MetalFlow 2014 Supplementary Report

17/08/2016

MetalFlow 2014
Supplementary Report

Executive Summary

Introduction

The role of this report is to update elements of the MetalFlow 2014 report (with which this report should be read) to update total Placed on the market (POM) estimates for steel and aluminium packaging for the baseline year 2012 and provide revised recycling estimates for both. The report also provides uplift calculations so future POM figures can be calculated.

Conclusions

1. Steel packaging POM in 2012 was 537k tonnes, of which 49k tonnes (9.15%) was unobligated. Using the accredited recycling figure of 358k tonnes gives a recycling rate of 67% in 2012. This is down slightly from the previous estimate of 68%.

2. For steel the unobligated proportion makes up 9.15% of the total POM. This means that in order to calculate the total POM, the obligated Net Pack Fill tonnage must be increased by 10.07%.

3. Market information for aluminium shows that a lower assumption for unobligated tonnage is reasonable, and analysis indicates a nominal 1% is unobligated, i.e. 178k tonnes + 2kt (1% of total POM) for the base year 2012. This gives an aluminium packaging POM in 2012 of 180k tonnes. Using the accredited recycling figure of 62k tonnes gives a recycling rate of 34%. This is down slightly from the previous estimate of 35%.

4. For aluminium the unobligated proportion makes up 1% of the total POM. This means that in order to calculate the total POM, the obligated Net Pack Fill tonnage must be increased by 1.01%.

5. The table below shows that steel POM increased from 537k tonnes in 2012 (baseline year) to 559k tonnes in 2014, however the longer term trend indicates that from 2014 the quantity of steel packaging POM is expected to decrease by approximately 0.5% by 2020, which is more in line with the general trend from 1997. The total aluminium POM decreased slightly from 180k tonnes in 2012 to 177k tonnes in 2014, the longer term trend is a modest increase to 183k tonnes by 2020, an increase of approximately 0.6% per annum.

		2012	2013	2014	2015	2016	2017	2018	2019	2020
Steel	Net Pack Fill (Obligated)	**488k**	**494k**	**508k**	*507k*	*506k*	*506k*	*506k*	*505k*	*505k*
	Unobligated	**49k**	**50k**	**51k**	*51k*	*51k*	*51k*	*51k*	*51k*	*51k*
	TOTAL POM	**537k**	**544k**	**559k**	*558k*	*557k*	*557k*	*557k*	*556k*	*556k*
Aluminium	Net Pack Fill (Obligated)	**178k**	**176k**	**175k**	*177k*	*178k*	*179k*	*180k*	*181k*	*182k*
	Unobligated	**2k**	**2k**	**2k**	*2k*	*2k*	*2k*	*2k*	*2k*	*2k*
	TOTAL POM	**180k**	**178k**	**177k**	*179k*	*180k*	*181k*	*182k*	*183k*	*183k**

*Figures do not add up to total due to rounding

6. We recommend that Defra use the POM projections in this report for planning and determining future target proposals. However we also suggest that Defra should consider adopting a variable approach for future national reporting of actual performance that is based on Net Pack Fill actual figures plus the unobligated proportion shown in this report.

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Glossary

C&I – Commercial & Industrial
DEFRA – Department for Environment, Food and Rural Affairs
EA – Environment Agency (EA)
MPMA – Metal Packaging Manufacturers Association
NPF – Net Pack Fill
NPWD – National Packaging Waste Database
POM – Placed On the Market

1 Introduction

1.1 Background

The MetalFlow 2014 project was commissioned by WRAP and Valpak to provide support for material estimates in Defra's packaging policy work. Its aim was to review the quantity of steel and aluminium packaging being both placed on the market (POM) and reprocessed for the year 2012 (and 2013 where data was available), and to provide a scenario analysis for each of the materials going forward to 2020. To achieve this, this project engaged a stakeholder group that provided expert market knowledge at all stages of the process. The group comprised organisations such as Defra, the Environment Agency (EA), Alupro, the Metal Packaging Manufacturers Association (MPMA) and Tata Steel, amongst others.

