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**Final Report for Ofcom**

## Review of Royal Mail's short-run marginality

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**Postal & Logistics  
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## Abbreviations used

<b>BMV</b>	basic minute value	<b>IMP</b>	integrated mail processor (a machine)
<b>CAM</b>	Cost Allocation Model	<b>LSM</b>	letter sorting machine
<b>CFC</b>	culler facer canceller (a machine)	<b>LWT</b>	light-weight trolley
<b>CSS</b>	compact sequence sorter (a machine)	<b>MC</b>	Mail Centre
<b>CVE</b>	cost-volume elasticity	<b>MTT</b>	machine de tri a tasseur
<b>CVR</b>	cost-volume relationship	<b>POL</b>	Post Office Ltd
<b>DP</b>	delivery point	<b>PV</b>	planning value
<b>DSA</b>	Down Stream Access	<b>RDC</b>	Regional Distribution Centre
<b>FTE</b>	full-time equivalent	<b>D2D</b>	Door to Door
<b>HCT</b>	high-capacity trolley	<b>SMV</b>	standard minute value
<b>IE</b>	industrial engineering	<b>TPM</b>	total productive maintenance
<b>iLSM</b>	intelligent letter sorting machine	<b>USO</b>	Universal service obligation



## 0 Executive summary

Ofcom commissioned Analysys Mason and PLCWW to undertake a review of Royal Mail's short-run cost marginality. The review has focused on Royal Mail's current approach for measuring marginality, based on industrial engineering measurements, and has assessed whether the approach should be updated and whether it captures the full range of marginality issues. The review is based on Royal Mail's 2014 model suite, which used industrial engineering parameters from 2012. Royal Mail updated its measurements in 2015. In the current methodology for estimating short-run marginality (expressed in terms of cost-volume elasticities or CVEs), industrial engineers record the time taken to undertake activities in the Processing and Delivery pipeline segments. Each activity is classified as fixed or variable depending on the type of costs incurred.<sup>1</sup> By adding up the time from all the fixed and variable activities in a pipeline segment, Royal Mail can determine the short-run marginality of its frontline work force.

Our review shows that the classification of fixed and variable activities is reasonable.

The planning values (PVs) and CVEs for Outdoor Delivery need to be updated to reflect the current delivery methods and the bundling of unaddressed items (known within Royal Mail as door-to-door or D2D items). We estimate that updating the mix of delivery methods would result in a materially lower marginality of [X] blended across Delivery Indoor and Delivery Outdoor (down from [X]), and [X] for Delivery Outdoor only (down from [X]).

We have also identified that Collections pipeline activities are modelled using analogous Processing and Delivery CVEs. We consider that this is inappropriate, because Collections activities are believed to have a much lower marginality than both Processing and Delivery activities (we estimate [X]% for collections compared to the [X]% which is the result of the application of the Processing and Delivery CVEs). We identified a similar issue with Local Distribution activities.

We have found that various bottom-up assumptions related to Processing could be refined to match the current work plan and machine configurations, but due to the large number of model inputs these refinements would not have a significant impact on the resultant PVs and CVEs.

The various PV and CVE factors are fed into the Business Plan, where they are used to calculate the short-run marginality-related change to frontline costs.<sup>2</sup> The current CVE method considers pipeline overheads to be short-run fixed costs. We agree that pipeline overheads do not vary with short-term volume changes and therefore support this approach.

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<sup>1</sup> Note: some activities may be either fixed or variable, depending on where they occur in the process, e.g. clear downs occur during process work (variable) and again when a despatch is made (fixed).

<sup>2</sup> In the Business Plan, frontline costs can also vary every year depending on two additional factors: [X]

By assessing all of the pipeline areas, we have reached our estimates and calculations for revised CVEs. At a headline level, the overall marginality is the same ([X]). However, as indicated above, this comparison of the overall marginality hides various differences for particular pipeline segments – some (such as [X]) are lower, while some are higher (e.g. [X]).

