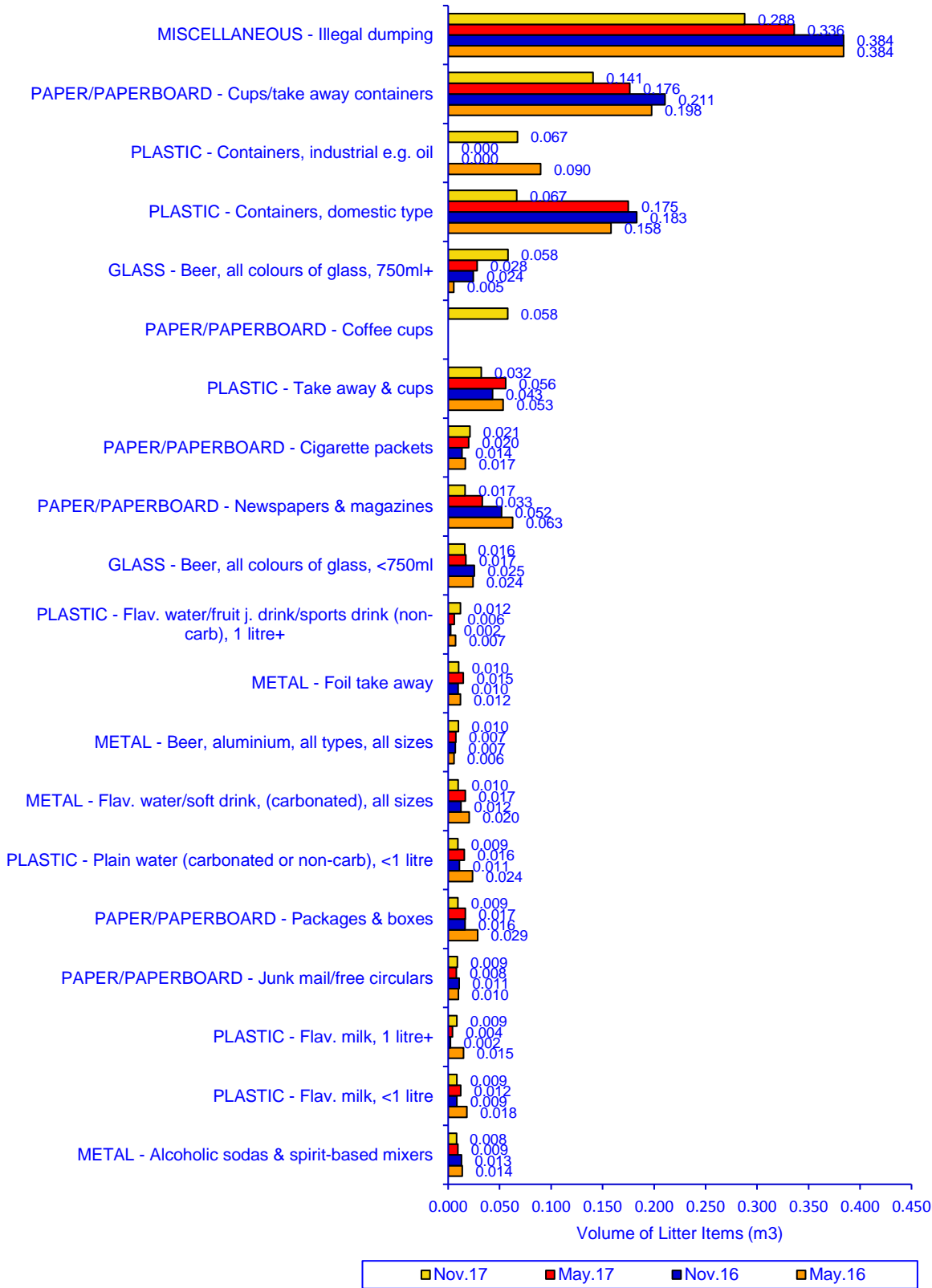


Top 20 Litter Items - Highest Counts

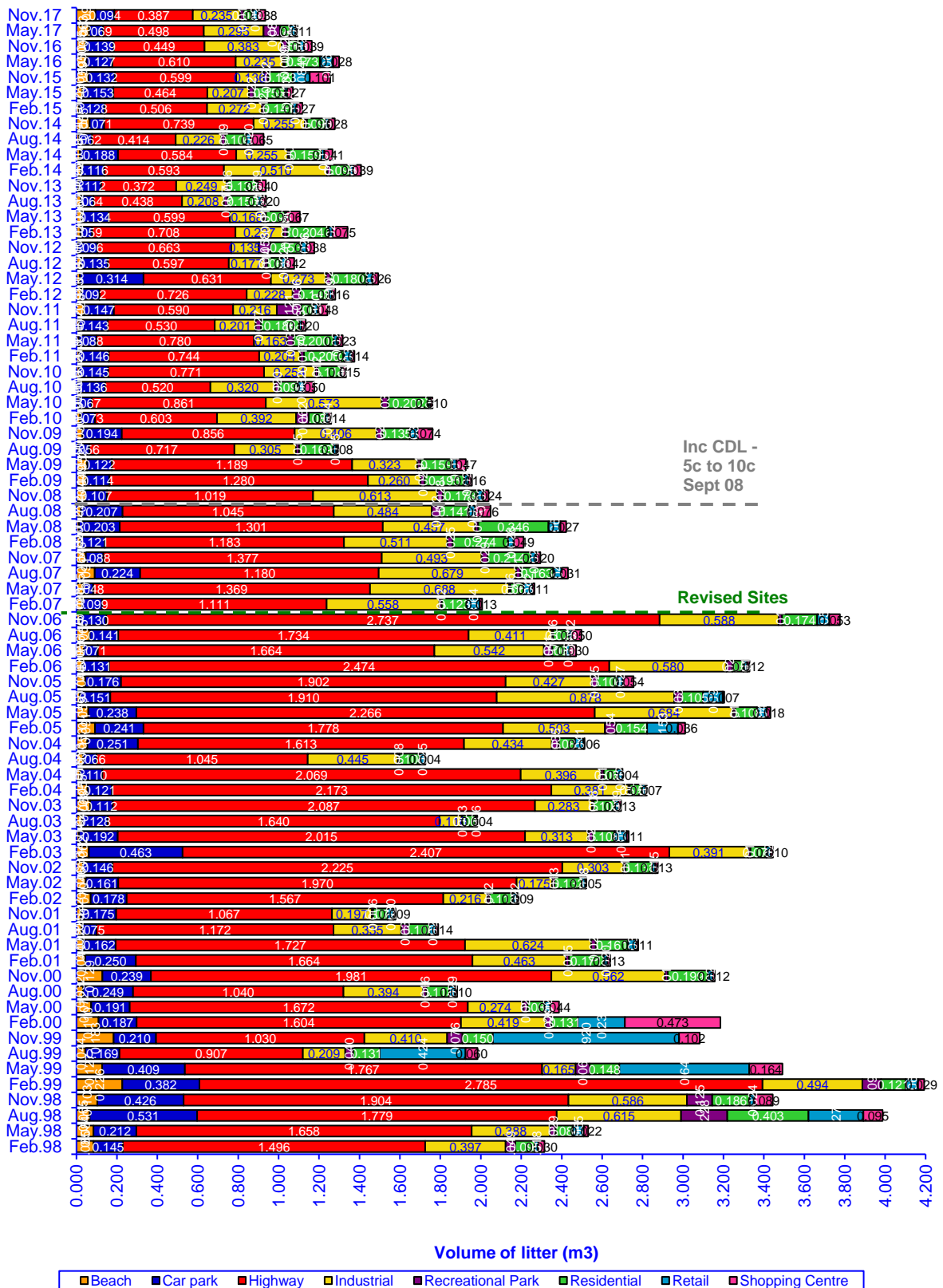


Unweighted Tracking Graphs - Volume

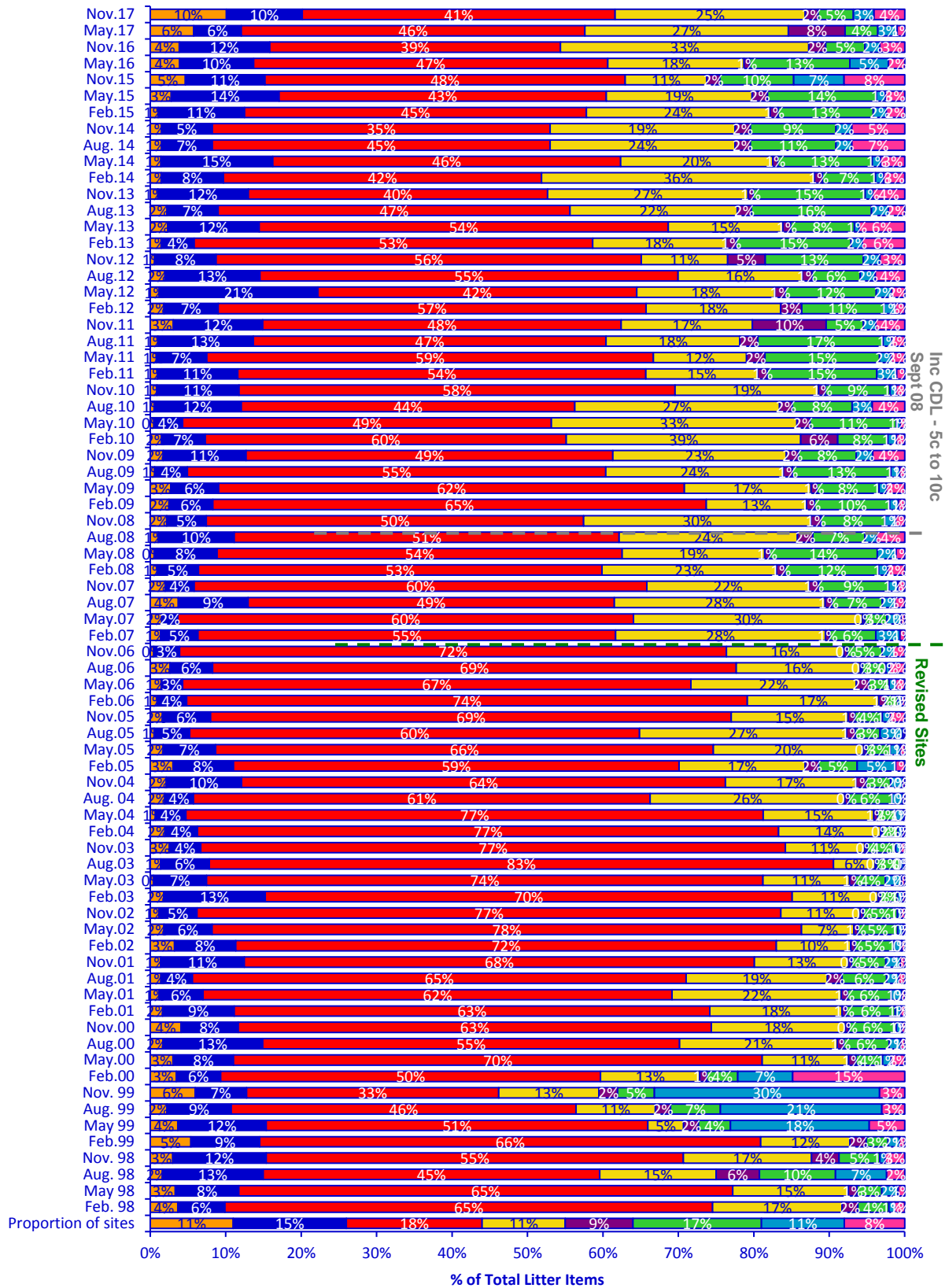
Top 20 Litter Items by Volume



Volume of Litter by Site Type

