

A wide-angle photograph of a city skyline at dusk. In the foreground, a bridge with a metal railing curves from the left. The background is filled with various skyscrapers and buildings, some with lights on. The sky is a mix of blue and orange, with scattered clouds. A semi-transparent white rectangular box is overlaid in the center, containing the title and author information.

How to improve Business Address matching to the PAF file

TONY LAMB, MAY 2020

Table of contents

Executive Summary	4
Royal Mail Mailmark Addressing Requirements	6
PAF File Overview	7
Test File Data Analysis and Testing Approach	8
Test Results	9
The Need for Business Names on PAF and Address Matching Failures	10
Improvement Opportunities, and Recommendations	15
Appendix	18

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Executive Summary

Background

- **The PAF Advisory Board (PAB) has a requirement to understand the impact for mailers with B2B data, of matching their mailing files to PAF, and the resulting mailing charges they are required to pay.**
- Royal Mail's bulk mail contract requires a minimum of 90% of items to be "fully and accurately" addressed for the majority of mail products.
- As PAF business addresses include the business name, and business names can have a complex and variable format (i.e. Royal Mail, Royal Mail Group Plc, MarketReach etc all can legitimately be present at the same address), items where the mailer has a different business name to that in PAF may suffer from these matching problems.
- **The financial impact of failure to achieve the 90% "fully and accurately addressed" requirement and show the correct Delivery Point Suffix (DPS) can be severe.** If a mailing is judged by RM not to meet this, then the additional failed items above the threshold are 'reverted' (surcharged) to the service for which they are judged to meet the specification.
- Alternatively, to avoid this issue, **the mailer may decide not to use a Mailmark service**, so the mail has to be handled manually by Royal Mail, increasing their costs and reducing their efficiency.
- The requirement of this project is to understand the extent to which a business name is required to accurately identify the correct postcode and DPS, why the matching failures occur, and any recommendations of how to improve the position for the B2B mailer and Royal Mail.

Project Scope

1. Research the current RM service specifications for the optimal mail services
2. Conduct interviews with up to 10 key stakeholders to understand their perspectives and experiences, relating to the benefits and issues with business names on PAF
3. Create a reference dataset of c10k UK business records, of varying quality and known DPS. Work with approx. 5 suppliers to test their ability to match the test file to PAF, correctly allocate the DPS. Interrogate and analyse the results
4. Production of a report to cover the following areas
 - a. Are business names necessary on PAF
 - i. To correctly identify the delivery point with quantified evidence to support this, and if so
 - ii. Are there alternative approaches to increase the level of business data matching to PAF?
 - b. What causes address matching failures (postcode + DPS) between mail files and PAF?
 - i. To what extent are these known causes?
 - ii. Are there other material causes?
 - c. Propose a list of improvement opportunities, with recommendations about those best able to implement specific improvements

Executive Summary

Conclusions		Recommendations	
Scale of the issue	<ul style="list-style-type: none">• Ability to achieve the required 90% match threshold to PAF; If the input file is purely a B2B file, it can be difficult to achieve the required minimum 90% match to PAF. This is despite the mailers address often being more detailed and accurate than the closest record on PAF• The scale of this issue is not currently quantified, but our test results, and discussions with the market suggest it's significant for B2B mailers. Many decide not to use bulk mail services, increasing Royal Mail's and the mailers costs	<ul style="list-style-type: none">• AMU to report to PAB periodically (eg monthly) on DPS failures for B2B addresses; This will provide visibility to all of the extent of the issue, which is currently unquantified• PAF business Data Governance; A more detailed data governance process should be created, for example; 6 monthly audits of PAF and Alias file business data; reporting on a quality KPI measure; benchmarking the current PAF data accuracy; pro-actively finding errors in PAF and catalysing updates to the file	
Increasing B2B match rates to PAF	<ul style="list-style-type: none">• Average test match rates to PAF were 59% using business name and address, and 53% only using address to match. More and better business name data on PAF would significantly increase this difference• Our test gained over 60% increased match rate when we incorporated D&B data. 85-90% are typical match rates to a UK business universe such as D&B and our tests gained 83%. D&B contains c3.3m active business records vs 1.3m on PAF, showing the impact business names have on match rates• To allow a match to happen at addresses with multiple DPS's, as much business name data as possible is required. This where a large percentage of the issues occur, with the input data often being more detailed and accurate than the PAF data	<ul style="list-style-type: none">• Create a Multi-occupancy file for business addresses; These instances should be easily identifiable in PAF, and particular focus paid to the quality and business coverage of them• Increase PAF business data coverage for Multi-occupancy addresses; Royal Mail has access to many sources of business information. These can be used to flag and identify businesses that can be added to PAF• Alias file for business addresses; Increasing the use of this file for business addresses will provide additional information to allow a match to happen• Mailmark quality threshold; If the PAF business reference data quality and coverage can't be improved to provide B2B mailers with reasonable chance of achieving it, the effect on take-up of the Mailmark product should be evaluated	
Software	<ul style="list-style-type: none">• Different software has different match logic, creating different results. Only 59% of the matches for two of the software offerings tested were the same. A lack of business names on PAF magnified this difference	<ul style="list-style-type: none">• Software enhancements; By working with Royal Mail, there may be opportunities for software providers to fine tune match routines to allocate as many DPS's at valid addresses as possible	