The MetalFlow 2014 report used two main methodologies to identify the quantity of steel and aluminium being placed on the UK market:

1. Bottom up approach

2. Net Pack Fill

The bottom up approach quantified the quantity of steel and aluminium in each of the key sectors (Grocery Retail / Pet Stores / Body Care / DIY / Hospitality / Airline / Cross Border Shopping / Commercial & Industrial / Illegal Imports) then added them up to give a total figure. However the POM figure from this approach was not taken forward as there were concerns that the estimates for the Hospitality and Commercial & Industrial (C&I) were not robust enough due to the data/assumptions used.

The MetalFlow 2014 report therefore recommended using the Net Pack Fill (NPF) methodology. This uses data reported to the National Packaging Waste Database (NPWD) by producers, which is considered robust but does not include un-registered packaging from either free-riders or de-minimis data (from producers that are below the registration threshold of 50 tonnes of packaging and £2 million turnover). The MetalFlow 2014 report used an estimated uplift percentage (7.5% for steel and 0% for aluminium) to account for the de-minimis / unobligated figure in order to give a total POM figure. These percentage estimates were based on industry opinion rather than on any robust data or analysis, but were concluded as the best estimate that could be produced in the timescale and circumstances.

The MetalFlow 2014 report recommended that further work should be undertaken to improve the accuracy and robustness of the unobligated data, in particular to include further investigating steel and aluminium packaging estimates for the Hospitality and Commercial & Industrial (C&I) sectors. This would allow for a more robust POM figure to be identified, which includes unobligated tonnage and is based on real data.

Valpak has recently identified an improved approach for deriving this data and so has been able to undertake additional work to supplement and update the findings of MetalFlow 2014. This report summarises these additional findings.

1.2 Role of this Report

This report investigates new methods for quantifying the unobligated tonnage for both steel and aluminium and recommends revised POM figures to Government. Each material is examined individually due to the differences in the unobligated tonnage estimates.

The role of this report is to update elements of the MetalFlow 2014 report (with which this report should be read) to update total POM estimates for steel and aluminium for the baseline year 2012 and provide revised recycling estimates for both.

The report also provides uplift calculations so as future POM figures can be calculated.

2 Steel Packaging

This section of the report provides a new approach to identifying the quantity of steel produced within the hospitality and C&I sectors.

2.1 Hospitality

Hospitality steel packaging is that which is 'household-type', but includes both primary and secondary packaging and is consumed in pubs, cafés, hotels etc. It is generally similar in type as that consumed at home, but may not be collected by a local authority for recycling or disposal, and may include some non-household type packaging.

An estimate for the quantity of steel packaging POM by the hospitality sector was derived from Valpak member sales and packaging data for the cash and carry industry[1]. Market share information for the companies included in the sample was used to scale up the resulting tonnage to represent the whole of UK cash and carry, resulting in a tonnage of ~11k tonnes[2].

This was used alongside estimates from the Institute of Grocery Distribution (IGD[3]); the IGD categorises the wholesale sector into three sub-sectors[4]:

- Cash and carry wholesalers;
- Delivered grocery wholesalers; and
- Delivered foodservice wholesalers.

Since delivered grocery wholesalers' products go to retailers and are already accounted for in the MetalFlow 2014 report, cash and carry wholesalers and delivered foodservice wholesalers were the focus of this section. The IGD stated that in 2011 cash and carries accounted for 42% of the three sub-sectors and 'delivered foodservice' 24%[5]; therefore by excluding 'delivered grocery wholesalers' which accounts for 34%, the remaining two sub-sectors account for 66%. Therefore cash and carry is 63.6% of the two sub-sectors[6]. Using this proportion and the total tonnage for cash and carry for the UK of ~11k tonnes means a total tonnage estimate in the sector in the UK of ~18k tonnes. This is a reduction of 27k tonnes from the original MetalFlow 2014 estimate of 45k tonnes.