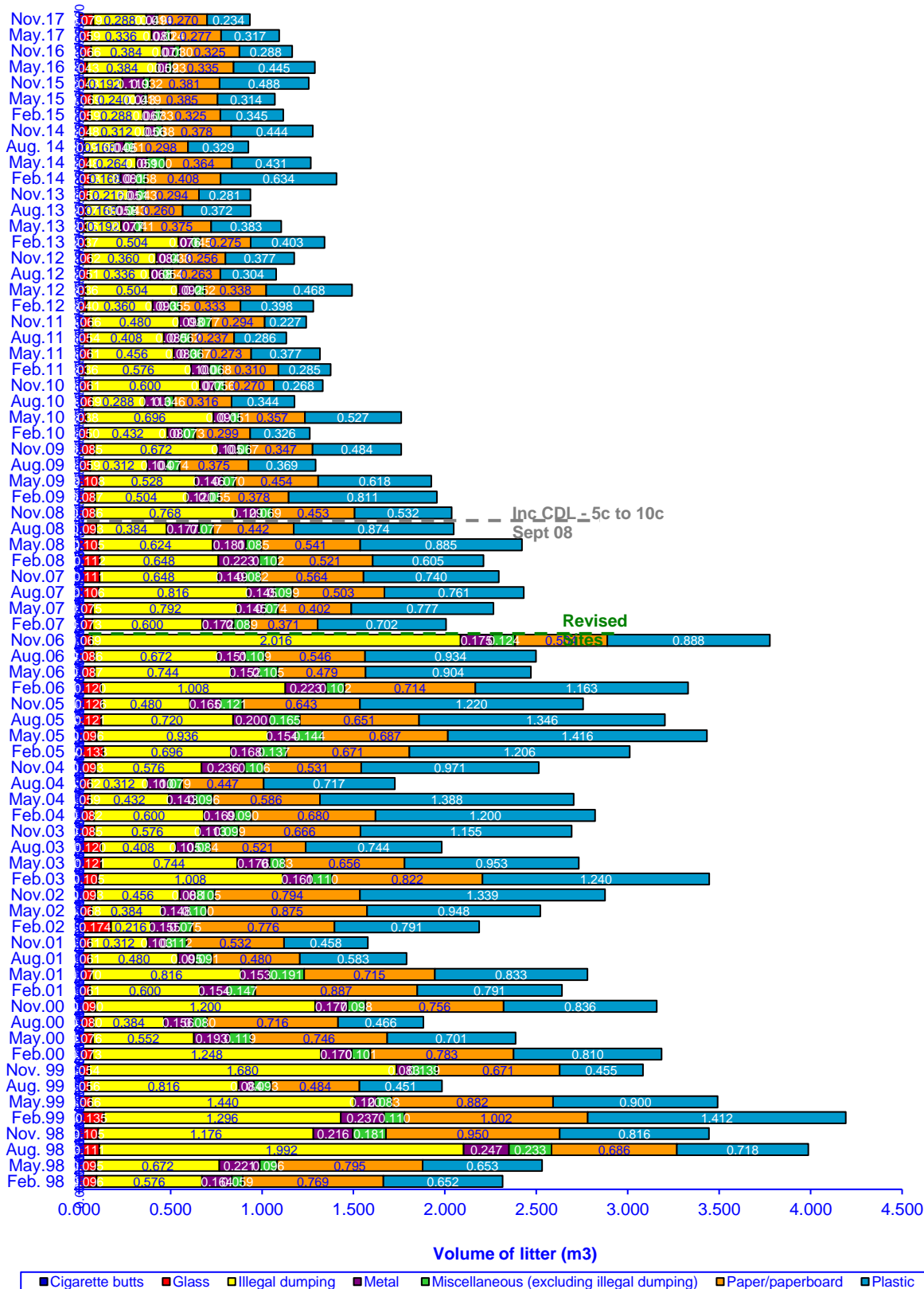


Proportion of Litter Volume in Total Litter Stream by Site Type



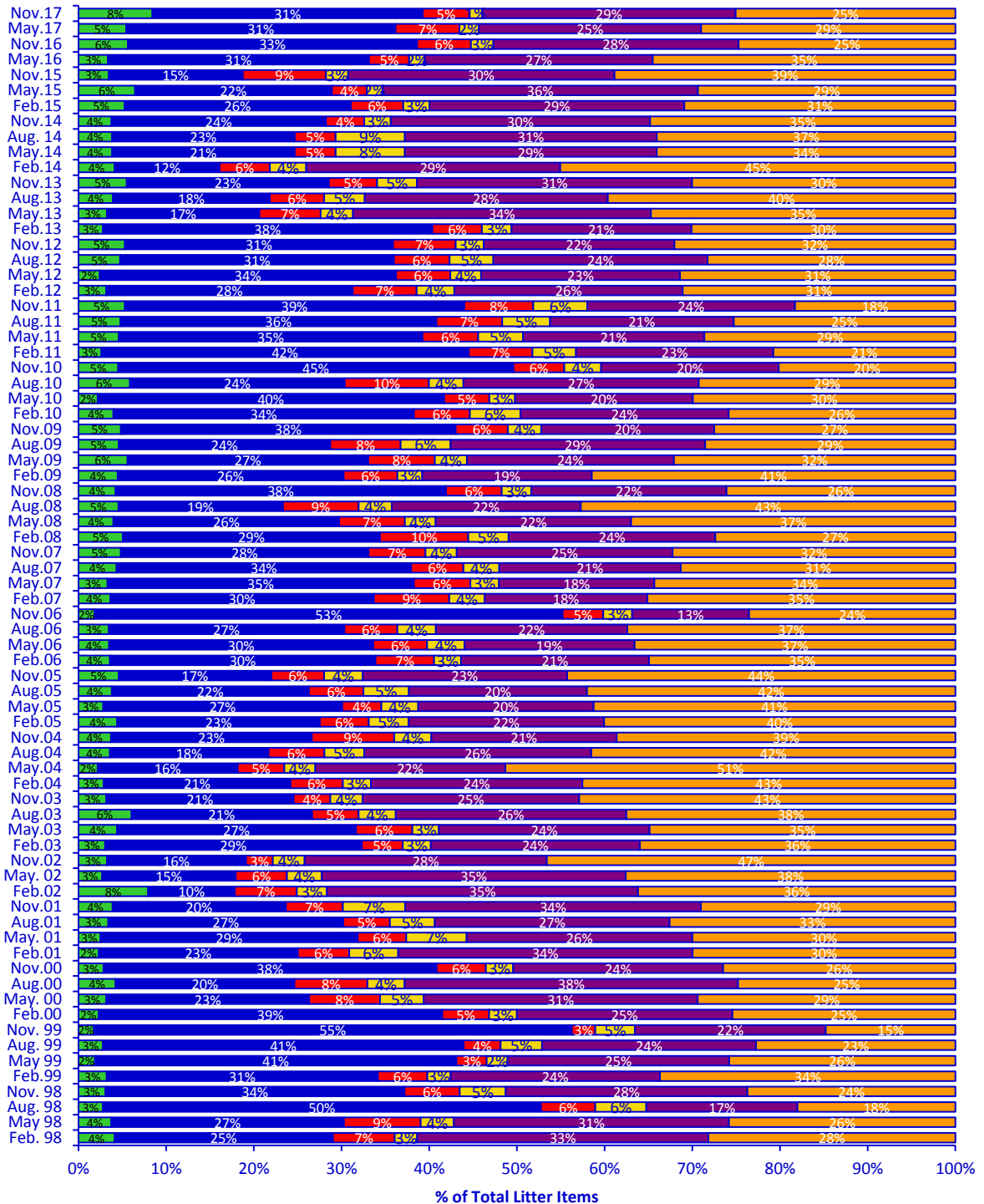
Legend: Beach, Car park, Highway, Industrial, Recreational Park, Residential, Retail, Shopping Centre