We have compared gross hours with (CVE-related) standard hours. In both *Processing* and *Delivery* we conclude that there is a material, unreconciled gap between the effort required to undertake the measured volume-based fixed and variable activities, and the amount of staff resources in the business. We think that this gap is explained to some extent by the hourly, daily and seasonal variation of mail volumes, which leads to short-run fixed costs arising from changes in staffing to meet the varying flows of mail, and inevitably there are periods of less-than maximal working. The industrial engineering (IE) approach is not able to capture these effects, and we conclude that the marginality in processing is currently overstated by the IE-based mechanism, and should be lower.<sup>3</sup> Issues related to staffing and efficiency may also have an influence on the unreconciled gap, but are not within the scope of the present review.

The analysis above has revealed a number of insights into what might be causing the difference, and shows the benefit of performing such a reconciliation. The size of the difference between gross and standard hours highlights the need to ensure that the PVs are based on up-to-date IE-based measurements. We recommend that Ofcom asks Royal Mail to undertake its own reconciliation, and also suggest that Ofcom should continue to closely follow any updates that Royal Mail makes to its IE-based inputs.

Finally, we have expanded our analysis to consider the differences between zones. The major differences are between Urban and Rural zones, while the differences between different types of urban zones (London, Urban and Suburban) are small. Urban zones have a much lower marginality than rural, mainly due to the number of deliveries to firms within urban areas, which have a particularly low marginality.

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<sup>3</sup>

We are not able to determine how much lower as we do not know precisely how much is fixed in the short term. We only know there is a gap which we think is structurally fixed.



# 1 Introduction

Ofcom's objectives as the UK Postal Regulator include ensuring the Universal Postal Service is financially sustainable, and ensuring that it becomes increasingly efficient over a reasonable period of time. Given these two overarching objectives, Analysys Mason Ltd (Analysys Mason) and Postal & Logistics Consulting Worldwide (PLCWW) have been tasked within this study to review:

- The current short-run cost-volume elasticities (CVEs), which describe the short-run cost change for a given volume change, as developed by the Royal Mail.
- The current long-run cost-volume relationships (CVRs), which describe the long-run cost change for a given volume change, as developed by the Royal Mail.

The CVEs are used in Royal Mail's Strategic Business Plan, whereas the CVRs are used in its LRIC model. Both sets of cost-volume calculations form an important part of Ofcom's monitoring regime with respect to efficiency.

This report covers the review of the current short-run CVEs. We have reviewed how Royal Mail's costs do *in fact* vary with volumes, and made recommendations on how they *should* vary with volumes.

It should be noted that the scope of our CVE review covers *marginality*, but not *efficiency*. Marginality can be defined as the short-term level of cost savings that can be expected to be made as volumes fall, i.e. without any significant changes to the underlying infrastructure. In the context of this review, marginality is considered in relation to Royal Mail's standard operation. The standard operation considers the current Royal Mail network configuration, together with the work rate within it that qualified workers, conversant with the task, will be able to maintain under *proper conditions* ('proper conditions' involve working a normal working day, without undue fatigue, and taking the appropriate amount of rest). This is the way in which Royal Mail has historically considered marginality.

Our report quantifies marginality in this way, and discusses how Royal Mail's actual marginality may differ from this, identifying and quantifying the impact of these differences on marginality at both a national and zonal level.

Overall, the aim of the project is to answer the following questions:

- How do Royal Mail's costs vary with volume from an operational point of view?
- How does Royal Mail currently capture short-run cost-volume variance in its modelling?
- How should Royal Mail capture short-run cost-volume variance in its modelling?

The approach we have taken to answering these questions is to analyse how in fact Royal Mail currently captures the CVEs, and then make recommendations on how it should be capturing the



CVEs, based on our understanding of how costs and volumes actually vary from an operational point of view.

In the following section, we present the main conclusions of our review. The supporting methodology, detailed analysis and recommendations are provided in the annexes.





## 2 Main conclusions of our review

This section presents our assessment of whether Royal's Mail's mechanism for capturing short-run marginality is fit for purpose; whether the assumptions that support that mechanism require improvement; and how the mechanism can be used to inform other issues of interest to Ofcom (e.g. zonal costing).