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[1] Valpak's EPIC database holds sales data and packaging weights information for clients signed up for the fully managed service
[2] Rounded down from 11,190 tonnes
[3] http://www.igd.com/
[4] http://www.igd.com/Research/Retail/Wholesaling-and-foodservice/4114/UK-Wholesale-Market-Overview/
5 http://www.igd.com/Research/Retail/Wholesaling-and-foodservice/4114/UK-Wholesale-Market-Overview/
[6] Cash and carry wholesalers (42%) and delivered foodservice wholesalers (24%)

2.2 Commercial & Industrial

The MetalFlow 2014 report used the Defra Commercial and Industrial Waste Survey in 2009[7] to estimate the total quantity of all steel in the C&I waste sector to be 2,031k tonnes.

Then based on discussions with stakeholders around steel packaging protocols (percentages of packaging contained within loads of scrap metal (by grade) agreed with the EA), it was estimated that 7% (or 142k tonnes) would be steel packaging.

However a recent report by Zero Waste Scotland indicated that packaging could account for as much as 36% of the steel content in C&I waste. Although this is considered too high by stakeholders it does indicate that the estimate of 7% could be low.

Using the highest currently agreed protocol for steel packaging of 10.6% and applying this to the 2,031k tonnes of steel from the C&I sector gives an updated upper estimate of steel packaging of 215k tonnes for the C&I sector. This is an increase of 74k tonnes from the original MetalFlow 2014 estimate of 142k tonnes.

2.3 Revised Total Steel POM Tonnage

Using the findings above for the Hospitality and C&I sectors and replacing the corresponding figures in the MetalFlow 2014 report gives a revised upper estimate POM figure of 561k tonnes, which is an increase of 46k tonnes from the original POM estimate of 515k tonnes. Figure 1 shows the comparison between the previous Metal Flow 2014 estimates and the revised estimates as well as the impact on the unobligated proportion.

Due to the large variation in the unobligated steel POM between the two approaches, and in the absence of any alternative data being available, it is recommended that the midpoint between the two POM tonnages should be adopted. This would give a 2012 POM figure of 537kt and an unobligated percentage of 9.15% of the total POM. This approach was sense checked by key industry stakeholders and was agreed to be a logical approach and reflect best market knowledge.

[7] *https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/400597/ci-project-report.pdf*

FIGURE 1 – STEEL POM 2012

	MetalFlow 2014 Report (2012 Data)	Metal Flow 2014 Report Revised (upper estimate) (2012 Data)	Metal Flow 2014 Report (Final Recommended) (2012 Data)
Steel POM	515kt	561kt	**537kt**
Net Pack Fill	488kt	488kt	**488kt**
Unobligated Steel POM	5.2% (27kt)	13.1% (73kt)	**9.15% (49kt)**

This shows that there was 537k tonnes of steel packaging POM in 2012. Using the accredited recycling figure of 358k tonnes give a recycling rate of 67%.