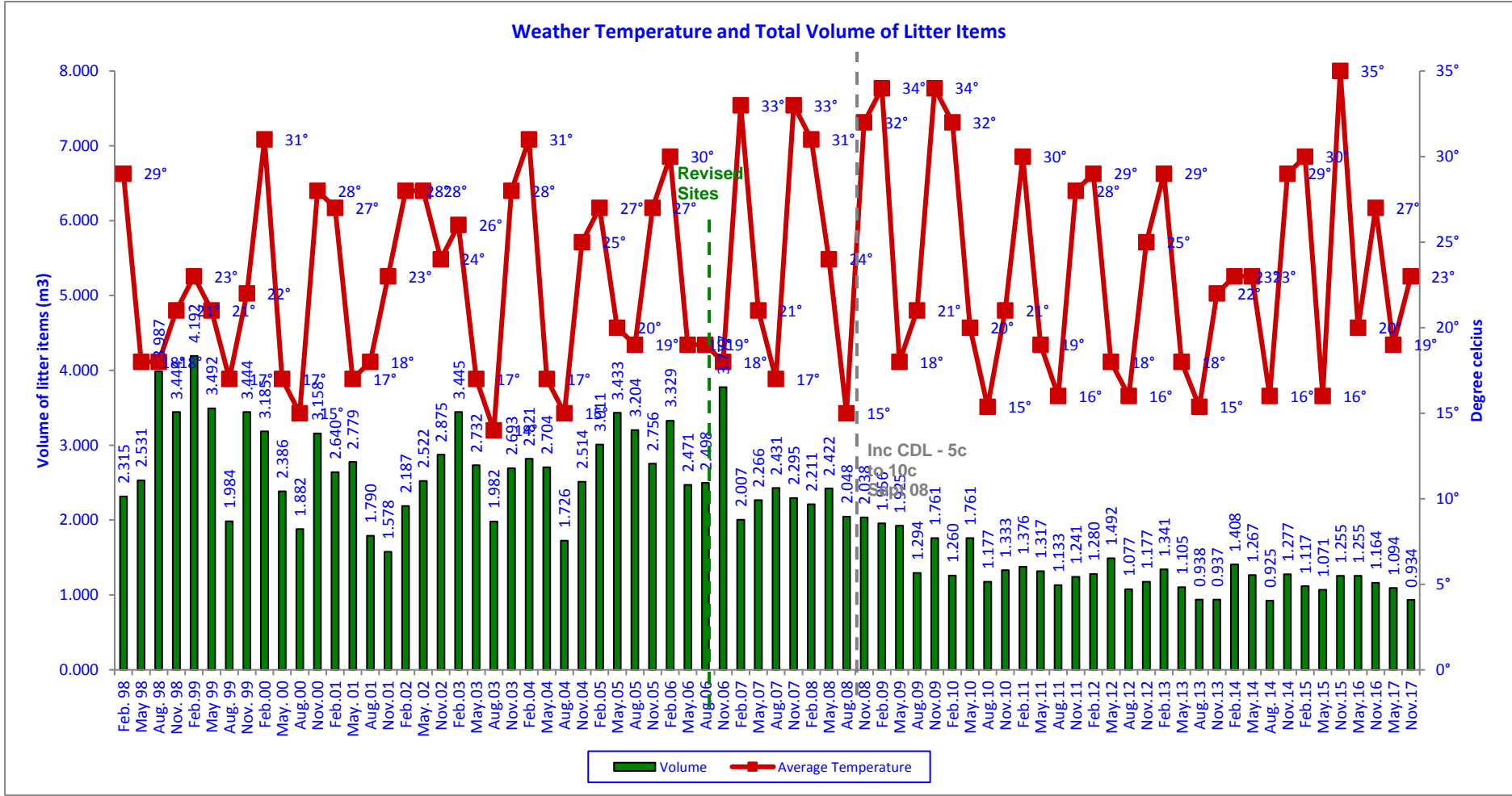
Volume of Litter Items by Material Type

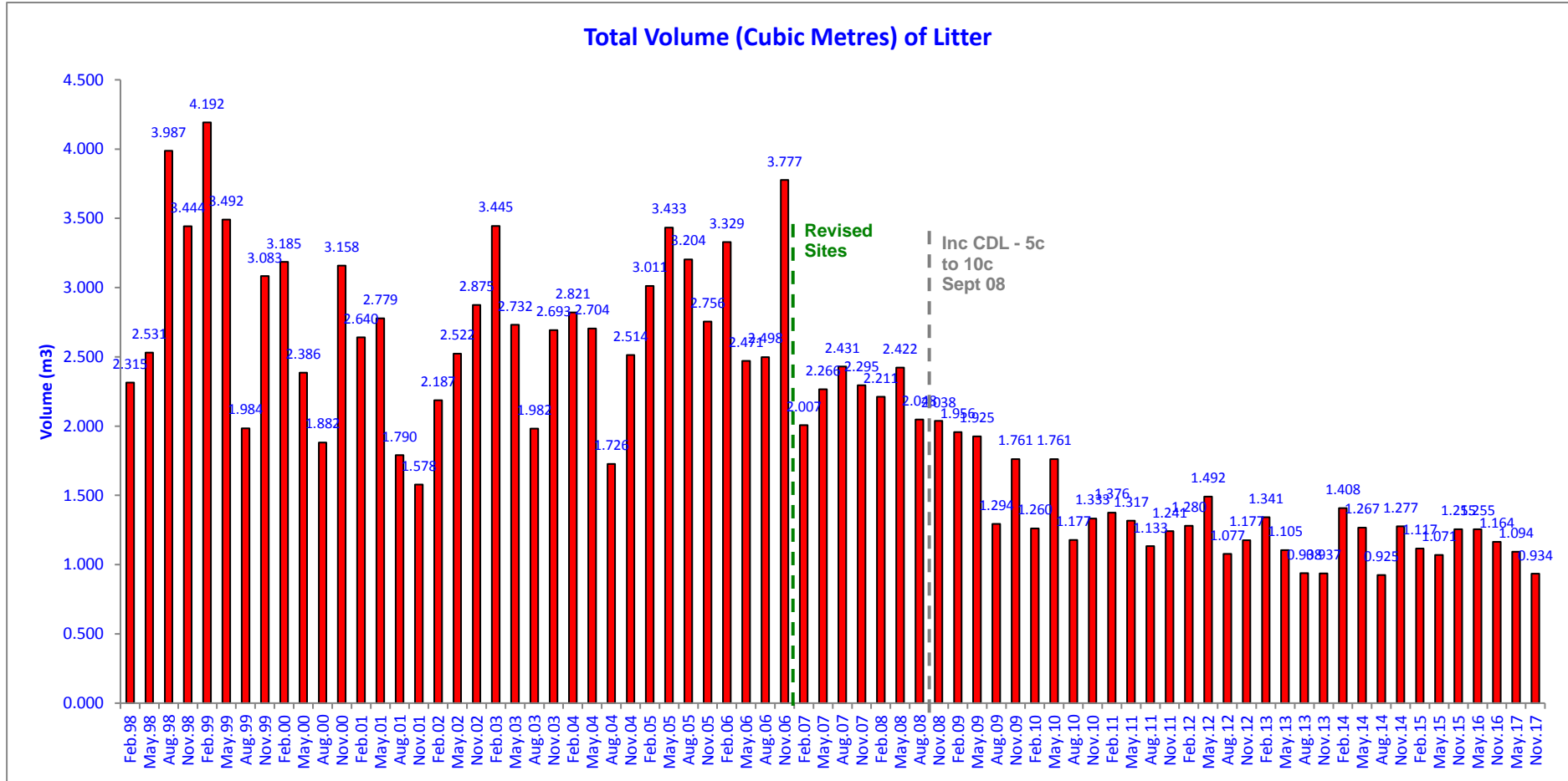


Proportion of Total Litter Volume by Material Type

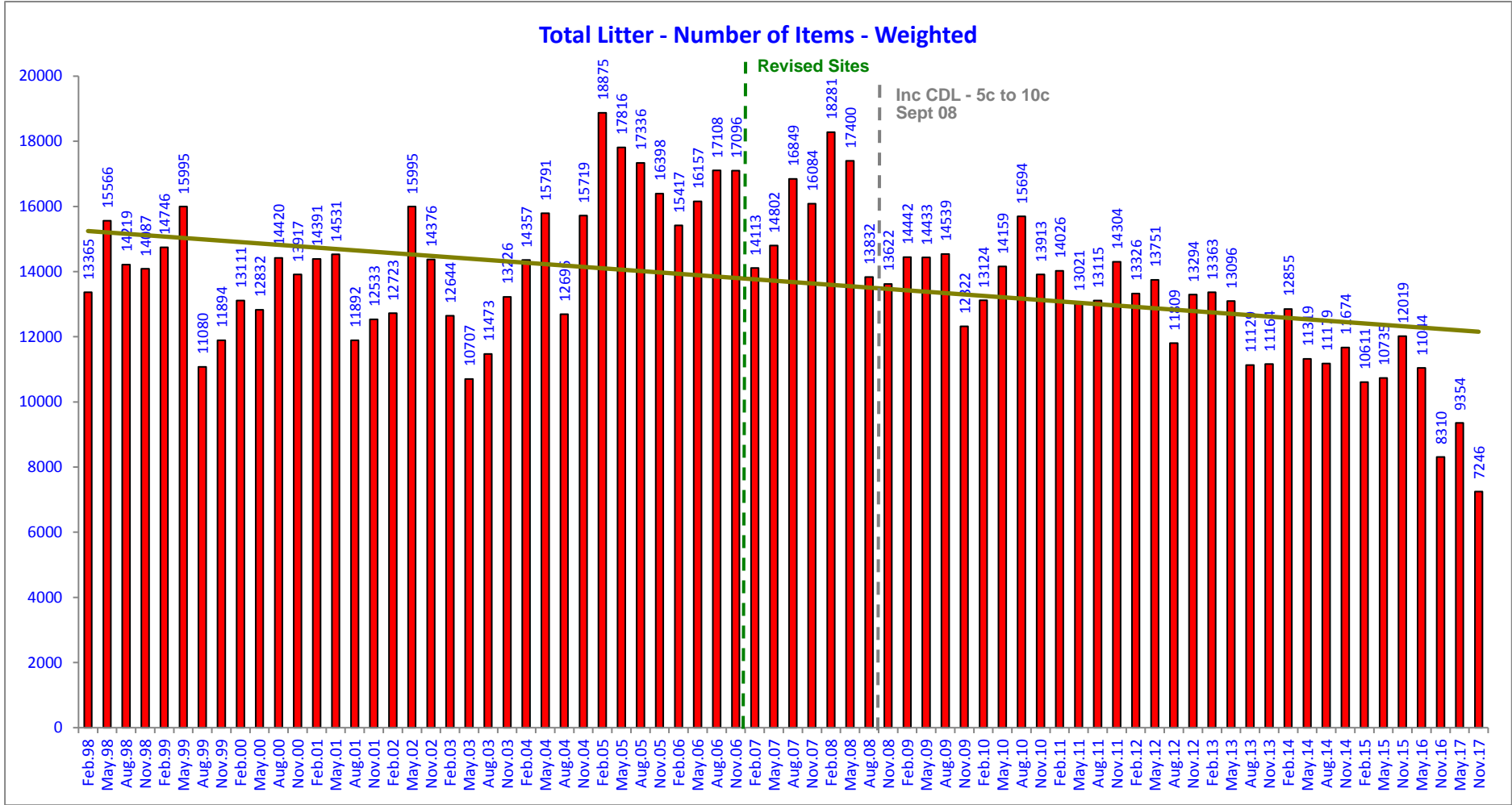
- Please note that cigarette butts are not included as the volumes of such are consistently negligible -