Our overall methodology is summarised in Annex A, and our detailed analysis is provided in the subsequent annexes.

### 2.1 Overall assessment of Royal Mail's mechanism for capturing short-run marginality

#### 2.1.1 Overview of Royal Mail's approach to short-run marginality

Royal Mail has developed a methodology for estimating short-run marginality (i.e. CVEs) whereby Industrial Engineers record the time taken to undertake activities in the processing and delivery pipeline segments. Each activity is classified as fixed or variable, and by adding up all the time from all the fixed and variable activities in a pipeline segment, Royal Mail can determine the short-run marginality of its frontline work force.

This estimate of time is known as the "standard hours". Royal Mail chooses to convert this estimate of time into a weighted volume known as "workload". The time taken to process each format of mail (e.g. a parcel) is divided by the time taken to process a sequenced letter. In this way, the workload associated with all formats is expressed in terms of the time taken to process automated letters. Royal Mail explained that the conversion of time to weighted volumes is used as a general rule. We have concluded that it does not affect how the measure of marginality is considered.

We have further concluded that frontline staff (i.e. those directly related to the handling of mail items) make up the main area where Royal Mail can manage its cost in the short run.

#### 2.1.2 Classification of Royal Mail's cost base

As described above, Royal Mail's CVE approach is based on industrial engineering measurements of the length of time taken to perform a standard set of activities. These activities are classed as fixed and variable, and the balance of time in each category informs the overall marginality. However, Royal Mail currently only applies the CVE approach to certain areas of its business, though these represent the areas with the most significant labour costs. Therefore we have classified Royal Mail's total cost base according to its current treatment for modelling short-run marginality. We have classified the base along two dimensions:

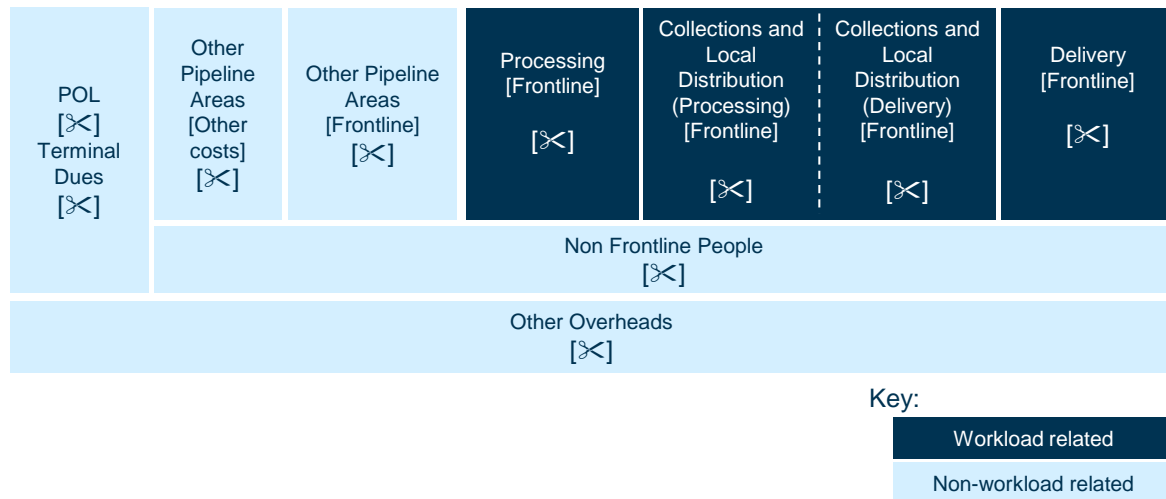
- costs arising from fixed vs. variable activities
- costs calculated based on industrial engineering measurements, versus those calculated on other bases.



This approach sets the context for the other analysis in the report. It shows the materiality of any changes in the CVE assumptions, and also allows us to assess whether the limited application of the CVE approach is reasonable.

Royal Mail currently only calculates CVEs for frontline staff in the processing and delivery parts of its cost base. We have classified the overall cost base for the reported business in Figure 2.1 (this classification is based on Royal Mail's cost base for 2013/14).