Royal Mail Mailmark Addressing Requirements

Mailmark addressing requirements

- Royal Mail (RM) offers mailers savings for preparing mail by ensuring mailing addresses, postcodes and DPS are accurate. This means each mail piece can be read, successfully routed and sequenced by RM's sorting machines, without intervention, using the data contained in the Mailmark barcode
- It's therefore recommended by RM that every item in a Mailmark option mailing has a full and accurate address & postcode printed on each item and a full and accurate postcode and DPS in the eManifest and encoded in the Mailmark barcode.
- However, the Mailmark option allows address, postcode and DPS accuracy, compared to PAF, to legitimately dip below 90% (or 95% for Sustainable Advertising Mail Intermediate), but a surcharge may be added to cover the costs of conveying poorly addressed mail pieces
- RM tries to pass Mailmark mail pieces through sorting machines and only takes further action if they identify performance issues with the mailing. The sorting machines use PAF as one source of data to successfully sort and sequence mail pieces without manual or other intervention. Failures occur if
 - Mailmark Items have a default or missing DPS or RM's machines determine a different DPS for the address
 - Mailmark items have a missing or partial Postcode or RM's machines determine a different Postcode for the address.
 - The customer has declared Mailmark items in an eManifest that RM have not seen on their machines but RM had expected to machine them. RM only applies such charges if your posting has less than a 90% read rate.

Royal Mail user guide for sorting

1.1 Address accuracy

Your mail must be addressed in accordance with the address accuracy requirements set out in the following table:

Accuracy requirements	Products and options
No minimum address accuracy	<ul style="list-style-type: none">➤ 1st and 2nd Class with no additional options➤ Business Mail, Advertising Mail, Sustainable Advertising Mail, Publishing Mail and Subscription Mail with Mailmark® option *Please see note below table.➤ Advertising Mail which is not machine-readable➤ Advertising Business Mail with Machine-readable Advanced**
90% address and postcode accuracy	<p>The following products except when using the Mailmark option and other than those specific product options requiring no minimum address accuracy (listed in row above)</p> <ul style="list-style-type: none">➤ Sustainable Advertising Mail➤ Advertising Mail➤ Publishing Mail➤ Business Mail

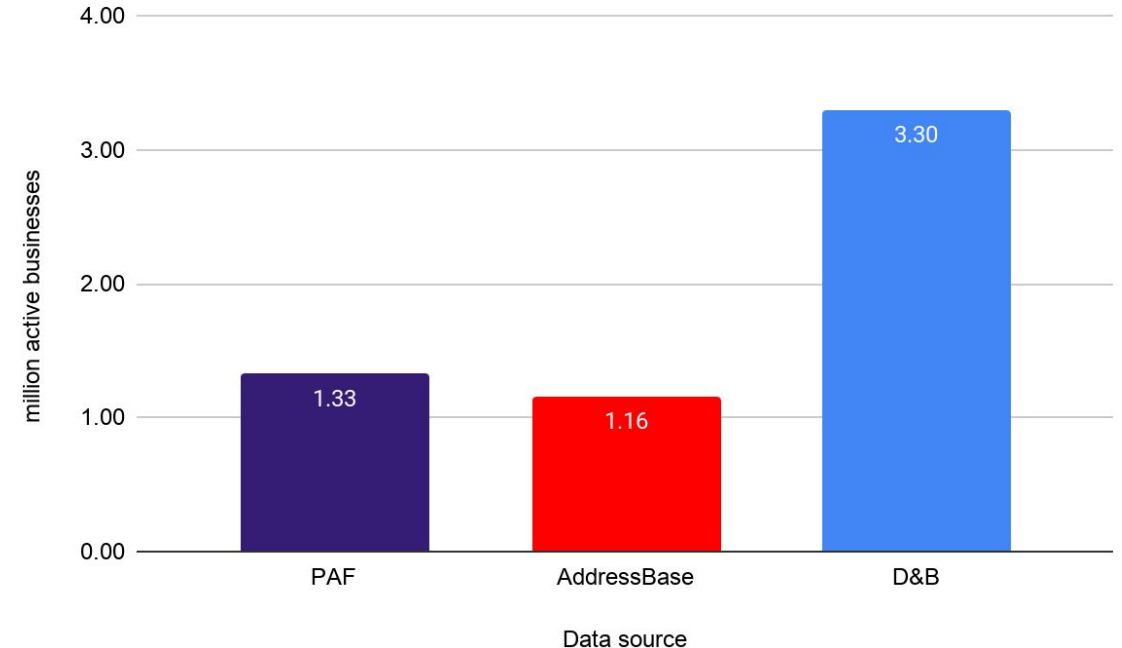
The PAF File

Overview

- The **Postcode Address File**, abbreviated as 'PAF', is a database containing every address that can receive mail (i.e. every 'delivery point') in the UK. It contains around 28 million addresses for over 1.8 million postcodes. RM owns PAF and maintains it so that it reflects the postcode addresses which are 'live' for receiving mail. It makes the file available to other users
- **PAF contains 1.32 million business records** (1.23m small organisations, 0.09m large organisations). This **represents c.40% of the live trading businesses available** on UK business files such as Dun & Bradstreet.
- Business names also appear in the separate PAF Alias file to identify businesses operating from a residential address and alternative business names. No businesses records currently appear in the Multi-residence file
- PAF is updated daily with over 10k residential and business address updates per month. Business records are **updated without consultation through a number of mechanisms**; postal operatives (posties), mailing data analysis, 3rd party data, customer notifications etc . Each Delivery Walk is confirmed as checked every 12 months, and an update date is recorded
- **Delivery points are the points at which a postie delivers post, but each business on PAF is recorded with a separate unique number.** For example, an office block may contain numerous business units. **If mail is delivered to a central point in that block, each business listed in PAF will still have it's own delivery point suffix.**
- The Delivery Point Suffix is a two character code that is used only in bar codes and uniquely identifies each address within a single postcode. It ranges from 1A to 9T, with codes 9U to 9Z being accepted as default codes when no DPS has been allocated