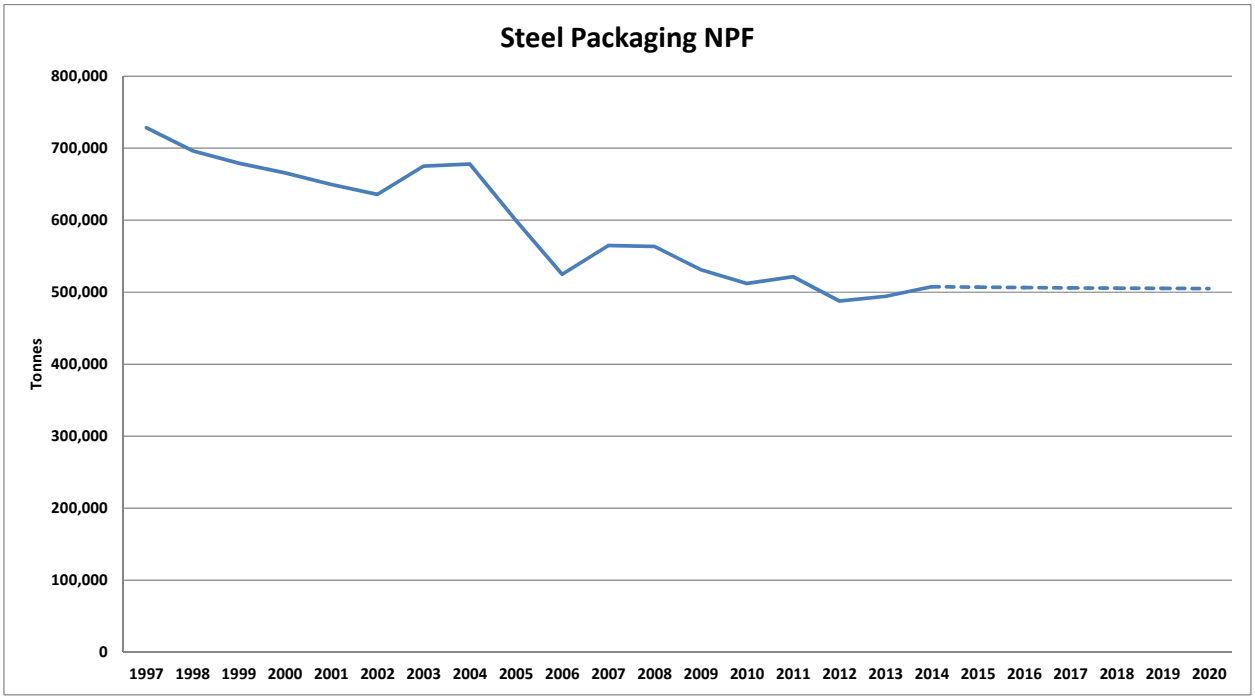
Qualitative Supporting Industry Information

The above findings for Hospitality and C&I were presented to the MPMA, which canvassed its members to gain a sense check of the proposed POM of 537k tonnes, of which 49k tonnes (9.15%) is unobligated. Following a canvassing of its larger members it confirmed that these revised figures seemed sensible.

2.4Revised Steel POM Projections

Due to the POM estimate changing from the original report the previous projections were updated. In order to do this a linear regression analysis using historical NPF data was undertaken to help project future tonnages of obligated steel packaging. This was done using the EA NPWD packaging data from 1997 to 2014, and the Net Pack Fill calculation (as described in Section 4 of this report). This process involves using an independent variable to project forward from 2014 to 2020. The findings of the analysis are shown Figure 2.

FIGURE 2 – STEEL NPF HISTORIC AND PROJECTIONS



This shows that obligated steel packaging has overall been decreasing from 1997.

In order to identify the total steel packaging POM the unobligated proportion was added to the obligated figures. The figure below shows the actual figures from 2012 to 2014 (in bold) as well as the results of the projections from 2015 to 2020 in italics.

FIGURE 3 – STEEL POM PROJECTIONS 2015 - 2020

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net Pack Fill (Obligated)	**488k**	**494k**	**508k**	*507k*	*506k*	*506k*	*506k*	*505k*	*505k*
Unobligated	**49k**	**50k**	**51k**	*51k*	*51k*	*51k*	*51k*	*51k*	*51k*
TOTAL POM	**537k**	**544k**	**559k**	*558k*	*557k*	*557k*	*557k*	*556k*	*556k*

This shows that although the total POM actually increased from 537k tonnes in 2012 (baseline year) to 559k tonnes in 2014, the longer term trend indicates that from 2014 the quantity of steel packaging POM is expected to decrease by approximately 0.5% by 2020, which is more in line with the general trend from 1997.

3 Aluminium Packaging

For aluminium MetalFlow 2014 used a Net Pack Fill approach which is thought to give the best estimate of obligated packaging flow because it is based on actual data. However in MetalFlow 2014 there was no data available on un-obligated tonnage and so no allowance was made for this.

This section of the report uses Valpak internal producer data to further examine the aluminium packaging unobligated estimate to determine if the original MetalFlow 2014 estimate of 0% is accurate. Previously it was largely based on industry opinion rather than reliable data.

3.1 Import Producer Analysis

During discussions with key industry stakeholders it was identified that any unobligated tonnage would likely arise from imports of specialist goods.