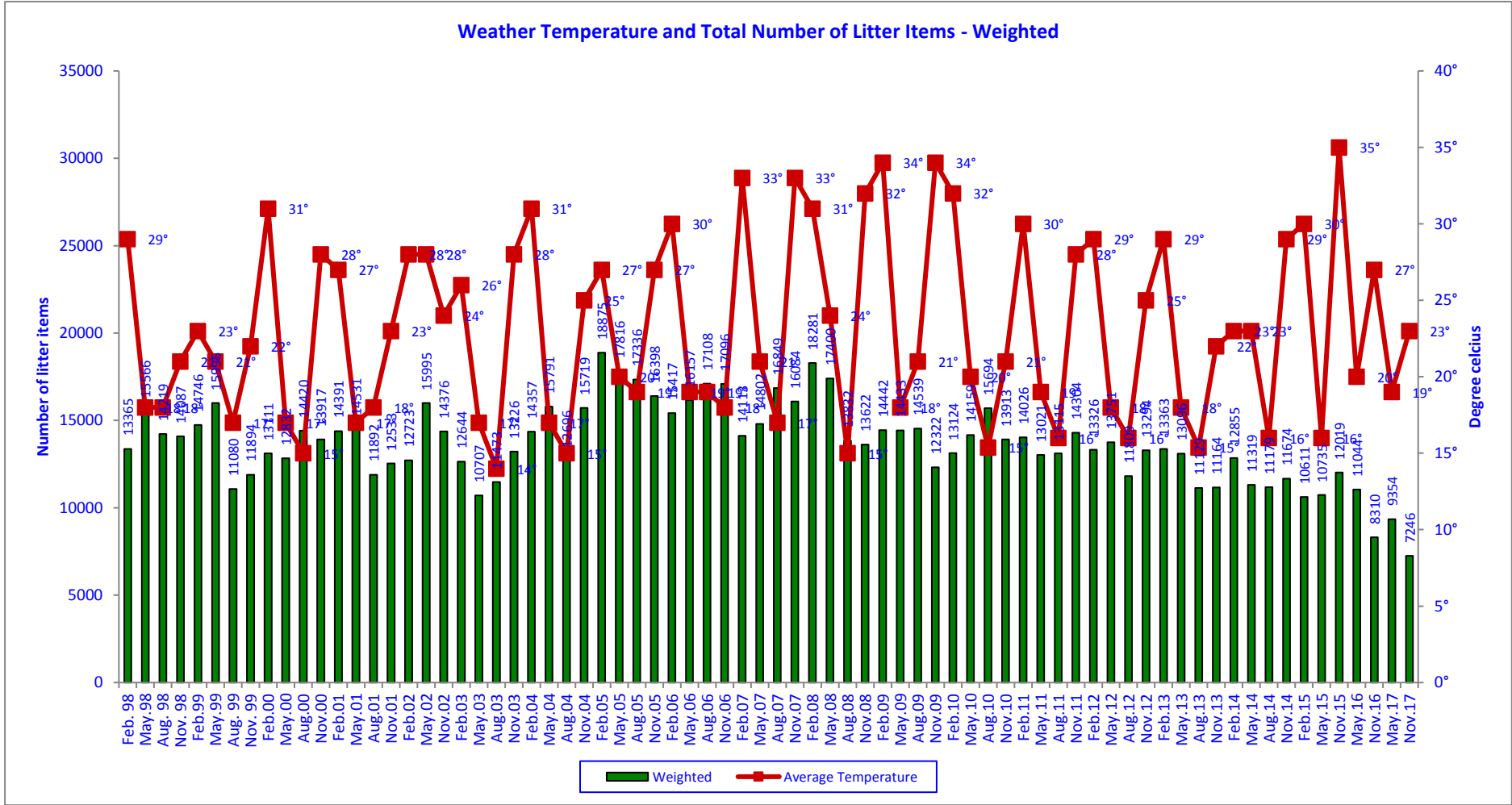




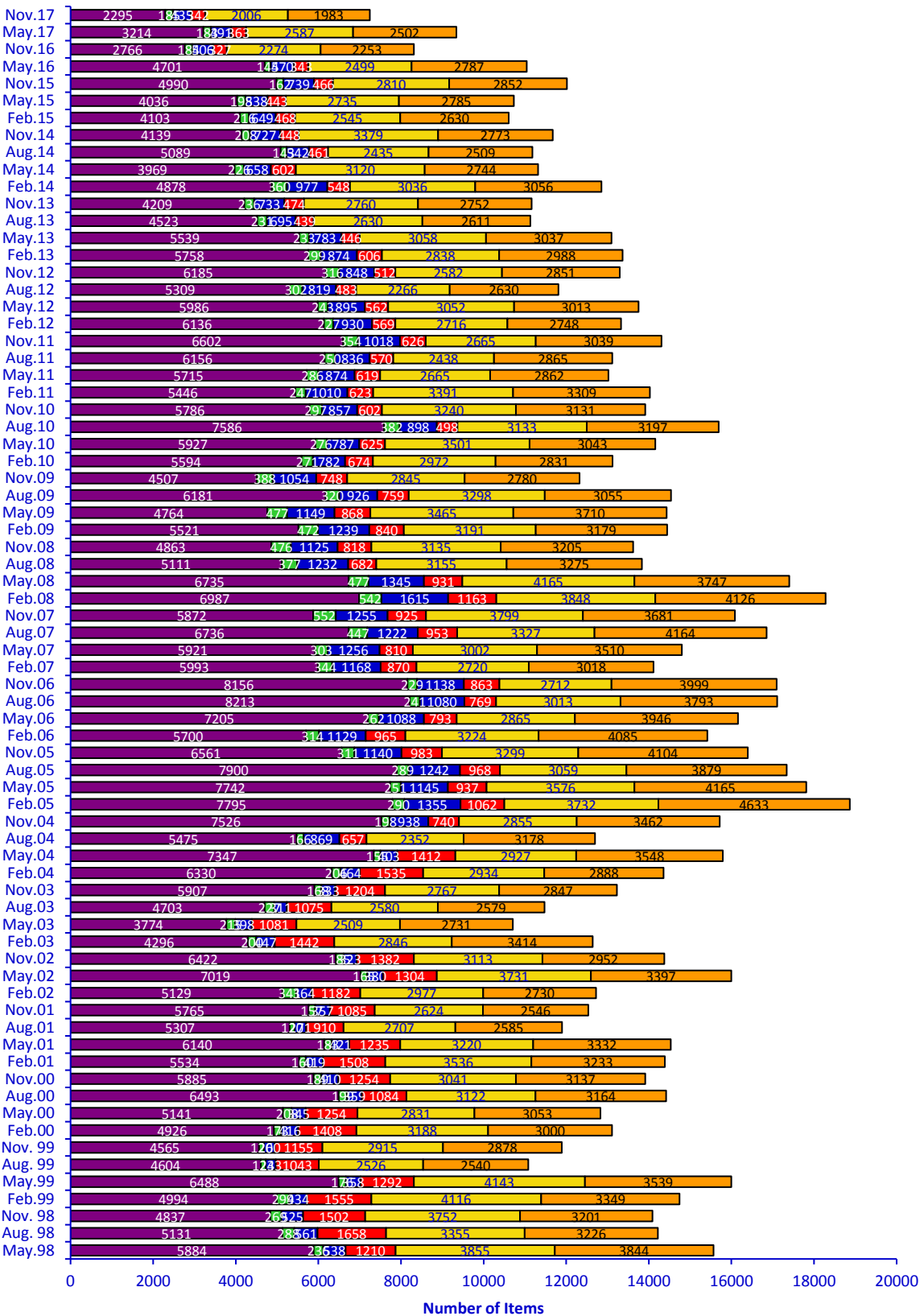


Weighted Tracking Graphs - Items

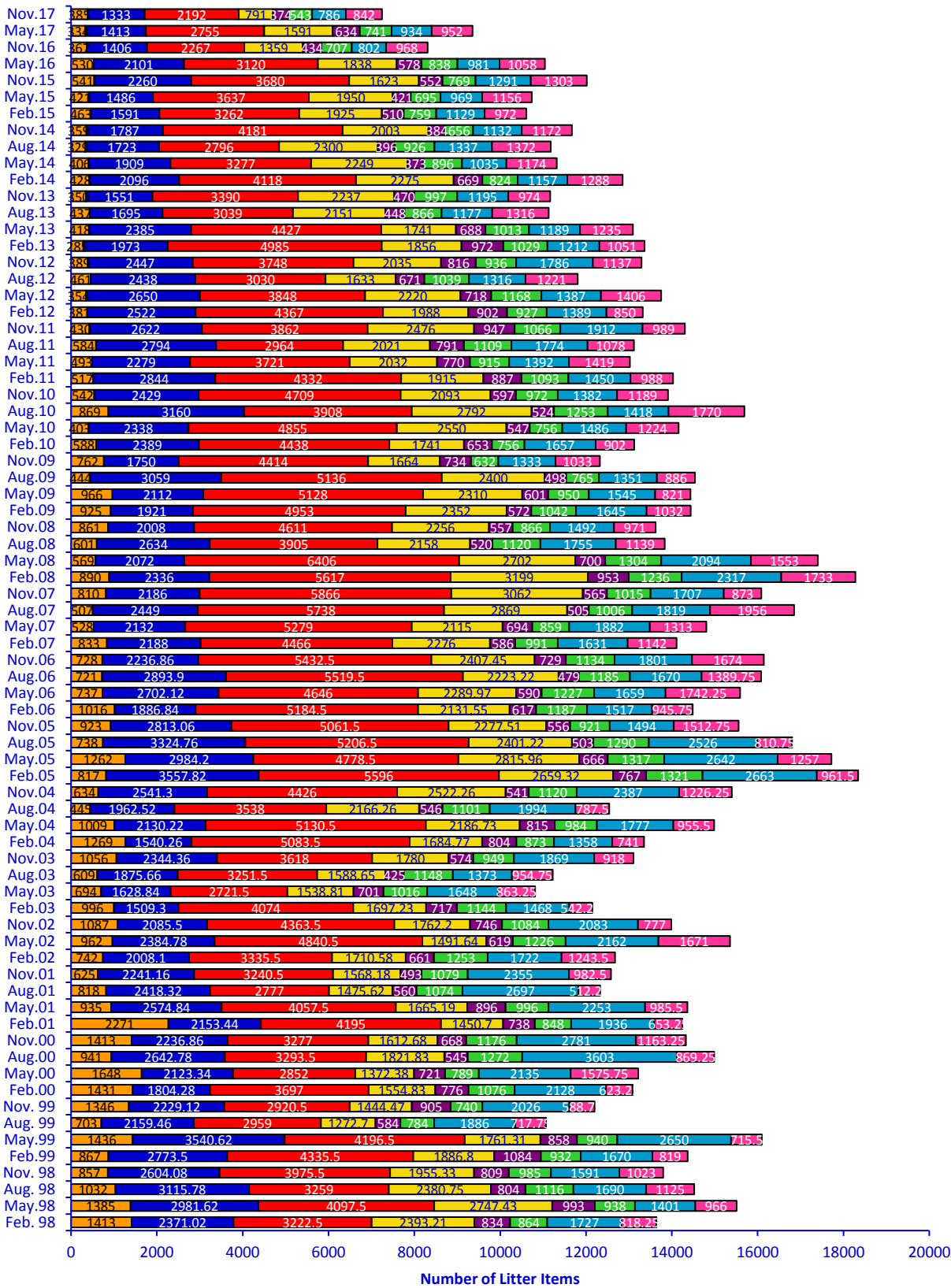




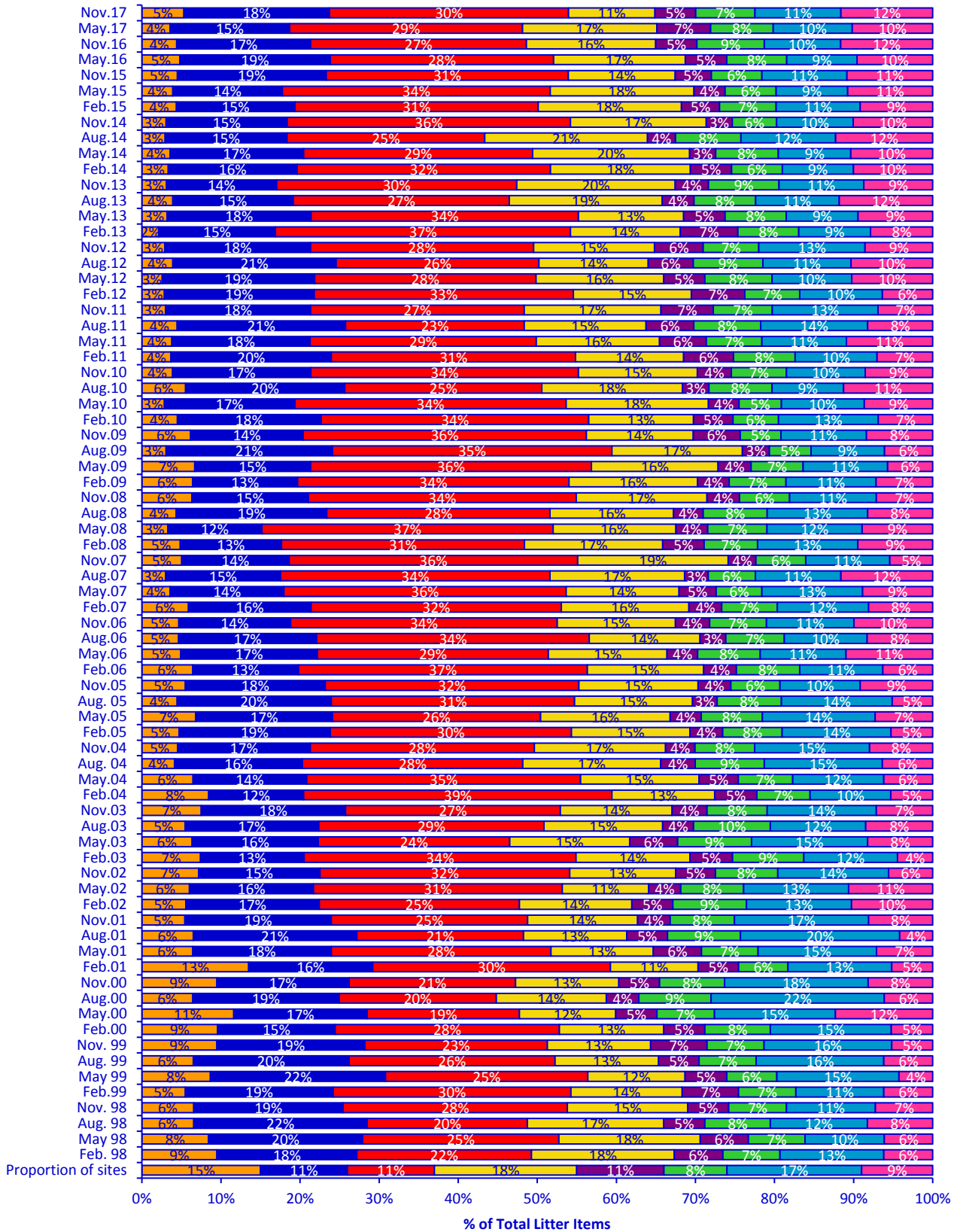
Number of Litter Items by Material Type - Weighted