Figure 2.1: Classification of Royal Mail's overall reported business cost base [Source: Analysys Mason, 2015]



In most areas of the frontline cost base, the current treatment in terms of short-run marginality appears reasonable. Adjusting the hours for frontline staff is the main mechanism that Royal Mail has for adjusting cost in the short term, and the most material areas of frontline cost have a CVE approach already implemented.

However, Royal Mail applies the marginalities calculated for processing and delivery to collection costs, via the mechanisms in the Business Plan. Royal Mail confirmed that collection hours are included in the delivery and processing functions. We consider this to be inappropriate for the calculation of marginality since collections are generally recognised as having a much lower marginality than both processing and delivery (each collection point must usually be visited regardless of the volume of mail to be collected and therefore collections have a high proportion of fixed cost). We found a similar issue for Local Distribution.

We understand that Royal Mail is planning to develop a CVE approach for collections and other transport-related areas; this will be especially helpful for collections, due to the issue raised above. Development of CVEs for other transport-related areas will refine the overall estimate of marginality for frontline costs. It would be useful if this work could be extended to also determine the cost variability of vehicles and fuel, as this would further improve the accuracy of the Royal Mail marginality calculations.



We have made our own further analysis of the short-run marginality of pipeline areas and cost types without CVEs. Our revised marginality values are shown in the tables below, and details of our analysis are provided in Annex C.

### 2.1.3 Royal Mail's short-run marginality

We have summarised how Royal Mail considers marginality in Figure 2.2 below, and provided a more detailed breakdown in Figure 2.3. We have also included an estimate of the marginality that would result if all the changes we recommend in Annex I are implemented.

It should be noted that the total costs in the tables below are based on Royal Mail's 2013/14 cost base, due to a greater granularity of data being available for that year than for 2014/15.

Figure 2.2: Summary of Royal Mail's marginality [Source: Analysys Mason, 2015]

Cost matrix cost type	2013/14 Cost (GBP m)	Weighting approach	RM View Marginality	AM View Marginality
Frontline People	[X]	Hours	[X]	[X]
Non Frontline People	[X]	Cost	[X]	[X]
Total People	[X]	Cost	[X]	[X]
Total Non People	[X]	Cost	[X]	[X]
Total	[X]	Cost	[X]	[X]

In Figure 2.3 below we have indicated whether Royal Mail currently has an approach to defining marginality, and the basis of that approach. Where Royal Mail does not have an approach, we have indicated as such and also shown the marginality *effectively* assumed by the current modelling suite.

Figure 2.3: Breakdown of Royal Mail's marginality [Source: Analysys Mason, 2015]

Cost matrix cost type	2013/14 Cost (GBP m)	RM marginality approach	RM View Marginality	AM View Marginality
Frontline People	Delivery	[X]	IE based	[X]
	Collection	[X]	Based on delivery and processing	[X]
	Processing	[X]	IE based	[X]
	RDC	[X]	None	[X]
	Network	[X]	None	[X]
	Local Distribution	[X]	Based on delivery and processing	[X]
International	[X]	None	[X]	[X]



Cost matrix cost type		2013/14 Cost (GBP m)	RM marginality approach	RM View Marginality	AM View Marginality
<b>Total Frontline People</b>		[X]		[X]	[X]
<b>Non Frontline People</b>		[X]	None	[X]	[X]
<b>Total People</b>		[X]		[X]	[X]
<b>Operational Non People</b>	Fuel & Transport	[X]	None	[X]	[X]
	Depn & Property	[X]	None	[X]	[X]
	Other Operational Non People	[X]	None	[X]	[X]
<b>Non-Operational Non-people</b>	POL	[X]	None	[X]	[X]
	Terminal Dues	[X]	None	[X]	[X]
	Other Non Operational Non People	[X]	None	[X]	[X]
<b>Total Non People</b>		[X]		[X]	[X]
<b>Total</b>		[X]		[X]	[X]

Our assessment of Royal Mail's marginality by cost type and the calculations we have undertaken to present revised marginalities are categorised into five types:

- In the case of delivery and processing, Royal Mail already defines a marginality approach. However, we have made some changes to update the method to reflect current operational practices and volumes, and also made some smaller changes to the input assumptions.
- In the case of collections and local distribution, Royal Mail assumes that these follow the marginalities of delivery and processing (by default, because the costs of collections and local distribution are not separated out from the other two areas in the business plan). We have estimated new marginalities for collections and local distribution based on analysis of Royal Mail's network.
- There are a number of other areas for which no marginality approach is defined and we consider that some marginality exists. These areas include other frontline cost areas and some operational costs. In these cases, we have estimated a marginality based on analysis of Royal Mail's network and reference to other pipeline areas.