Using internal Valpak producer data for producers reporting their data in Table 3A (Packaging Imported into the UK for the purpose of an Activity) and examining the difference between large brand owners/Packer Fillers (likely to be already registered and therefore obligated) and retailers, analysis of Valpak data showed that retailers only accounted for 1.4% of imports.

Further analysis of this data also showed that as the retailers used in the sample were some of the largest retailers in the UK, this indicated that the smaller more specialist retailers that would account for any unobligated tonnage would be likely to be very small.

The project team believes that although the unobligated figure for aluminium is likely to be very small it is probable that there may a small amount and therefore believes that a 1% unobligated figure should be used to ensure this is captured.

3.2Revised Total Aluminium POM Tonnage

The figure below shows the comparison between the Metal Flow 2014 estimates and the revised estimates as using the revised unobligated proportion.

FIGURE 4 – ALUMINIUM POM 2012

	MetalFlow 2014 Report (2012 Data)	Metal Flow 2014 Report Revised (Final Recommended) (2012 Data)
Aluminium POM	**178kt**	**180kt**
Net Pack Fill	**178kt**	**178kt**
Unobligated Aluminium POM	**0%** (0kt)	**1%** (2kt)

This shows that there was 180k tonnes of aluminium packaging POM in 2012. Using the accredited recycling figure of 62k tonnes gives a recycling rate of 34%.

Qualitative Supporting Industry Information

Alupro has been consulting widely in the different product sectors. The common view is that almost all (close to 100%) "fillers" of aluminium pack formats (inc. beverage cans, food cans, aerosols, foil and tubes) will be obligated, which will be different to other packaging materials.

In terms of imports, all filled beer imports, with the exception of personal cross channel imports, are done by large companies above the obligation threshold (they are registered) and the same would apply to soft drinks. Aerosols (aluminium - predominantly personal care) are either filled in the UK or imported filled by large multi-national companies who are also obligated. Any other importers of filled aluminium packaging would be very, very small so their volume would be insignificant. This means that the Net Pack Fill figure from NPWD will represent the total flow onto the market.

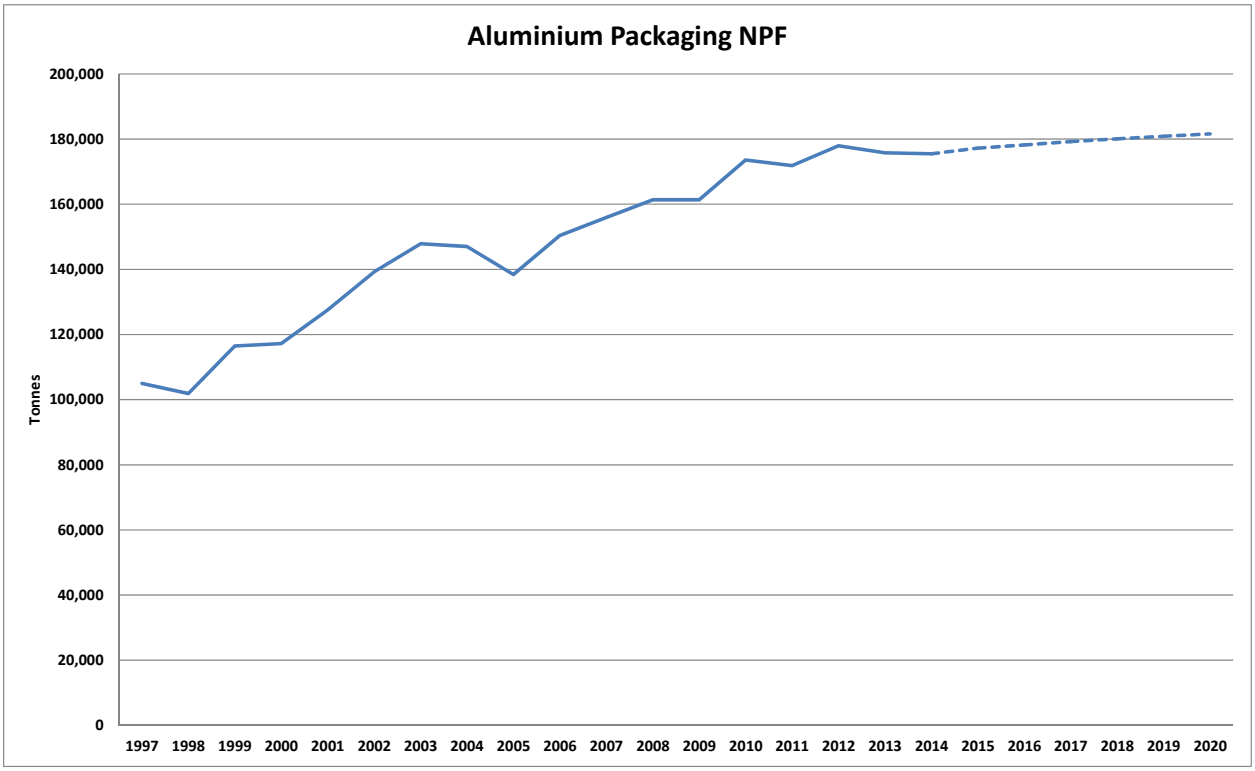
There is no doubt that items such as beverage cans, food cans, aerosols and tubes will be 100% obligated. The only exception is foil where there is probably is a few small independent bakers / food companies, but a relatively small percentage of the foil market and we know that foil represents only around 14% of the total flow onto the market. So the overall impact is minimal.