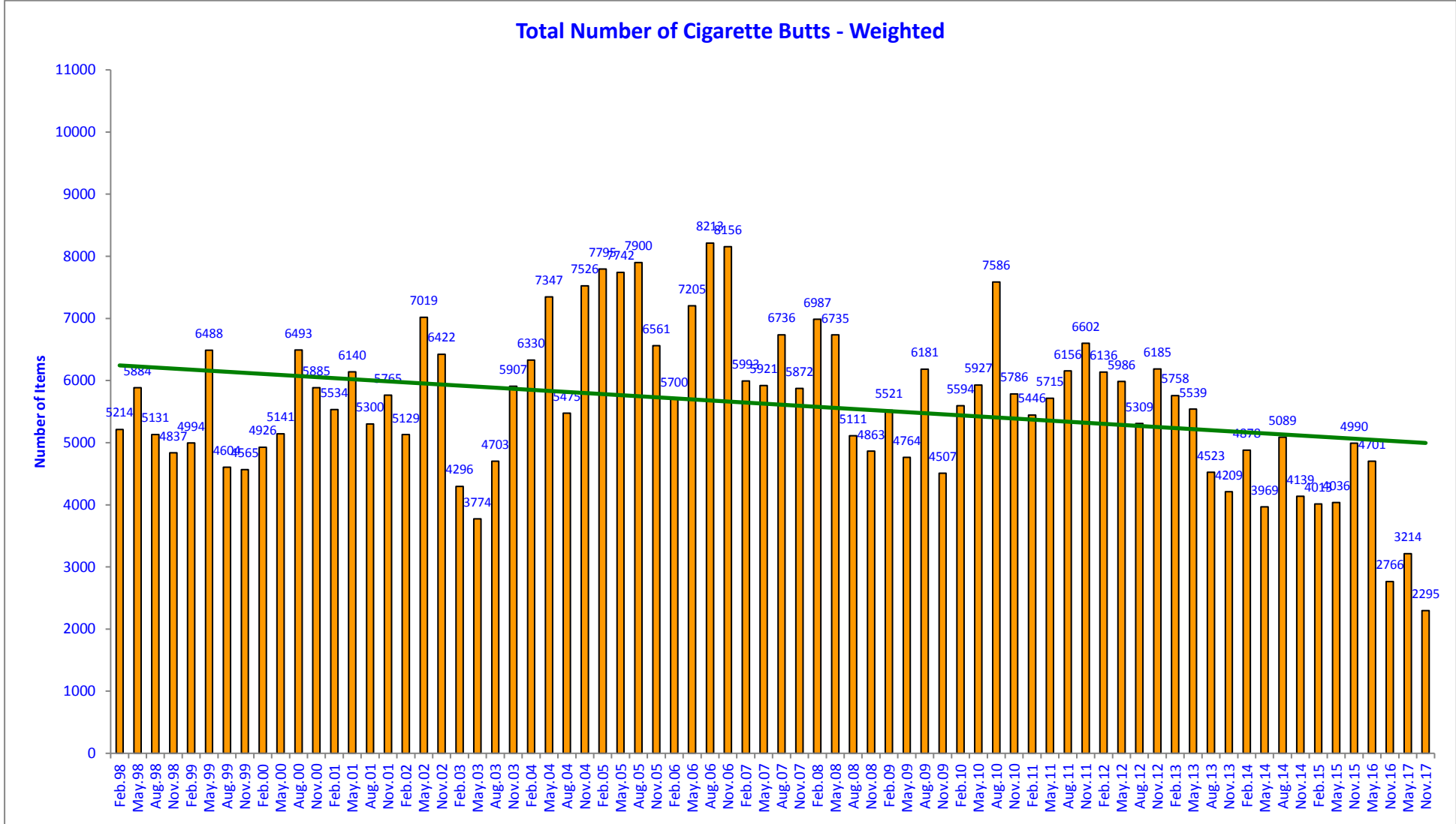


Number of Litter Items by Site Type -Weighted

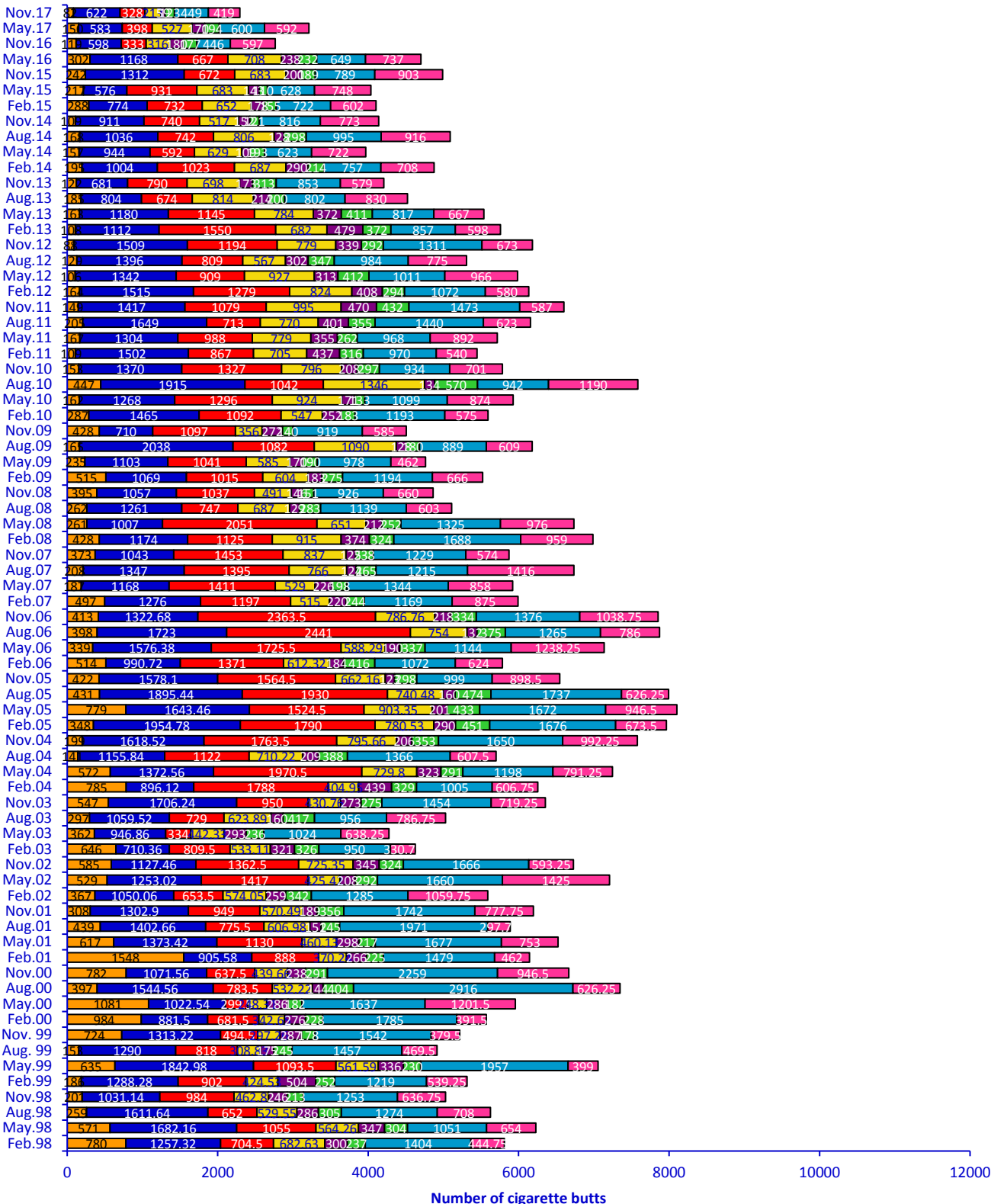


Proportion of Total Litter by Site Type - Weighted

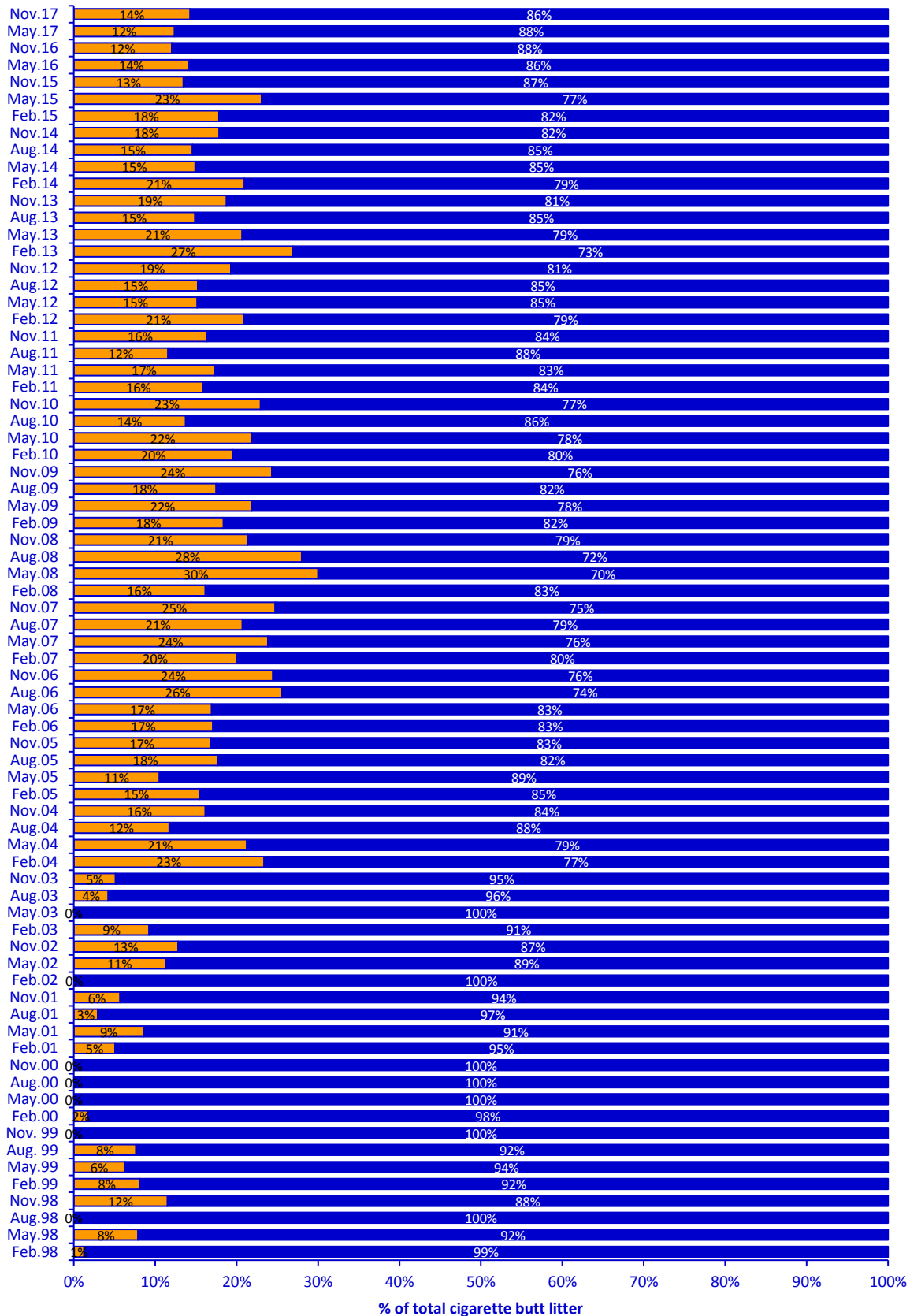




Number of Cigarette Butts by Site Type - Weighted

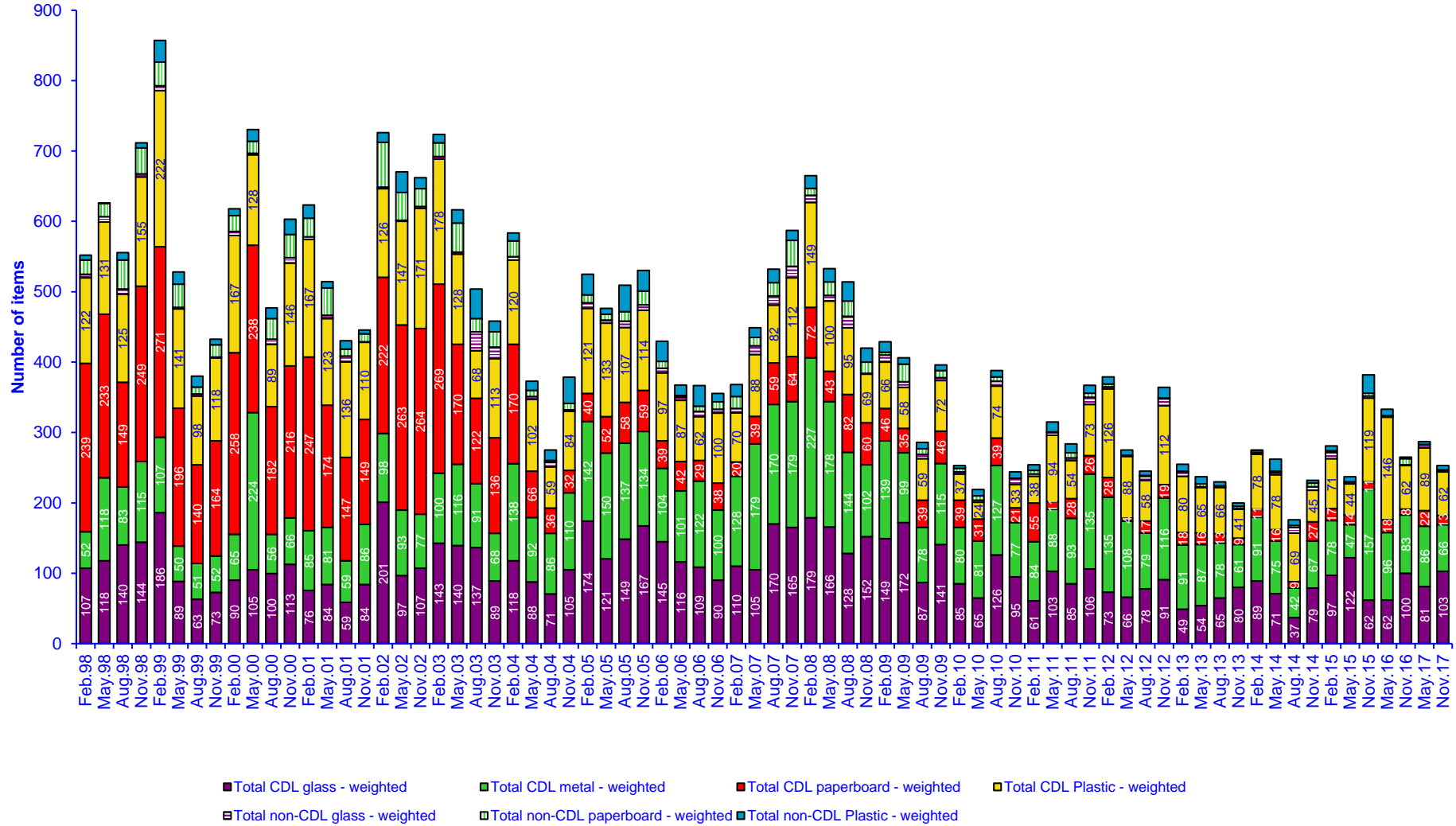


Proportion of Total Cigarette Butt Litter at Highway sites & Other sites - Weighted