- There are several areas of cost for which no marginality approach exists, but which we agree are fully fixed in the short term and therefore have no marginality. These cost areas include managers and other overheads.
- In the case of POL and Terminal dues, no marginality approach exists, [X]. We agree with this approach.

The calculations underlying our revised values for the marginalities are based on a number of assumptions:

- Revised marginalities for delivery and processing include the impact of our recommended changes to the Royal Mail modelling suite.
- We have created new marginalities for areas without CVEs based on a combination of our industry expertise and analysis of data provided by Royal Mail (please refer to Annex C).

The overall marginality for the Royal Mail business calculated based on Royal Mail's original assumptions is very similar to that based on our revisions. It should be noted that we have identified a number of areas where we have adjusted the marginality from Royal Mail's approach, either up or down.

#### 2.1.4 Relying on Royal Mail's current CVE approach as a measure of marginality

Royal Mail explained that standard and gross hours cannot be easily reconciled, for several reasons:

1. Gross hours include pipeline areas for which standard hours have not been defined (e.g. collections and local distribution are included in processing and delivery frontline costs).
2. Absence, including holiday, sick leave and breaks, will also form part of the difference between standard and gross hours.
3. The IE measures represent a benchmark which Royal Mail aspires to reach,<sup>4</sup> i.e. Royal Mail considers that its real-world operation may be less productive than the operation suggested by the standard hours.

We believe we have accounted for the first two points via the assumptions outlined in Annex D. Regarding the third point, that the amount of standard hours represents an aspiration, our view is that the IE-derived measure of standard hours represents the realistic time that an average competent workforce would take to complete the individual tasks. The measures already include allowances for factors such as fatigue and repetitiveness. Therefore, we consider that the IE-based measure should be close to the actual time required to undertake each individual task.

We have analysed the gap between the gross hours and standard hours, as shown for 2014/15 in Figure 2.4 and Figure 2.5 below.

<sup>4</sup> Discussed during meetings with Royal Mail.



Figure 2.4: Reconciliation of standard and gross hours in processing [Source: Analysys Mason, 2015]

[REDACTED]

Figure 2.5: Reconciliation of standard and gross hours in delivery [Source: Analysys Mason, 2015]

[REDACTED]

### ► Processing

It can be seen that there is a material gap between standard hours and our estimate of adjusted hours, and for this reason we think that additional factors are present in the system. We believe that one significant factor is a structural effect arising from the rostering of staff, who within each shift are processing and handling an uneven flow of mail. In defining standard hours, a key decision is how daily, weekly and seasonal variations are accounted for. Generally, it is not possible to have perfect flexibility in the workforce, and the level of staffing is likely to be driven mainly by the required peak rate of work. There will inevitably be some abatement in effort from the peak level during a shift due to the fact that staffing cannot be varied on an hour-by-hour basis. This creates a structural fixed cost associated with staff rostering.

In MCs, while there is *daily* variation in workload, this can be more easily matched to human resources: processing work can be carried over from one day to the next for some mail streams (i.e. second class mail), and so an average manning level can be set to ensure that on each day essential operations (i.e. first class mail) are completed, together with a reasonable amount of non-essential work (i.e. second class mail) to maintain service quality.

However, the variation in load in MCs is more evident on an *hourly* basis, as an “ebb and flow” of mail as it arrives, is processed, and is sent out<sup>5</sup>. There is, for example, a fixed cost of staff preparing for trucks to arrive. We have attempted to capture this effect in our analysis, the results of which are included in the Processing figures above (for details, refer to Annex [REDACTED]). This issue has less of an effect on Delivery Indoor, since the distances between MCs and Delivery Offices are shorter and more predictable, and the mail has normally already arrived at the Delivery Office before the Delivery Indoor staff commence their shifts.