Any other importers of filled aluminium packaging would be very, very small so their volume would be insignificant.

3.3Revised Aluminium POM Projections

Due to the POM estimate changing from the original report the previous projections also need updating. In order to do this a linear regression analysis using historical NPF data was undertaken to help project future tonnages of obligated aluminium packaging. This was done using the EA NPWD packaging data from 1997 to 2014, and the Net Pack Fill calculation (as described in Section 4 of this report). This process involves using an independent variable to project forward from 2014 to 2020. The findings of the analysis are shown below.

FIGURE 5 – ALUMINIUM NPF HISTORIC AND PROJECTIONS



This shows that obligated aluminum packaging has overall been increasing from 1997.

In order to identify the total aluminium packaging POM the unobligated proportion was added to the obligated figures. Figure 6 shows the actual figures from 2012 to 2014 (in bold) as well as the results of the projections from 2015 to 2020 in italics.

FIGURE 6 – ALUMINIUM POM PROJECTIONS 2015 - 2020

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net Pack Fill (Obligated)	**178k**	**176k**	**175k**	*177k*	*178k*	*179k*	*180k*	*181k*	*182k*
Unobligated	**2k**	**2k**	**2k**	*2k*	*2k*	*2k*	*2k*	*2k*	*2k*
TOTAL POM	**180k**	**178k**	**177k**	*179k*	*180k*	*181k*	*182k*	*183k*	*183k**

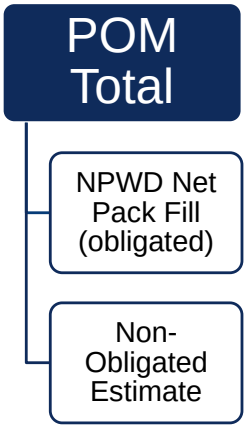
*Figures do not add up to total due to rounding

The figure above shows that although the total POM decreased slightly from 180k tonnes in 2012 to 177k tonnes in 2014, the longer term trend is a modest increase to 183k tonnes by 2020, an increase of approximately 0.6% per annum.

4 Methodology for Future POM Calculations

Based on the work undertaken for this supplementary report coupled with the findings/recommendation from the review of packaging flow POM methodologies conducted as part of the Paper Flow 2020 report, Valpak believes that using the Net Pack Fill methodology for obligated packaging and adding the unobligated percentages from the recent flow projects could be adopted for future national reporting.