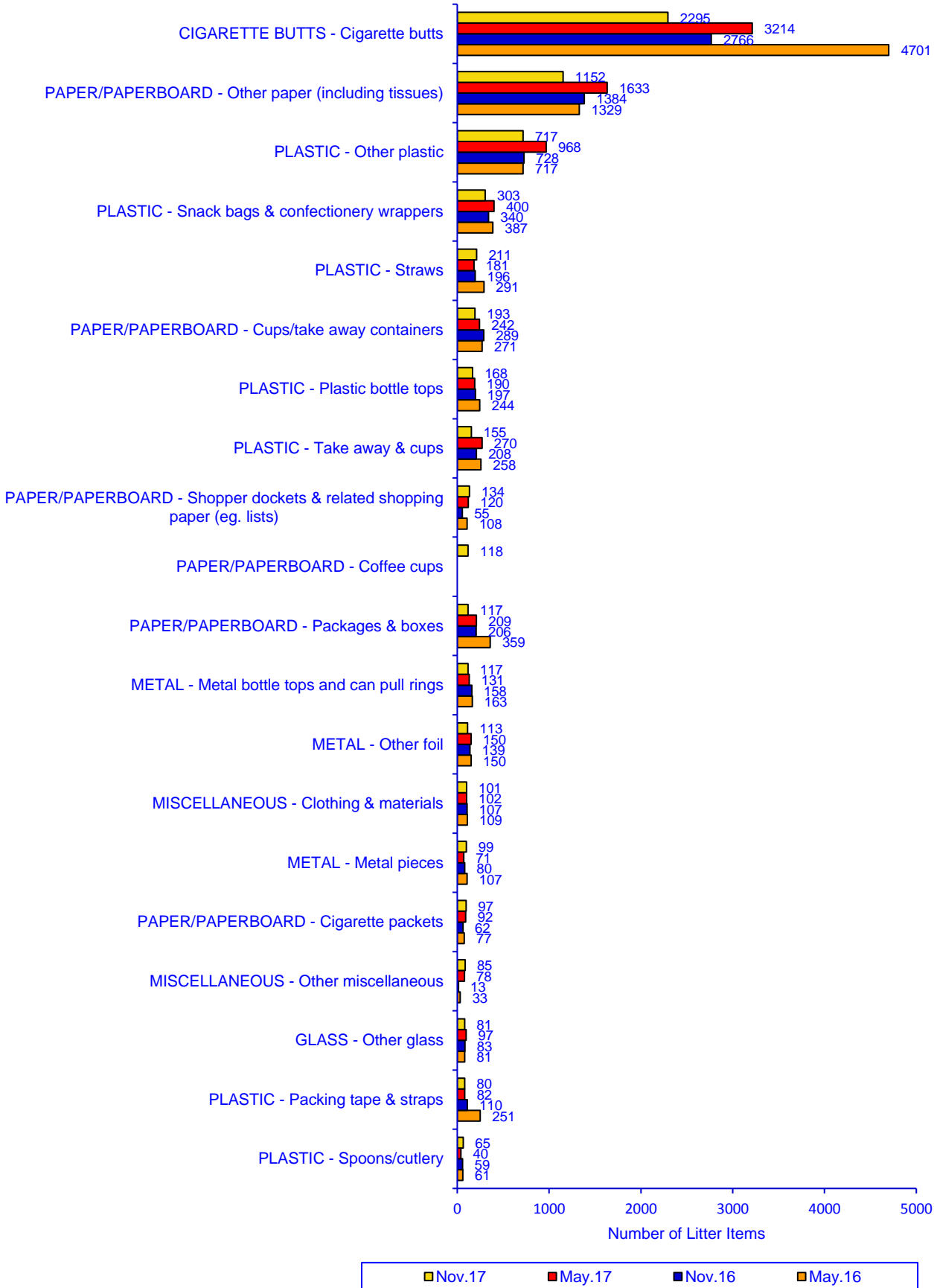


Highway sites - weighted Other sites - weighted

CDL and Non-CDL Beverage Items Within Material Categories - Weighted

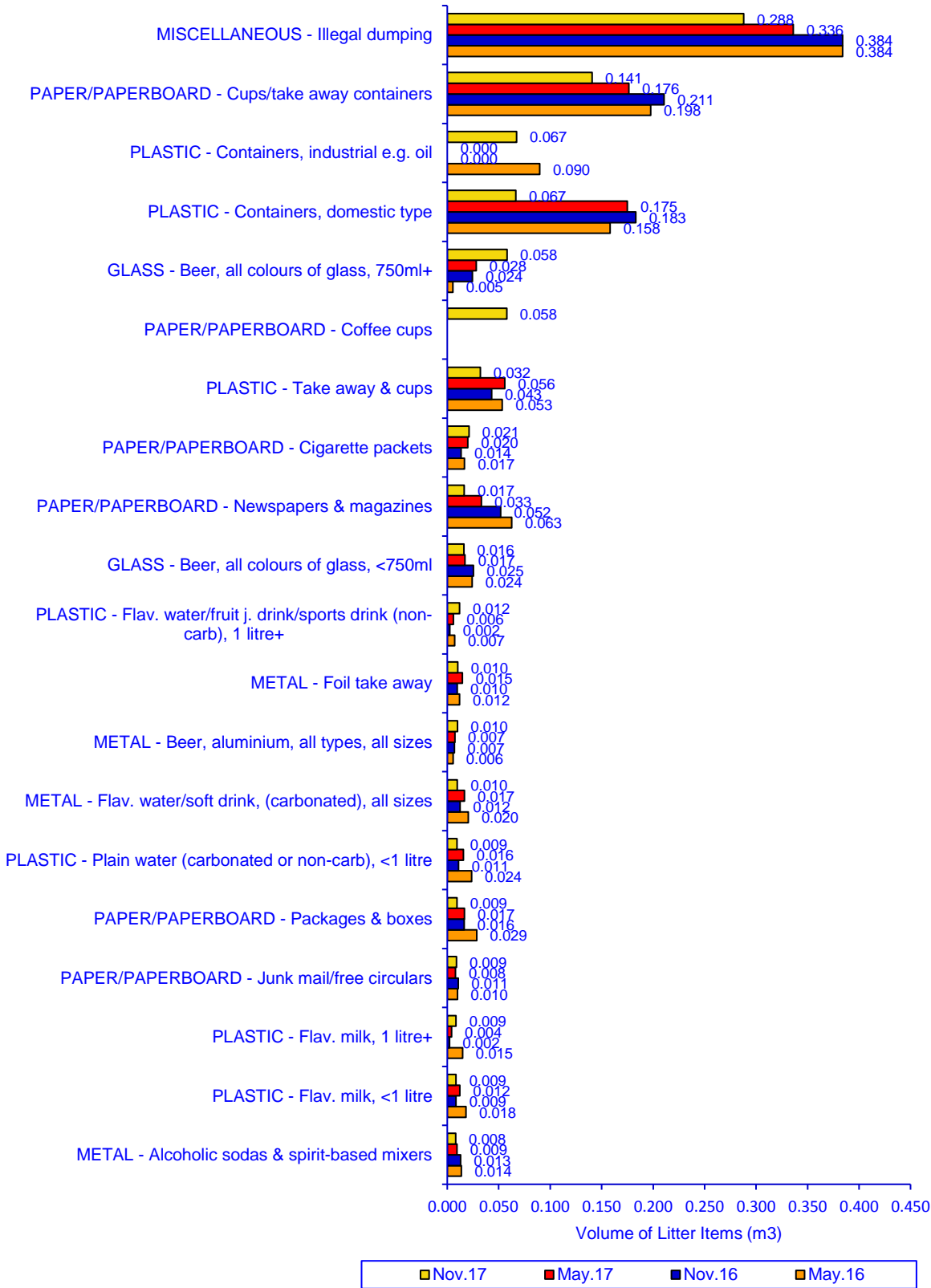


Top 20 Litter Items - Highest Counts - Weighted