PAF business coverage vs other files

- **Ordnance Survey's AddressBase®** products matches 28 million Royal Mail postal address to unique property reference numbers. It contains c1.2m organisations, and is updated every six weeks, using files such as PAF, and NLPG* from the previous month. This creates a c.2 month update lag
- **Dun and Bradstreet (D&B) provides global business data** and holds c6m UK business records, of which c3.3m are actively trading and identifiable (eg not a consumer who is an active trader)



*National Land and Property Gazetteer

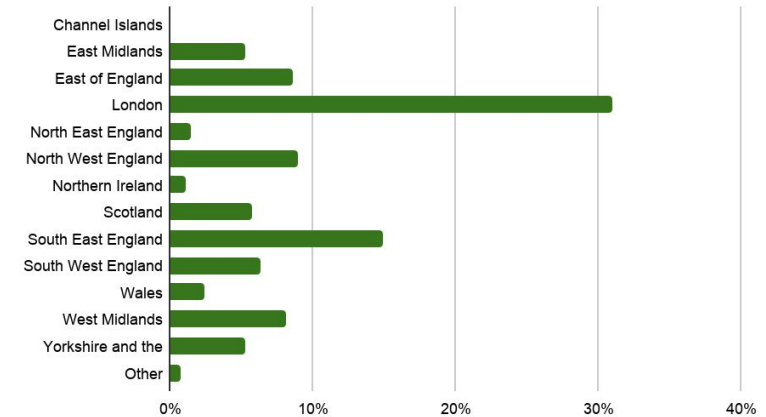
Test File Data Analysis and Testing Approach

Testing overview

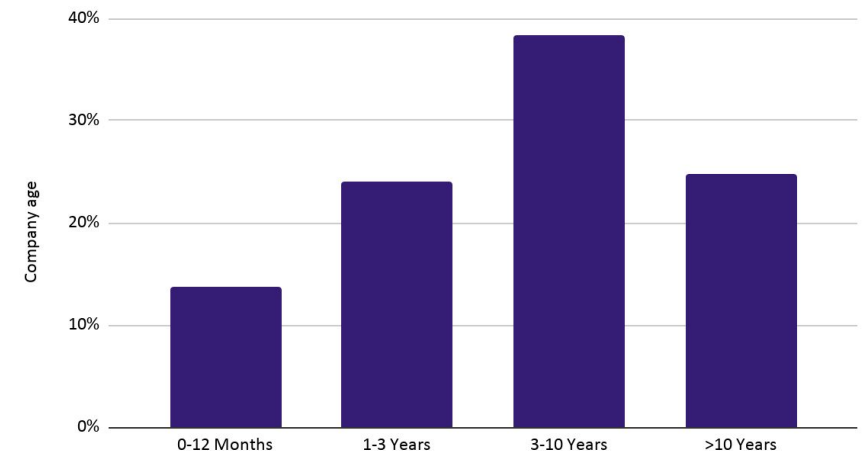
- **Data source**; Companies House Free Public Data Product, covering basic company data of live companies on the register, as of Sept 2019. All address fields are complete, and the distribution is geographically representative of UK companies
- The data contains trading and registered addresses, plus 74 foreign or low quality addresses. All of the remaining UK addresses are valid, of good quality and will be mailed at some time. It's estimated 50% of records will relate to registered addresses
- Two test files were created from this data, containing **the same 10k business records**, randomly selected for size and location;
 - **File A contained the business names with the addresses,**
 - **File B only had the addresses.**
- The primary purpose of the test was to understand **how business name affects the ability to append a DPS** to the record across a randomised set of business data.
- The secondary purpose was to better **understand how the data processing /software** affected the results
- Both files were processed by 3 suppliers with access to a recent copy of PAF and asked to append the DPS to as many records as possible in File A and B, then return the file with the DPS attachments.
- 7 results files were produced (3 x File A, 3 x File B, and an additional set, matching to a D&B data source). Analysis was performed on the returned files

Test file profile analysis

Companies by Geographic Region



Company Age



Test Results

General observations

- The 3 different software supplier solutions **average match results to identify a DPS were; File A = 59% (with business name and address); File B = 53% (address only)** (Fig. 1)
- Up to **c17% uplift in correct DPS was achieved if the business name is used** with software with business specific data matching routines (Supplier 2). General residential configured matching routines gained a lower uplift
- Different software has different match logic, so creates different results. For example **only 59% of the matches for Supplier 1 & Supplier 2 File A's were the same.** (Fig. 2)
- **The ability for software to process the business names, impacts the importance of the business name, and the accuracy of the results.** Supplier 2 has specific business match routines, and produced more accurate match results. Supplier 1 did not have these, and gained a higher number matches. 29% of the results were exclusive to them, and a visual check indicated they were less accurate matches
- **85-90% are typical match rates to a UK business universe** such as D&B containing over 6m UK business records (trading and non-trading), for good quality input data using sophisticated business match routines
- Presence of registered addresses in the input files creates some complexity in the matching, and will exaggerate the lower match rates for the more advanced match routines. They do though highlight the importance of comprehensive and accurate reference data