[REDACTED]<sup>6</sup>

The impact of efficiency may play a part in the remaining difference between standard and gross hours. However, issues related to efficiency are not within the scope of the present review.

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<sup>5</sup> [REDACTED]

<sup>6</sup> Royal Mail response to “Clarification questions on marginality’ (email dated 23/04/15) (“Follow-up Queries”)", Annex A – Responses to Ofcom’s queries of 23/04/2015.



We have considered whether the marginality of the estimated gap in hours is the same as that given by the standard-hours calculations. We propose that the gap is predominantly a short-run *fixed* cost on the basis of the standard-hours calculations, as we believe there is fixed cost in the Royal Mail business which is not being captured by the IE-based marginality approach: the IE approach is best suited to measuring a continuous run of steady demand, but does not capture the fixed cost associated with the ability of a real-world workforce to perfectly flex in order to follow variations in demand (e.g. hour to hour, day to day, and season to season).

We are not able to speculate which of the factors described above (structural fixed rostering costs or efficiency) makes the greatest contribution to this gap. We conclude that the marginality in processing is currently overstated, and should be lower.

► *Delivery*

In Delivery, there is also a material gap between gross and standard hours after our various adjustments. We think there are also structural fixed costs associated with Delivery<sup>7</sup>.

► *Conclusions*

The analysis of the difference between gross hours and our revised view of standard hours gives rise to the following two conclusions.

- It is useful to undertake a reconciliation between gross hours and standard hours. The analysis above has revealed a number of insights into what might be causing the difference. Ofcom may wish to discuss with Royal Mail whether it is able to provide its own reconciliation.
- Such a reconciliation is only useful when combined with fully up-to-date IE-based measurements throughout the standard hours computation. The assumptions for planning are underpinned by a large number of real-world measurements of the time taken to undertake tasks (so-called basic minute values or BMVs), as well as other aspects such as container fills, proportions of mail and distances travelled.<sup>8</sup> Due to the evolving nature of Royal Mail's business, a regular update to the IE-measured inputs will be essential.

<sup>7</sup> In delivery, variation in workload is mainly caused by the day of the week: for example, delivery volumes are significantly lower on a [><]

An additional effect is that the nature of outdoor delivery activities constrains the amount by which indoor resource can be flexed in response to demand. Each outdoor delivery route has to be capable of passing every address every day irrespective of which addresses will receive mail. The time spent travelling to, from and around the route is therefore relatively fixed, and the main element that varies is the time spent actually visiting and delivering mail to addresses receiving mail. This effect creates additional constraints on adapting the resourcing to variations in mail volume.

Note, we are unable to separate out the impact of daily variation effects from other effects (such as efficiency) without detailed bottom-up modelling of delivery activities.

<sup>8</sup> We have been able to confirm that while a review of all PVs was undertaken by Royal Mail in 2012, it no longer holds the data that was used to create the original PVs. Further detail of our analysis can be found in Annex G.1.



We recommend that Ofcom asks Royal Mail to provide a reconciliation between standard and gross hours, and also continue to closely follow any updates that Royal Mail makes to its IE-measured inputs.

## 2.2 Recommendations for improvements to assumptions

Within the limitations of the marginality approach described above, we have considered whether the assumptions and methodologies in the approach can be improved. We have split our recommendations into three categories, depending on the impact that the improvements would have; these are presented in the following three subsections.

### 2.2.1 High-materiality improvements

- We agree with Royal Mail's proposal to remove a calculation from the CVR control model,<sup>9</sup> and have described the impact of such a change in Annex I. The results show material changes for both manual and mechanised letters. Though the revised CVEs show distinct differences in marginality between manual and mechanised mail.
  - [REDACTED]
  - [REDACTED]
  - [REDACTED].
- Updating the Delivery Outdoor model to reflect the new delivery methods has a large impact on the associated CVEs and PVs. Generally, the marginality has reduced as higher marginality methods such as unsupported foot delivery and cycle delivery have been replaced with lower marginality van-supported, foot and lightweight trolley (LWT) delivery. There has been a large reduction in marginality for packets, as the very-high-marginality dedicated packet deliveries are much reduced as;<sup>10</sup> the majority of packets are now delivered via the van-supported methods, alongside letter mail.