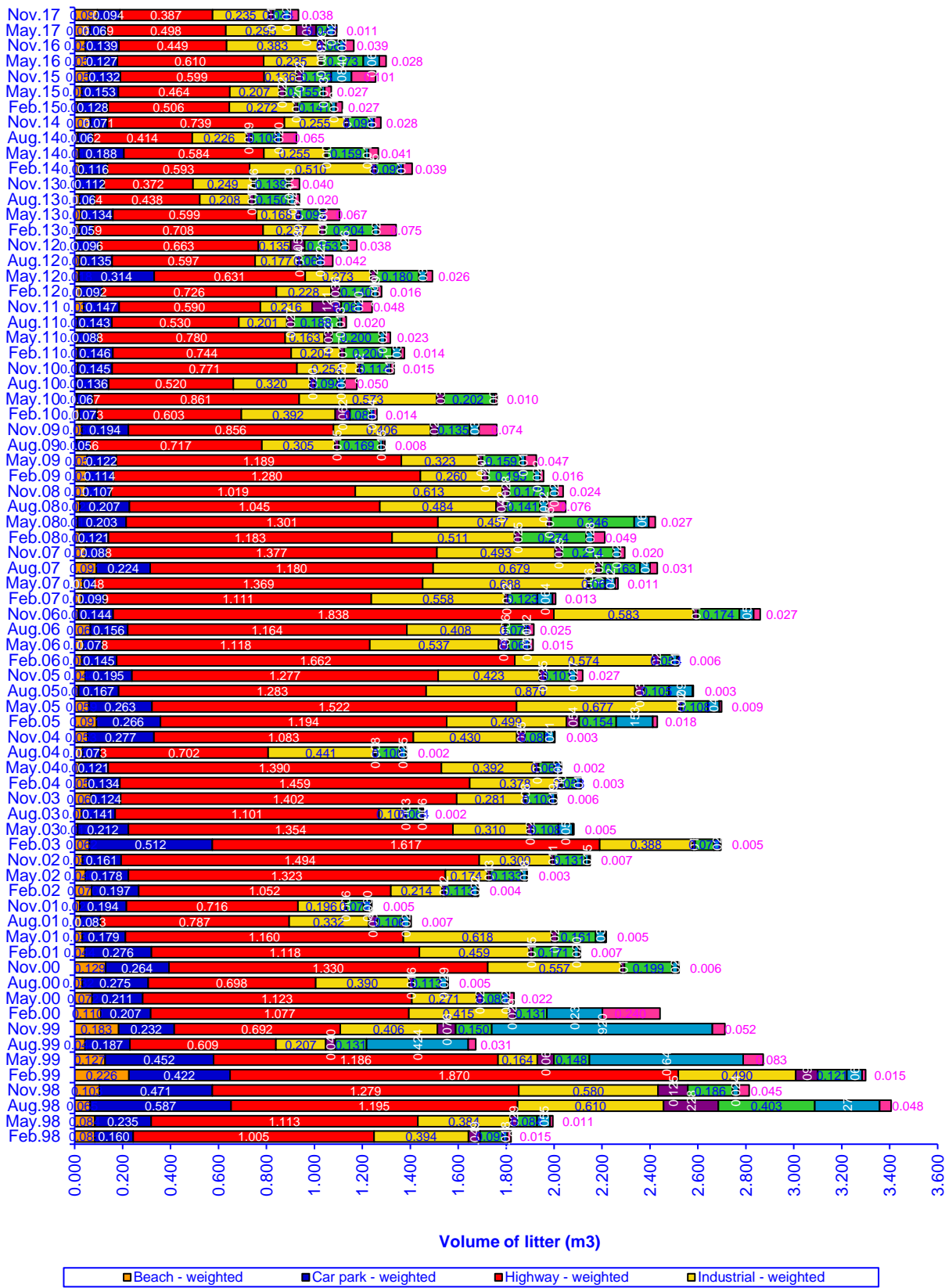


Weighted Tracking Graphs - Volumes

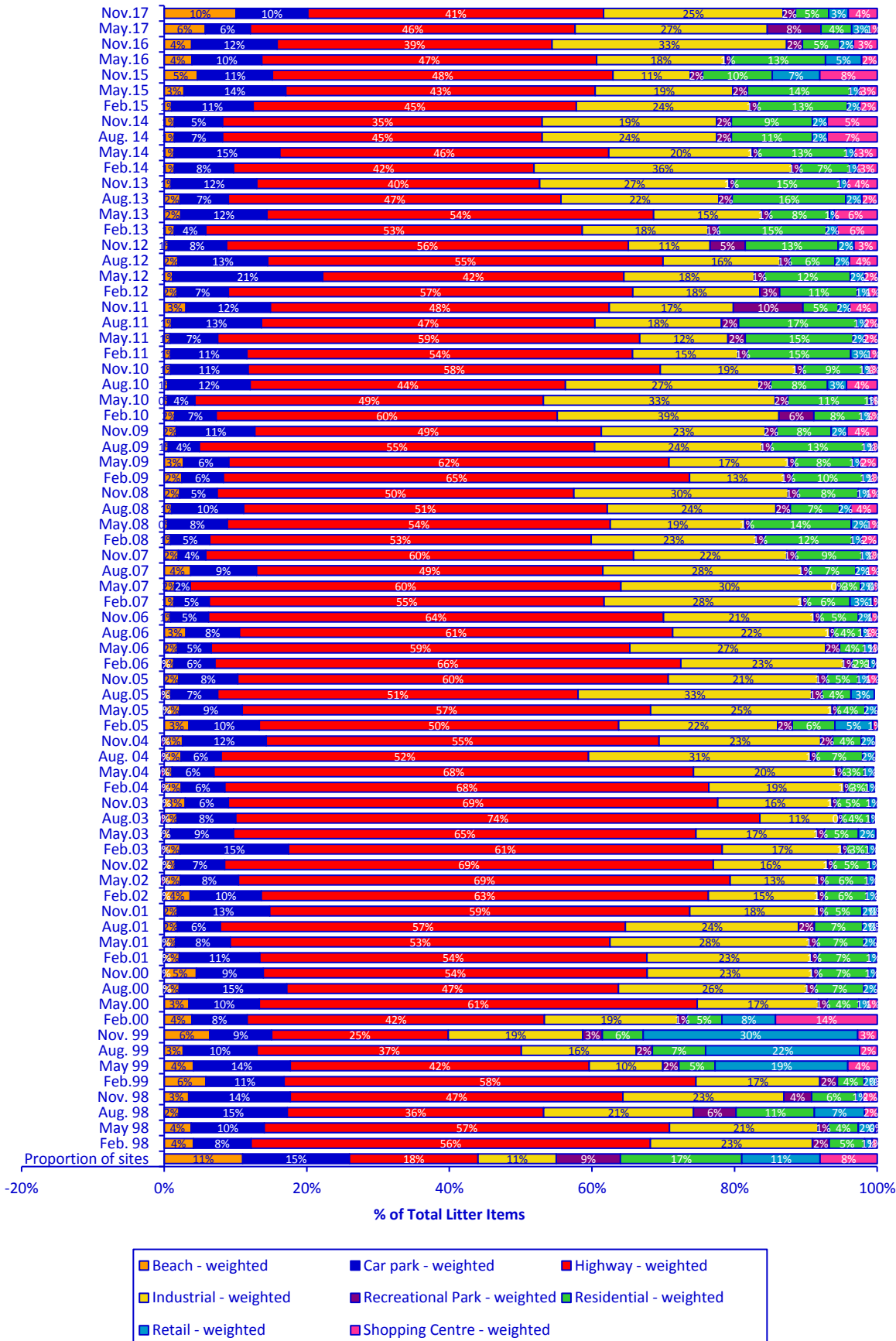
Top 20 Litter Items by Volume - Weighted



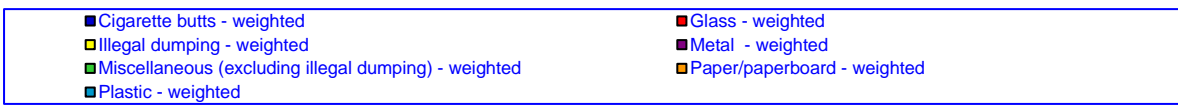
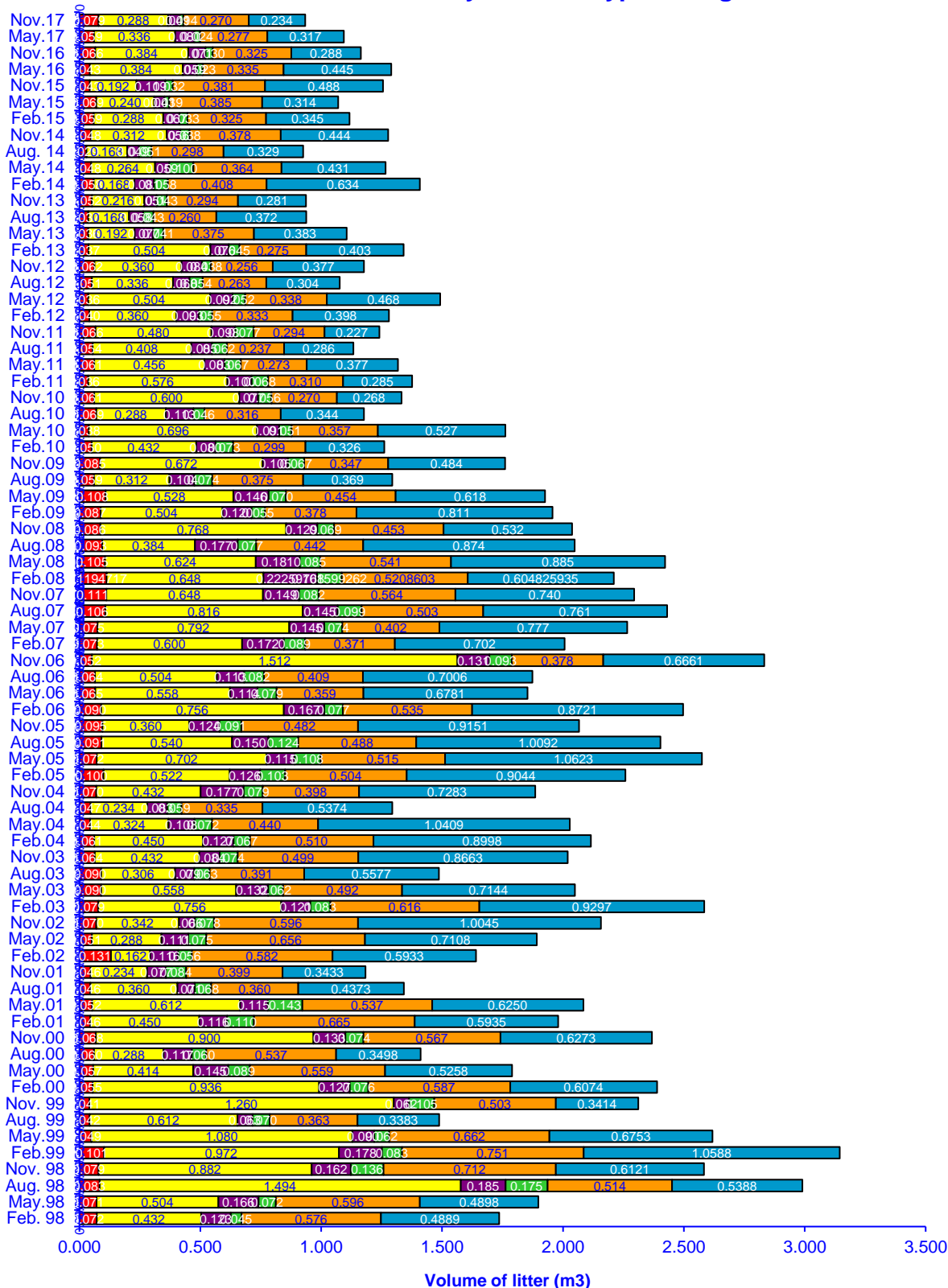
Volume of Litter by Site Type - Weighted