File A & B match analysis

Fig. 1

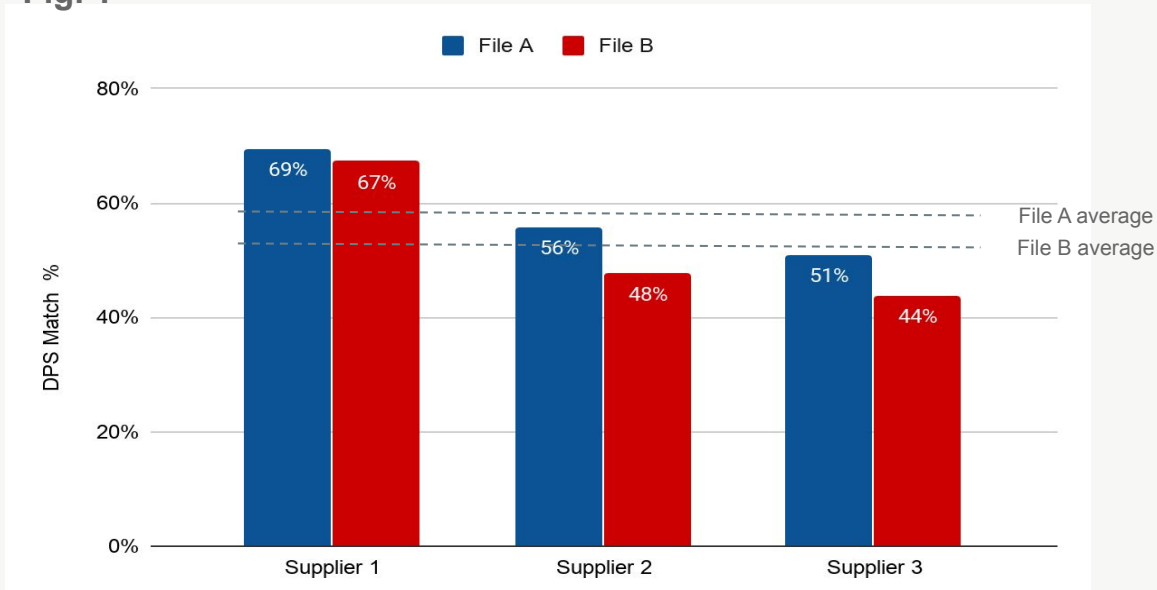
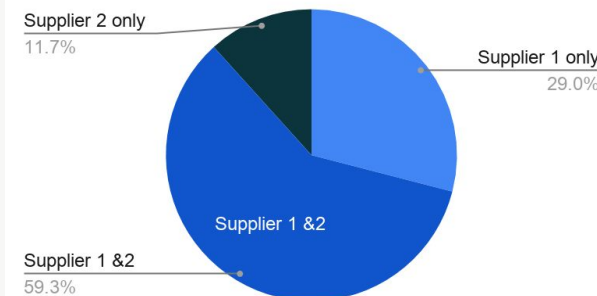


Fig. 2

Total Matches (File A1 & A2)



The Need for Business Names on PAF

Observations

- **Correct business names improve the match rates by up to 17% in our tests.** In particular, multiple DPS's at an address, need as much business name data as possible to match. Without an accurate name, looser matching logic may allocate a DPS, but these will also introduce other errors in DPS allocation
- Supplier 2 used fairly tight match routines with no defaulting to the next best DPS option, at the same address. In its File A (business name and address) results, despite matching the correct address, there was a 45% gap in unallocated DPS's
- Mailmark Items are considered for surcharges if they have a default (9Z) or missing DPS or RM's machines determine a different DP for the address. There is no RM requirement to use a business name to allocate the DPS. **If PAF has a record for the specific business name, the software needs to match to the DPS associated with this business name. If PAF doesn't have a record of the business name, the allocated DPS just needs to be accurate for the address and the RM sortation systems will accept it**

Examples

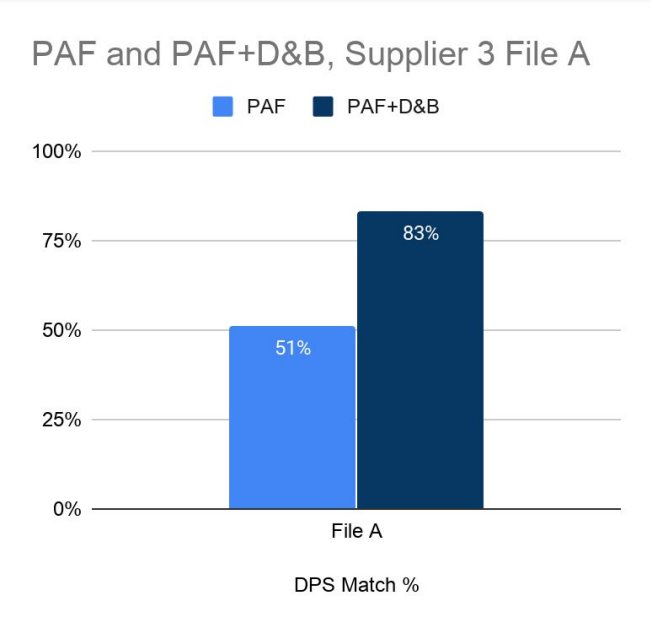
- **No business name on PAF, for single DPS residential locations.** Good chance of a match. (for Vegan Boulevard, there is a Flat 9, vs a No 9. Without the business name, a DPS can't be accurately added). Vegan Buddha is a restaurant and an example of a trading business that is not on PAF
- **Single DPS, different business name.** May throw out tighter match logic, and not allocate a DPS, as below. Can get a match using looser matching rules, but this can cause other errors in matching elsewhere
- **Multiple DPS with different names.** There is generally an issue in matching to these records. Selecting the next best DPS aligns to right postcode and generally the right building or street, meaning the postie is able to easily deliver the item. There will always be some error in matching. Vegan Care incorrectly matched to Gorilla Cars, as no correct reference data was available. **More accurate and complete data will reduce the error levels**