### 2.2.2 Low-materiality improvements

- Updating the traffic assumptions used to calculate CVEs and PVs has a low materiality impact on the results.
- Our work plan adjustments show small but measureable changes in the CVEs and PVs, although there is a mixed impact across the formats as our changes are mixed in nature (sometimes more fixed cost is required, sometimes less).

<sup>9</sup> Note: Royal Mail refer to its short-run cost-volume elasticities as cost-volume relationships (CVRs).

<sup>10</sup> [REDACTED]





- The machine-related adjustments show very small changes, and only to machine-related activities. This is because there have been relatively small changes in the average number of machines per MC since the assumptions were defined.
- The changes to the delivery traffic (including items per delivery point (DP)) create the unintuitive result of increasing both the PVs and the marginality. This is because the drop in volumes decreases the call rate (the proportion of homes and businesses that are actually visited to deliver mail), so it takes more time to deliver a certain amount of items, but increases the gradient of the call-rate curve, and therefore increasing the marginality. Based on our high-level analysis, Royal Mail's call rate model appears to be valid.
- We have reduced the door-to-door (D2D) volumes by a factor of 2 to represent the fact that D2D items tend to be bundled and are statistically distributed in the same way as other mail<sup>11</sup>. This has resulted in a small but measurable increase in PV, but a decrease in CVE. The Royal Mail model [§<]. Reducing the D2D volumes has no impact on the addressed call rate, but increases the fixed work per unaddressed item.

### 2.2.3 No impact improvements

- There was a small error in the CVR control model relating to the use of the volume splits for the outward segment for all pipeline segments. We discuss the impact of correcting this error in detail in Annex I; in summary, the results show no impact on the CVEs and PVs, as this calculation is used only to inform the conversion to weighted items, based on the time taken to process a mechanised letter.
- We have found Royal Mail's classification of activities into fixed and variable to be reasonable. We consider that many of the assumptions that we have identified as being questionable will have no material impact on the results.

### 2.2.4 Issues for which we have checked materiality

There are two issues which we have identified and for which we have assessed the materiality:

- In the models reviewed, fixed planning values for Royal Mail's compact sequence sorters (CSSs) are not included. Based on other inward sorting machines, we have estimated that the missing fixed planning values represent less than 1% of total standard hours. Please see Annex [§<].
- Royal Mail double counts variable workload in its indoor delivery area. The last container used (e.g. tray, york) will be on average half full, and Royal Mail correctly assumes that a whole container will need to be moved or sorted as the last container used. However, the final

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<sup>11</sup> [§<]



half is also included in the variable workload. We estimate the impact of this issue to be less than 1% of total standard hours. Please see Annex [8].

We consider both of these issues to have no material impact on the results of our analysis.

### 2.2.5 Impact of recommendations

We have implemented the above recommendations in a copy of the Royal Mail model suite, and shown the impact on the CVEs and PVs in Annex I. Overall, the impact is small, which supports our conclusion that whilst there is a large amount of detail supporting the marginality measures of certain parts of the business, changing individual assumptions (or even groups of assumptions) does not have a large impact on the overall result.

## 2.3 Zonal effects

We have developed Royal Mail's current marginality models to consider differences between zones, including an increase in volume drop to model the effect of new competition. We have focused on Delivery Outdoor, since this is the pipeline segment which will be most strongly affected (due to differences in the split of delivery methods).

We have shown the impact on the CVEs and PVs in Annex I. Overall, the major differences between the zones are between urban and rural; the differences between urban zones (London, urban, suburban) is small. Urban zones have a much lower marginality than rural, mainly due to the inclusion of firm deliveries in urban areas, which have a markedly low marginality. An increase in the volume drop creates a higher marginality as the call rate model will move to a steeper part of the curve. This is illustrated in Figure 2.6.