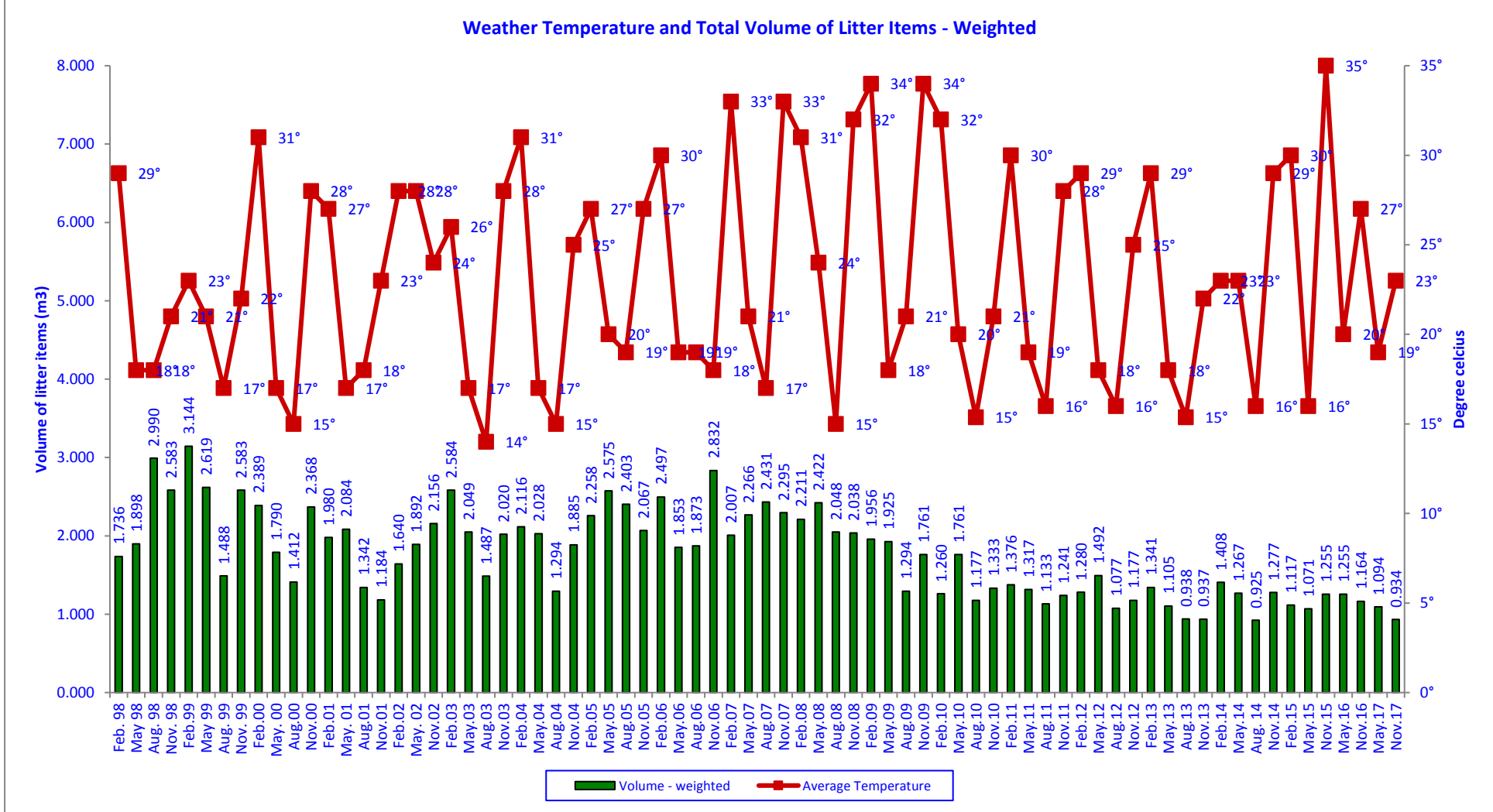


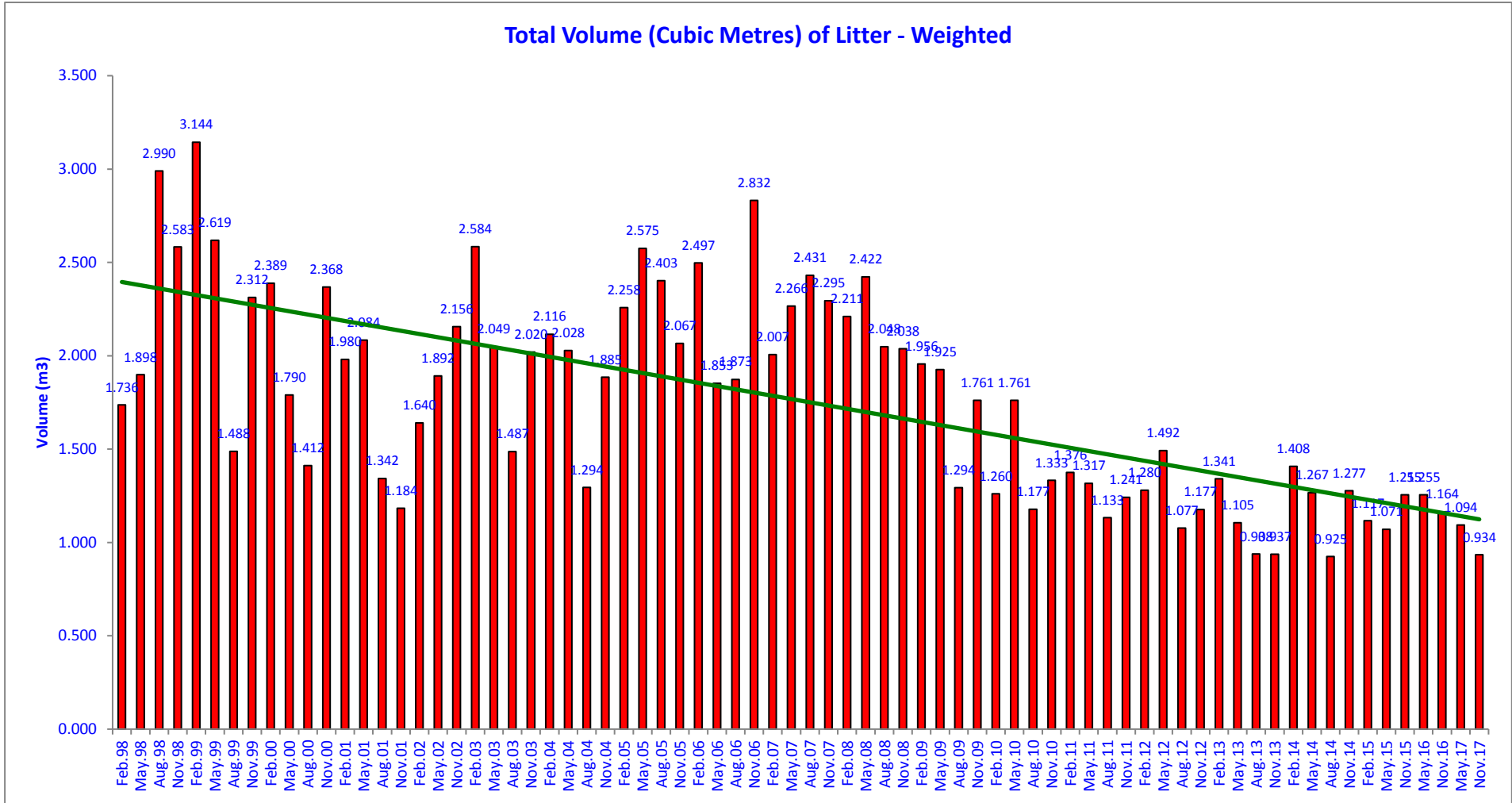
Proportion of Litter Volume in Total Litter Stream by Site Type - Weighted



Volume of Litter Items by Material Type - Weighted







Appendix 2: Data Collection Form

KESAB - LITTER COUNT COVER SHEET

SITE CODE:

PLEASE ENSURE THAT A COPY OF THIS COVER SHEET IS FILLED OUT AND ATTACHED TO THE COMPLETED LITTER COUNT FORM FOR EVERY SITE.

Date of count: ___/___/___ Site description: _____

Site responsible person: _____

Wet? (Y/N)

Windy? (Y/N)

Temp? °C

Conditions: (Circle appropriate numbers)

1. Area appeared to be cleaned before count.
2. Area was mowed before count causing proliferation
3. Very recent storm/flood damage litter build-up
4. Very recent or current high winds causing build-up
5. Recent public event held in area – **specify:** _____
6. Uncovered load spilled in area causing litter

Please record number and type of bins in site area

No. of litter bins:

No. of butt bins:

No. and type of other bins:

Illegal dumping incidents (Xc)

No. of Illegal dumpings:

Illegal dumpings description:

Plastic Domestic Containers (Pm)

No. of incidents:

Description:

Plastic Industrial Containers (PI)

No. of incidents:

Messages:

Litter Signage

No. of signs:

Messages:

Graffiti

None

Medium (2m² to 10m²)

Low (less than 2m²)

High (more than 10m²)

(REF: 10705)

SITE CODE:				SITE RESPONSIBLE PERSON:				DATE:			
Item Type		Brand	Work Area	Total	Item Type		Brand	Work Area	Total		
GLASS	Ga	Plain water (carbonated or non-carb.), 1 litre+	NONE		METAL	Ma	Beer, aluminium, all types, all sizes	NONE			
	Gb	Plain water (carbonated or non-carb.), <1 litre	NONE			Mb	Alcoholic sodas & spirit-based mixers	NONE			
	Gc	Flavoured water/soft drink (carbonated) 1 litre+	NONE			Mc	Cider/fruit based etc.	NONE			
	Gd	Flavoured water/soft drink (carbonated) <1 litre	NONE			Md	Water, carbonated & flavoured/soft drink	NONE			
	Ge	Flav. water / fruit juice drink/ sports drink, (non carb), 1 litre+	NONE			Me	Water, non-carbonated & flavoured, all sizes	NONE			
	Gf	Flav. water / fruit juice drink/ sports drink, (non carb), <1 litre	NONE			Mf	Food cans (including pet food)	NONE			
	Gg	Fruit juice, 1 litre or more	NONE			Mg	Industrial cans - all types	NONE			
	Gh	Fruit juice, < 1 litre	NONE			Mh	Aerosols - pressure packs	NONE			
	Gi	Wine cooler, all sizes	NONE			Mi	Metal bottle tops and can pull rings	NONE			
	Gj	Alcoholic sodas / spirit-based mixers, all sizes	NONE			Mj	Metal pieces	NONE			
	Gk	Cider/fruit based etc.	NONE			Mk	Foil take away	NONE			
	Gl	Wine & spirit, all sizes	NONE			Ml	Other foil	NONE			
	Gm	Beer, 750ml or more, all colours of glass	NONE			MISCELLANEOUS	Xa	Tyres & pieces	NONE		
	Gn	Beer, < 750ml, all colours of glass	NONE				Xb	Clothing & materials	NONE		
	Go	Other glass	NONE				Xc	Illegal dumping	NONE		
	CIGARETTE BUTTS						Xd	Syringes - Do Not Touch	NONE		
							Xe	Ice creamsticks	NONE		
							Xf	Rubber pieces (not tyres)	NONE		
							Xg	Condoms	NONE		
							Xh	Construction materials	NONE		
				Xi	Disposable nappies		NONE				
				OTHER MISC -(Please specify item types and brands below)							
				Xj							

PAPER / PAPERBOARD					PLASTIC				
Item Type	Brand	Work Area	Total	Item Type	Brand	Work Area	Total		
Ka Packages & boxes	NONE			Pt Plain water (carbonated or non-carb), 1 litre+	NONE				
Kb Cigarette packets	NONE			Pg Plain water (carbonated or non-carb), <1 litre	NONE				
Kc Cartons, milk, plain (white), all sizes	NONE			Ph Flav. water/soft drink (carbonated) 1 litre+	NONE				
Kd Cartons, flavoured milk, 1 litre+	NONE			Pi Flav. water/soft drink (carbonated) <1 litre	NONE				
Ke Cartons, flavoured milk, <1 litre	NONE			Pj Flav. water/fruit juice drinks, sports drinks etc. (non-carb), 1 litre+	NONE				
Kf Carbons, flav. water/fruit juice drink/sports drink, (non-carb), 1 litre+	NONE			Pk Flav. water/fruit juice drinks, sports drinks etc. (non-carb), <1 litre	NONE				
Kg Carbons, flav. water/fruit juice drink/sports drink, (non-carb), <1 litre	NONE			Pl Containers, industrial e.g. oil	NONE				
Kh Carbons, fruit juice, 1 litre+	NONE			Pm Containers, domestic type	NONE				
Ki Carbons, fruit juice, <1 litre	NONE			Pn Bags – light weight plastic shopping type carry bags	NONE				
Kj Newspapers & magazines	NONE			Po Bags – heavier glossy typically branded carry bags	NONE				
Kk Junk mail / free circulars	NONE			Pp Sacks – sheeting – other bags	NONE				
Kl Coffee cups	NONE			Pq Wine cask bladders	NONE				
Kr Other cups/take away containers	NONE			Pr Straws	NONE				
Km Tickets, e.g. bus, ATM, vending machine etc.	NONE			Ps 6 ring can holders	NONE				
Kn Ice cream wrappers	NONE			Pt Snack bags & confectionery wrappers	NONE				
Ko Paper bags	NONE			Pu Styrene foam boxes, sheets, etc.	NONE				
Kp Shopper docket & related shopping paper (eg, lists)	NONE			Pv Packing tape & straps	NONE				
Kq Other paper (including tissues)	NONE			Pw Take away & cups	NONE				
Pa White milk, all sizes	NONE			Px Plastic bottle tops	NONE				
Pb Flavoured milk, 1 litre+	NONE			Py Bread bag tags	NONE				
Pc Flavoured milk, <1 litre	NONE			Pz Lollipop sticks	NONE				
Pd Fruit juice, 1 litre+	NONE			P1 Spoons/cutlery	NONE				
Pe Fruit juice, <1 litre	NONE			P2 Drink pouches	NONE				
	NONE			P3 Other plastic	NONE				