Org	Pcode	DPS; Supplier2 File A	DPS; Supplier2 File B	Location type	DPS type
VEGAN BOULEVARD LTD	DY8 1EP	4P		Trading	Single DPS, same name
VEGAN BOWL LTD	DA11 8FS	1T	1T	Trading	Single DPS, residential
VEGAN CAKE COMPANY LTD	BS30 6NX	1L	1L	Dissolved	Single DPS, residential
VEGAN CASH LIMITED	E12 5QZ	2W	2W	Trading	Single DPS, residential
VEGAN BUDDHA LTD	CM17 0HS	1E	1E	Trading	Single DPS, residential
VEGAN CARD LTD	SS7 5HB			Registered	Single DPS, different name
VEGAN CHOCOLATES BY LUISA LTD	NG1 4JA			Registered	Single DPS, different name
VEGAN CARE LIMITED	EC1V 9BD	2N		Registered	Multi DPS, different name, mismatch
VEGAN CAMPAIGNS LTD	PR2 9ZD			Registered	Multi DPS, different name
VEGAN CHOP SHOP LTD	IG6 3UJ	1Y	1Y	Registered	Multi DPS, different name
VEGAN COFFEE LTD	WC2H 9JQ			Registered	Multi DPS, different name

Business Universe Data Increased Matches by over 60%

Observations

- **Supplier 3 used D&B data as a reference file instead of PAF, and increased the DPS match results by over 60%** (See below)
- Supplier 3 did not use enhanced business matching routines. With these, results would be expected to aligning with the 85-90% business universe match rates
- This clearly demonstrates the **importance of increased levels of business name data in the reference file to increase match rates**



Examples

- Supplier 3, also matched the test file to a source of D&B data. This source did not contain the DPS record, but the DPS listed below was derived from the standard Test File A matching to PAF.
- D&B has identified a large percentage of the DPS records for a business address from its own additional matching activity, particularly if only one DPS is present at a business address

Org	Pcode	DPS; Supplier 2 File A	DPS; Supplier 3 File A	DUNS Supplier3 File A	Location type	DPS type
VEGAN BOULEVARD LTD	DY8 1EP	4P	4P	223039493	Trading	Single DPS, same name
VEGAN BOWL LTD	DA11 8FS	1T	1T	224652916	Trading	Single DPS, residential
VEGAN CAKE COMPANY LTD	BS30 6NX	1L	1L		Dissolved	Single DPS, residential
VEGAN CASH LIMITED	E12 5QZ	2W	2W	224438834	Trading	Single DPS, residential
VEGAN BUDDHA LTD	CM17 0HS	1E		220086054	Trading	Single DPS, residential
VEGAN CARD LTD	SS7 5HB			225120318	Registered	Single DPS, different name
VEGAN CHOCOLATES BY LUISA LTD	NG1 4JA			223483729	Registered	Single DPS, different name
VEGAN CARE LIMITED	EC1V 9BD	2N	2N	224438834	Registered	Multi DPS, different name
VEGAN CAMPAIGNS LTD	PR2 9ZD			220086054	Registered	Multi DPS, different name
VEGAN CHOP SHOP LTD	IG6 3UJ	1Y	1Y	225314287	Registered	Multi DPS, different name
VEGAN COFFEE LTD	WC2H 9JQ			224782989	Registered	Multi DPS, different name

The Multi-occupant Matching Issue

Observations

Example

- For multiple occupants at a business address, unless a similar business name to the mailing file record is present on PAF, the software usually finds the correct address, but cannot allocate a DPS
- For Supplier 2 File A, **only 56% of DPS's were identified, but 91% correct addresses were found**
- Vegeco Ltd is a typical example where no similar business name exists on PAF, so no DPS can be allocated**
- Castle Court is Vegeco's registered and correspondence address. It is interestingly registered with FAB Accountants at this address, which is also not listed on PAF
- See Appendix 1 for more examples

Org	Addr1	Addr2	Town	Pcode	DPS; Supplier 1 File A	Validatio nLevel	DPS; Supplier 2 File A	Validation Level
VEGECO LIMITED	CASTLE COURT 1 CASTLE STREET	PORTCHESTER	FAREHAM	PO16 9QD	9Z	1		precise

Gadgetservices.Com Ltd, Castle Court, 1 Castle Street Portchester, Fareham, PO16 9QD

Kristallklar Communications Ltd, Castle Court, 1 Castle Street Portchester, Fareham, PO16 9QD

Legacy 4 Life, Castle Court, 1 Castle Street Portchester, Fareham, PO16 9QD

Legacy 4 Life Ltd, Castle Court, 1 Castle Street Portchester, Fareham, PO16 9QD

Portchester Business Centre, Castle Court, 1 Castle Street Portchester, Fareham, PO16 9QD

Rowe Sparkes Partnership, Castle Court, 1 Castle Street Portchester, Fareham, PO16 9QD

Sandpiper Ltd, Castle Court, 1 Castle Street Portchester, Fareham, PO16 9QD

CASTLE COURT 1 CASTLE STREET

PORTCHESTER

FAREHAM

HAMPSHIRE

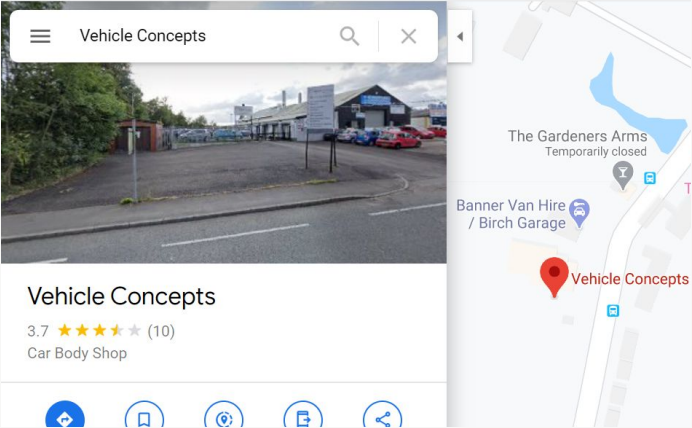
PO16 9Q



Multi-occupant Matching where the Business Name is on PAF

Observations

- For multiple occupants at a business address, where the business is listed, and enough information is similar in the business name and address, a match to the correct DPS can be made
- Vehicle Concepts Ltd is a typical example and all 3 solutions, regardless of match logic are able to create a match. The input address is also more detailed than the PAF record**
- Supplier 3 gained c11% match at organisation name across all the File A matches, due to the low level of business names on PAF. Its other matches relied upon the address