Figure 2.6: Illustration of increase in call rate gradient due to decrease in volume [Source: Analysys Mason, 2015]



## Annex A Approach to reviewing Royal Mail's short-run marginality

The way that Royal Mail models short-run marginality is illustrated for the 2013/14 cost base in Figure A.1 overleaf. Based on this, we have structured our review into seven review streams, which are described in detail in the following annexes:

1. Classification of overall cost base (Annex B)
2. Review of costs without CVEs (Annex C)
3. Review of reconciliation between workload and gross hours (Annex D)
4. Review of modelling mechanics and computational issues (Annex E)
5. Review of classification of tasks into fixed and variable (Annex F)
6. Review of detailed bottom-up assumptions underpinning PVs (Annex G)
7. Zonal analysis applied to Delivery Outdoor model (Annex H).

We have reviewed Royal Mail's short-run marginality for all pipeline areas and for all cost types. The areas for which Royal Mail has defined a CVE approach are discussed in detail in Annex E, Annex F and Annex G, while Annex C focuses on the pipeline areas and cost types for which CVEs are *not* currently applied. The location of the analysis for each pipeline area and cost type is shown in Figure A.2 overleaf.

Finally, after describing the analysis carried out in each of these review streams, in Annex I we list the changes we have made to the Royal Mail short-run modelling suite based on these findings, and present our recommendations for revised CVEs and PVs.



Figure A.1: Mapping of Royal Mail short-run marginality modelling and structure of our review [Source: Analysys Mason, 2015]

[Redacted]

Figure A.2: Location of our analysis of each pipeline area and cost type [Source: Analysys Mason, 2015]

	Collection	Outward	RDC	Network	Inward	Local Dist.	Delivery Indoor	Delivery Outdoor	Int. Ops	POL and Term. dues	Overhead functions
Frontline staff	Section [Redacted]	Annex E, Annex F and Annex G	Section [Redacted]	Section [Redacted]	Annex E, Annex F and Annex G	Section [Redacted]	Annex E, Annex F and Annex G		Sec. [Redacted]	[Redacted]	[Redacted]
Operational managers	Section [Redacted]										
Fuel and other transport costs	Section [Redacted]			Section [Redacted]		Section [Redacted]		Section [Redacted]			
Operational depreciation and property costs	Section [Redacted]										
Other operational costs	Section [Redacted]										
POL and Terminal Dues											
Other non-operational costs											Section [Redacted]



## Annex B Classification of overall cost base

[REDACTED]<sup>12, 13, 14</sup>

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<sup>12</sup> [REDACTED]

<sup>13</sup> [REDACTED]

<sup>14</sup> [REDACTED]



## Annex C Review of costs without CVEs

[REDACTED] 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25

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15 [REDACTED]

16 [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

23 [REDACTED]

24 [REDACTED]

25 [REDACTED]



## Annex D Review of reconciliation between standard and gross hours

[REDACTED] 26, 27, 28, 29, 30, 31

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26 [REDACTED]

27 [REDACTED]

28 [REDACTED]

29 [REDACTED]

30 [REDACTED]

31 [REDACTED]





## Annex E Review of modelling mechanics and computational issues

[REDACTED]<sup>32, 33</sup>

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<sup>32</sup> [REDACTED]

<sup>33</sup> [REDACTED]



# Annex F Review of classification of tasks into fixed and variable

[REDACTED] 34, 35, 36, 37, 38, 39, 40

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34 [REDACTED]  
35 [REDACTED]  
36 [REDACTED]  
37 [REDACTED]  
38 [REDACTED]  
39 [REDACTED]  
40 [REDACTED]



# Annex G Review of detailed bottom-up assumptions underpinning PVs

[REDACTED] 41, 42, 43, 44, 45

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41 [REDACTED]  
42 [REDACTED]  
43 [REDACTED]  
44 [REDACTED]  
45 [REDACTED]



# Annex H Review of zonal costing issues

[Redacted]

## Annex I Recommended CVEs and PVs

[8]