FIGURE 7 – METHODOLOGY FOR FUTURE POM CALCULATIONS



The total obligated packaging POM in the UK can be calculated based on the data stored on NPWD, as reported to the EA by obligated producers. Obligated producers are those that are above the following threshold: having a turnover of more than £2 million and handling more than 50 tonnes of packaging per year. The Net Pack Fill estimate does not include free-riders or de-minimis (producers below the threshold).

The UK flow of obligated packaging on a yearly basis can be calculated using the packaging weights reported to the EA by registered producers and publicly available on the NPWD website[8]. The calculation used is shown in the figure below.

FIGURE 8 – NET PACK FILL CALCULATION

Net Pack Fill	=	**Packing/Filling** table 1 - pack/filling	+	**Imports** table 3A - imported for the purpose of selling	+	**Imports** table 3B - packaging removed from around imports	-	**Exports** table 2A + table 2B (pack/filling)

[8] *https://npwd.environment-agency.gov.uk/*

This methodology takes the weight reported at the *packing* stage of the supply chain as opposed to the *selling* stage of the supply chain. This is used as it is believed by stakeholders that there are likely to be fewer unobligated packers in comparison to unobligated sellers, due to the likely size of the businesses.

Once the obligated packaging is identified the unobligated proportion is then added. Using steel as an example, the unobligated proportion is 9.15%[9] of the total POM. This means that to scale up to the total POM using the obligated figure the Net Pack Fill tonnage must be increased by 100/(100-9.15) = 1.1007 or approximately 10.07%.

Similarly for aluminium the Net Pack Fill figure should be increased by 100/(100-1) = 1.0101, or approximately 1.01%.

The figure below shows the Net Pack Fill plus unobligated proportion for 2012.

FIGURE 9 – 2012 STEEL AND ALUMINIUM POM CALCULATIONS

	Net Pack Fill	Obligated %	Unobligated %	POM
Steel POM	488kt	90.85%	9.15%	537kt
Aluminium POM	178kt	99%	1%	180kt

[9] It should be noted that 9.15% is a percentage of the total POM and as such should not be misinterpreted as a percentage of obligated flow, which in this case would be 10.04%.

5 Conclusions

The key conclusions for this work are:

1. Steel packaging POM in 2012 was 537k tonnes, of which 49k tonnes (9.15%) was unobligated. Using the accredited recycling figure of 358k tonnes gives a recycling rate of 67% in 2012. This is down slightly from the previous estimate of 68%.

2. Market information for aluminium shows that a lower assumption for unobligated tonnage is reasonable, and analysis indicates a nominal 1% is unobligated, i.e. 178k tonnes + 2kt (1% of total POM) for the base year 2012. This gives an aluminium packaging POM in 2012 of 180k tonnes. Using the accredited recycling figure of 62k tonnes gives a recycling rate of 34%. This is down slightly from the previous estimate of 35%.

3. The total POM figure can be calculated based on the obligated packaging figure. Once the obligated packaging is identified the unobligated proportion is then added to give a total POM figure. For steel the unobligated proportion is 9.15%[10] of the total POM. This means that to scale up to the total POM using the obligated figure the Net Pack Fill tonnage must be increased by 100/(100-9.15) = 1.1007 or approximately 10.07%.

   Similarly for aluminium the Net Pack Fill figure should be increased by 100/(100-1) = 1.0101, or approximately 1.01%.

4. The total steel POM actually increased from 537k tonnes in 2012 (baseline year) to 559k tonnes in 2014, the longer term trend indicates that from 2014 the quantity of steel packaging POM is expected to decrease by approximately 0.5% by 2020, which is more in line with the general trend from 1997. The total aluminium POM decreased slightly from 180k tonnes in 2012 to 177k tonnes in 2014, the longer term trend is a modest increase to 183k tonnes by 2020, an increase of approximately 0.6% per annum.

5. We recommend that Defra use the POM projections in this report for planning and determining future target proposals. However we also suggest that Defra should consider adopting a variable approach for future national reporting of actual performance that is based on Net Pack Fill actual figures plus the unobligated proportion shown in this report.

[10] *It should be noted that 9.15% is a percentage of the total POM and as such should not be misinterpreted as a percentage of obligated flow, which in this case would be 10.04%.*