Example

Org	Addr1	Addr2	Town	Pcode	DPS; Supplier1 File A	DPS; Supplier2 File A	DPS; Supplier3 File A	Validation Level
VEGECO LIMITED	CASTLE COURT 1 CASTLE STREET	PORTCHESTER	FAREHAM	PO16 9QD	2G	2G	2G	precise

Banner Van & Car Hire Ltd, Birch Garage, Manchester Road Heywood, OL10 2QD

Ken Johnson & Co, Birch Garage, Manchester Road Heywood, OL10 2QD

Vehicle Concepts Ltd, Birch Garage, Manchester Road Heywood, OL10 2QD

BIRCH GARAGE MANCHESTER ROAD HEYWOOD ENGLAND OL10 2QD

Different Software Delivers Different Results

Observations

- Business names are a lot more complex than surnames. **Only certain organisations have developed specific routines to match business data** (See Appendix 2 for explanation)
- Results cross-over of only 59% between Supplier 1 and Supplier 2 File A's shows the impact the software, and reference data can have
- **More accurate and comprehensive business data helps matching, particularly if there are multiple DPS's at a location.** It also reduces the difference in the software results
- If there is just a single DPS, a different business name can inhibit the matching and fail to allocate a DPS; see Vegan Card and Vegan Chocolates. This may often occur with, for example, Accountants or Debt Collection agencies, where multiple companies are registered at a single address, and have mail delivered there
- **Batching of mail at eManifest level;** Mail is charged at eManifest level so a good batch % might improve the overall average. Particularly true for mixed B2B and B2C files.

Examples

- **No business name on PAF, for single DPS residential locations.** Good chance of a match providing the addresses are similar. If there are differences, tighter match logic may not allocate a DPS
- **Single DPS, different business name.** May throw out tighter match logic, and not allocate a DPS, as below. Can get a match using looser matching rules, but can cause other errors in matching
- **Multiple DPS with different names.** Main matching issues occur here as there is no named record to link to. Selecting the next best DPS aligns to right postcode and generally the right building or street, meaning the postie is able to easily deliver the item

Org	Pcode	DPS; Supplier1 File A	DPS; Supplier2 File A	Location type	DPS type
VEGAN BOULEVARD LTD	DY8 1EP	4P	4P	Trading	Single DPS, same name
VEGAN BOWL LTD	DA11 8FS	1T	1T	Trading	Single DPS, residential
VEGAN CAKE COMPANY LTD	BS30 6NX	1L	1L	Dissolved	Single DPS, residential
VEGAN CASH LIMITED	E12 5QZ	2W	2W	Trading	Single DPS, residential
VEGAN BUDDHA LTD	CM17 0HS	1E	1E	Trading	Single DPS, residential
VEGAN CARD LTD	SS7 5HB	3H		Registered	Single DPS, different name
VEGAN CHOCOLATES BY LUISA LTD	NG1 4JA	1A		Registered	Single DPS, different name
VEGAN CARE LIMITED	EC1V 9BD	2N	2N	Registered	Multi DPS, different name, mismatch
VEGAN CAMPAIGNS LTD	PR2 9ZD	1Q		Registered	Multi DPS, different name
VEGAN CHOP SHOP LTD	IG6 3UJ	9Z	1Y	Registered	Multi DPS, different name
VEGAN COFFEE LTD	WC2H 9JQ	9Z		Registered	Multi DPS, different name

Improvement Opportunities, and Recommendations

Opportunities for PAF

- **Ability to achieve the required Mailmark threshold;** If the input file is purely a B2B file, it can often be hard to achieve the required minimum 90% match to PAF. If the PAF data was as rich as for example, the D&B data, it would be a lot closer. Our tests achieved 83% match rate to D&B without enhanced business match routines. It should be noted that this level is still below the required Mailmark threshold

More accurate business names data means more accurate allocation of the DPS for RM, and greater levels of mail automation. This enables better quality of service levels with speed and delivery accuracy
- **We conclude that business names are required on PAF;** Their removal would create more reliance on the address to gain a DPS match. For Supplier 2, there were no significant differences in **matches to PAF at an address level** if only an input address was used, versus the business name and the address (90% vs 91%). c20% fewer DPS's were identified though, meaning an increased level of re-work for RM of the mail if business names weren't on PAF
- **Increased business data completion levels on PAF;** PAF contains c.40% of the actively trading businesses. Where only one DPS is present at a location, the lack of a business name is of less significance, as the address alone can often lead to a match. Where multiple DPS's are present at an address, the presence of an accurate name is very significant and where matching failures are most likely to occur

Royal Mail has access to many sources of information such as posties, mailing data analysis, 3rd party data, customer notifications etc. These can be used to flag and identify businesses that can be added to PAF.

It may be impractical to have a large number of business names at a location i.e. registered company addresses at large accountancy firms. RM are though

...cont

(...cont); able to analyse the mail streams to identify the most commonly mailed businesses. Verification and addition of these businesses to the file would cover off a significant number of match failures

- **The PAF Alias File** contains some business records run from residential and also some business properties. It has historically been used to capture known variants of names of the main business, ie Marketreach or Royal Mail, but without an appropriate data governance process to maintain them, the rules attached to the addition of data to this file have been inconsistent
- **Increased accuracy of business data on PAF;** Each posties Delivery Walk is checked every 12 months, and an update date is recorded. The reality is not all individual delivery points are validated, but the overall data accuracy is still thought to be good. This accuracy could be easily validated and quantified against a 3rd party reference file such as D&B's, with errors proactively updated

The impact of Covid -19 on the business economy and the number of closures will make this even more important. It should though be noted that mail will still be paid for and sent to companies that have closed down. As a suggestion, companies that have ceased to trade could be placed in the Alias file for a period of time

- **Increased Data Governance of PAF;** Data Governance is a management framework for data accountability and improvement, that ensures high quality data through the complete lifecycle. Though some process exists, a more formal data governance approach, with proactive data quality and enhancement processes (particularly for multi-occupant business addresses) and agreed KPI's that are monitored would better inform the debate, improve PAF data quality, and help to increase the use of Mailmark services by B2B mailers

Improvement Opportunities, and Recommendations

Opportunities for Royal Mail

- **Increasing Mailmark's use for B2B mailers;** Mailmark provides mailing discounts for mailers, among other benefits, but many B2B mailers choose not to use it. Failure to meet the accurate addressing threshold can eliminate most of the price advantage of RM's most efficient sortation methods and causes problems for customers and the supply chain in allocation and administration of the surcharges. Being able to achieve the 90% threshold is therefore beneficial to RM and mailers. RM often does not see the lack of take-up of Mailmark, as the decision is already made before the items are sent, Better quantification of the issue will be valuable for all
- **Operational limitations for Royal Mail;** Sorting the mail in the correct order increases the delivery efficiency for the postie. Having an item out of order in the delivery walk, may require them to return back down the street to a property they have already passed to post the item. A lot of the time though, the item will have been routed to the correct business, but not the delivery point, meaning the postie is likely to be in the right building or area
- **We considered the likely effect of changing the 90% threshold figure;** This figure originated from the original Mailsort requirements. It is easier for B2C mailings to meet the threshold as B2C data has a simpler address structure. Since B2C mailings are estimated to represent over 90% of the mailing volume, lowering it would have an impact across the quality and deliverability of many mailings. It would be hard to create and govern a specific B2B threshold, especially since PAF is only able to identify c.40% of trading businesses. If the take-up of Mailmark is shown to be affected by this threshold, options should be evaluated
- **Batching of mail at eManifest level;** Mail is charged at eManifest level so a good batch % might improve the overall average. This is particularly true for mixed B2B and B2C files. This batching is restricted to each mailing customer, and already widely used where possible. It also masks the problems' scale

Other opportunities

- **Address processing software enhancements;** Different PAF solution providers use different business data matching routines; some update PAF more frequently; some add in extra PAF data such as the Alias records to enhance the base reference data; some use additional 3rd party data eg Companies House or D&B data; some create their own reference data such as common generic business naming conventions eg Ltd, Limited.

There is an opportunity for PAF resellers to enhance their B2B processing capabilities with customised matching routines, more frequent PAF updates and 3rd party data. The 3rd party sources may though incur additional licence fees, increasing the processing costs. As B2B mail is estimated to be about 5% of the total mail volume, a lot of companies haven't prioritised investment in the development of these enhancements

Accurate matching rules help to find if the business exists on PAF. If it doesn't, the test analysis indicates that the DPS just needs to be accurate for the address to be accepted by the RM sorting machines. Identifying the multi-occupant addresses could also allow different matching rules to be run

- **Mailing data quality;** Mailing files should be of the best quality to attain the best mailing price. Good Data Governance will help this process

For Transactional Mail, if there are address errors, organisations often won't change the data, as there could be unintended consequences if the decision is wrong; ie debt collection, statements. An approach is to create a file of "failures to match" and send them back to the mailing customer to check, but this could be high volumes and time consuming. Repeated errors will probably come back in subsequent mailings as the source data is unlikely to have been changed

Advertising Mail is different, as there is less risk around enhancing an address. A mailer wants to get it delivered so it's often updated prior to mailing

Improvement Opportunities, and Recommendations

Recommendations

Scale of the issue	<ul style="list-style-type: none">• AMU to report to PAB periodically (eg monthly) on DPS failures for B2B addresses; This will provide visibility to all of the extent of the issue, which is currently unquantified. Since the c1.3m business records are known, analysis of this data will identify the volume of traffic being sent to these addresses, and the level of RM determined addressing failures. Though this wont show the full scale of the issue, as only c40% of businesses can be identified, it should cover a large percentage of the multi-occupancy addresses where problems are most likely to occur• PAF business Data Governance; A more detailed data governance process should be created, for example; 6 monthly audits of PAF and Alias file business data performed; reporting on a quality KPI measure for PAB; coverage of multi-occupancy businesses; benchmarking the current PAF data accuracy; pro-actively finding errors and catalysing updates to the data. Performance against agreed targets could be simply presented in a Data Dashboard
Increasing B2B match rates to PAF	<ul style="list-style-type: none">• Create a Multi-occupancy file for business addresses; These records should be easily identifiable in PAF, and particular focus paid to the quality and business coverage of them• Increase PAF business data coverage for Multi-occupancy addresses; Royal Mail has access to many sources of information such as posties, mailing data analysis, 3rd party data, customer notifications etc. These can be used to flag and identify businesses that can be added to PAF, particularly if their mail volume exceeds a minimum threshold point. If required, these businesses could be proactively verified by desk research, or the postie• Alias file for business addresses; Increasing the use of the Alias file for business addresses will provide additional information to allow a match to happen eg; alternative business names, previous business occupants. Companies that have ceased to trade could also be placed in the Alias file for a period of time, while mail volumes are still significant• Mailmark quality threshold; If the PAF business reference data quality and coverage can't be improved to provide B2B mailers with reasonable chance of achieving it, the effect on take-up of the Mailmark product should be evaluated
Software	<ul style="list-style-type: none">• Software enhancements; The analysis indicates that enhanced business matching rules help to find the correct DPS if the business exists on PAF. If it doesn't exist, the DPS just needs to be accurate for the address to be accepted by the RM sorting machines. There may be opportunities for software providers to work with Royal Mail to fine tune match routines to allocate as many DPS's at valid addresses as possible

Appendix 1

Examples - The DPS matching issue*

Org	Addr1	Addr2	Town	Pcode	DPS; Supplier 1 File A	Validation Level	DPS; Supplier 2 File A	Validation Level
VEGTECH MACHINERY LIMITED		ASHBY ROAD	SPILSBY	PE23 5DW	9Z	4		postcode

Since the business address does not have a number, the name is the only way to locate it on the street, despite it being the only occupant at the address

The input record is more detailed and accurate than the PAF data, but fails to match to PAF due to lack of address detail

Org	Addr1	Addr2	Town	Pcode	DPS; Supplier 1 File A	Validation Level	DPS; Supplier 2 File A	Validation Level
VEGEMENTAL LTD	1 ANNEXE THE WHEELHOUSE	BONDS MILL ESTATE	STONEHO USE	GL10 3RF	9Z	1		precise

Org	Addr1	Addr2	Town	Pcode	DPS; Supplier 1 File A	Validati on Level	DPS; Supplier 2 File A	Validation Level
VEGAN CORPORATION LTD.	ELSCOT HOUSE	ARCADIA AVENUE	LONDON	N3 2JU	9Z	1		precise

Many companies are located and listed on PAF at Elscott House. A number of these are also company registered addresses. Vegan Corporation isn't listed, so failed to match

Address Search

Machinery Limited, [Ashby Road](#), [Spilbsy](#), Lincolnshire, England, [PE23 5DW](#)

PE23 5DW Tong Engineering Ltd, Ashby Road, SPILSBY

PE23 5DW Woodlands Trust Farm, Ashby Road, SPILSBY

PE23 5DW Flat 2, 44 Ashby Road, SPILSBY

PE23 5DW Flat 1, 44 Ashby Road, SPILSBY

PE23 5DW Flat 3, 46 Ashby Road, SPILSBY

Address Search

bonds mill estate [stonehouse](#) [GL10 3RF](#)

GL10 3RF Bonds Mill Estate Ltd, The Counting House, Bonds Mill, Bristol Road, **STONEHOUSE**

Address Search

[Elscot House](#) Arcadia Avenue LONDON [N3 2JU](#)

N3 2JU London Board of Shechita, **Elscot House**, Arcadia Avenue, LONDON

N3 2JU Lloyd Platt & Co, **Elscot House**, Arcadia Avenue, LONDON

N3 2JU Rhodes Finance, **Elscot House**, Arcadia Avenue, LONDON

N3 2JU Ghetz Ltd, **Elscot House**, Arcadia Avenue, LONDON

N3 2JU B C Business Centrum Ltd, **Elscot House**, Arcadia Avenue,

*PAF look-ups provided by the AFD Software online address search engine

Appendix 2

Fuzzy matching software explained - Help IT Systems

- HelpIT's software matchIT provides a good explanation of fuzzy matching. The match engine utilises the very latest in AI technology to identify patterns in the data, the nature and position of words, poor formatting or incomplete or uncertain information. By providing a description of the data that informs the engine, it is able to establish the trustworthiness of the record. In turn, each result feeds engine values that determine the quality of every record.
- During the match scoring stage record 'A' is compared to record 'B' and the logic attained helps the engine understand how the data was input and what the overall quality of that input was - and the types of issues identified. Finally, the engine is able to grade suspect matching records.

NAME	COMPANY	ADDRESS 1	ADDRESS 2	ADDRESS 3	POSTCODE	EMAIL	PHONE
Tony Naughton	Palmer Alarm Systems	Unit 3	25 Kings Mill Ln	Redhill	RH1 5YP	anaughton@pas.co.UK	01737 454100
Anthony Norton	PAS	25 Kingsmill Lane, Bldg 3	Redhill	RH1 5YP		info@pas.co.uk	(01737)454107
A R Naughton Esq	Palma Alarms Limited	255 Kings Mill Lane	Building 3	Redhull	RH1 5YO	anaughton@gmail.com	
Mr. A. Naughton	Operations Director	Palmr Alarm Systems, Ltd.				anaughton@pas.co.uk	01737454100 x207

Appendix 3

References

- Royal Mail User Guide for Sorting www.royalmailtechnical.com/rmt_docs/User_Guides_2019/Sorting_20190902.pdf
- Network Access bulk mail guide; dms.royalmailwholesale.com/document/1
- Retail bulk mail guide; www.royalmailtechnical.com/rmt_docs/User_Guides_2019/Sorting_20190902.pdf
- PAF code of practice for updating business records: www.royalmail.com/sites/default/files/PAF-Code-of-Practice-211118.pdf
- PAF developers guide www.poweredbypaf.com/wp-content/uploads/2017/07/Latest-Programmers_guide_Edition-7-Version-6.pdf
- Ofcom Postcode Address File Review www.ofcom.org.uk/_data/assets/pdf_file/0031/49756/paf.pdf
- AFD Software online address lookup www.afd.co.uk/try-it/
- Royal Mail AddressNow online address lookup addressnow.royalmail.com/demo/
- PAF business address database
www.postcodeaddressfile.co.uk/products/business_postcode_address_file/business_addresses_product_detail.htm
- Ordnance Survey AddressBase
www.ordnancesurvey.co.uk/documents/product-support/release-notes/addressbase-release-note-may-19.pdf