

Driving address data interoperability

Implementing UPRN standards within HMRC and across government

Rob Lee

Chief Data Architect

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HM Revenue
& Customs



Introduction

Rob worked in Financial Services most of their working life and spent many many many hours trying to help customers, using the data the organisation holds.

They are the Chief Data Architect at HMRC focussing on how to arrange HMRCs data for agility, cost and a better customer experience.

Allowing multiple government and non-government organisations to understand who a customer is critical, here we distil a lifetime of working on one problem... to a solution.

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Government Priorities

Connecting data is critical

Growing the economy – Enhancing digital and data infrastructure.

An NHS fit for the future – Using AI and data to improve healthcare services.

Safer streets – Integrating public sector data systems for better coordination.

Opportunity for all – Promoting transparency through open data and metrics.

Clean energy superpower – Leveraging data to optimize energy systems.

Customer Identifiers

National Insurance Number

Email Address

Mobile Number

Company Number

Bank Account and Sort Code (IBAN)

Charity Number

NHS Number

UTR

Customer Number

Name, Address, Date of Birth

Company Name





Posting in the UK

When posting something to someone in the UK, write the address like this:

- Addressee's name
- House number and street name
- Locality name (if needed)
- TOWN (please print in capitals)
- FULL POSTCODE (please print in capitals)

Handy tips

- Don't use full stops or commas
- Start each line on the left (don't centre the lines)
- You don't need to write the name of the county if you've included the town and postcode

Return address

If you want to make sure your post can get back to you, don't forget to include your UK return address on each item. Items cannot be delivered will be returned to you



- Addressee's name
- House number and street name
- Locality name (if needed)
- TOWN (print in capitals)
- FULL POSTCODE (print in capitals)

The Address

Mx Rob Lee
32 Culley Way
MAIDENHEAD
SL6 3PX

- ✓ Addressees' Name
- ✓ House Number and street name
- ✓ TOWN
- ✓ FULL POSTCODE

Mr Robert Lee
Two Chimneys
High Street
Urchfont
DEVIZES
SN10 4QH

- ✓ Addressees' Name
- × House Number and street name
- ✓ Locality name
- ✓ TOWN
- ✓ FULL POSTCODE



Addressees' name
House number and street name
Locality name (if needed)
TOWN (print in capitals)
FULL POSTCODE (print in capitals)

The Address

Ms Rob Lee
Ground Floor Flat, 43a Catharine Street
FROME
BA11 1DB

Is Ground Floor Flat the NAME, like Two Chimneys

Or a synonym for 43a Catharine Street

Is there a First Floor Flat

Is it 43b

Is 43 the building with flats: Ground Floor and First

Can I get broadband installed?



[43b Catherine Street, Frome, BA11 1DB](#)

[Land At The Back Of, 43 Catherine Street, Frome, BA11 1DB](#)

[43 Catherine Street, Frome, BA11 1DB](#)

[43a Catherine Street, Frome, BA11 1DB](#)

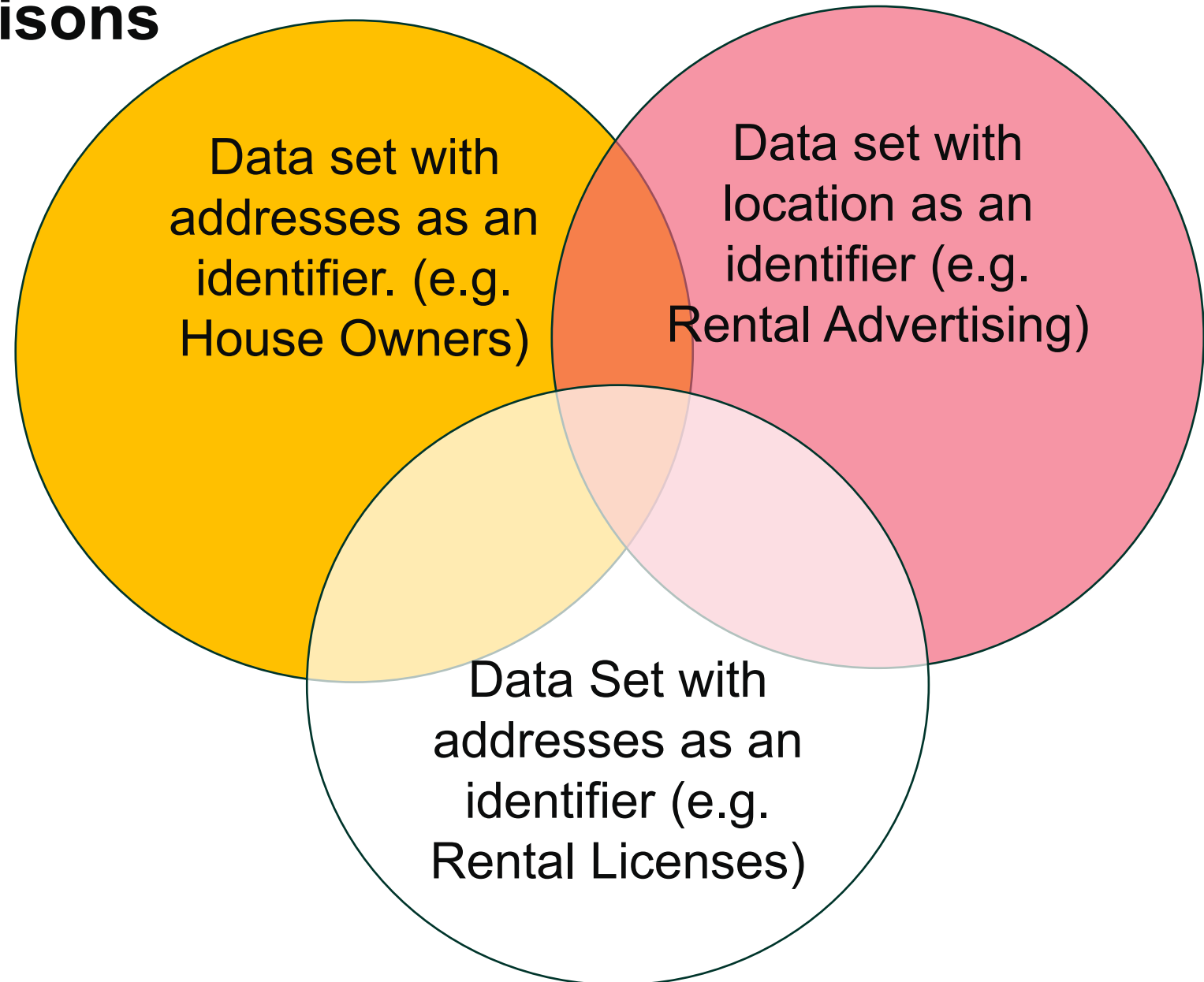
[Ground Floor Flat, 43a Catherine Street, Frome, BA11 1DB](#)

[The Garden Apartment, 43 Catherine Street, Frome, BA11 1DB](#)

[First Floor Flat, 43a Catherine Street, Frome, BA11 1DB](#)

Address Comparisons

Blending data sets



How to compare addresses?*

AddressLine1	String	35	
AddressLine2	String	35	
AddressLine3	String	35	
AddressLine4	String	35	
AddressLine5	String	35	
Postcode	String	8	
ForeignCountry	String	35	For a NON-UK address, Foreign_Country is mandatory.
Type	String	1	

Observations

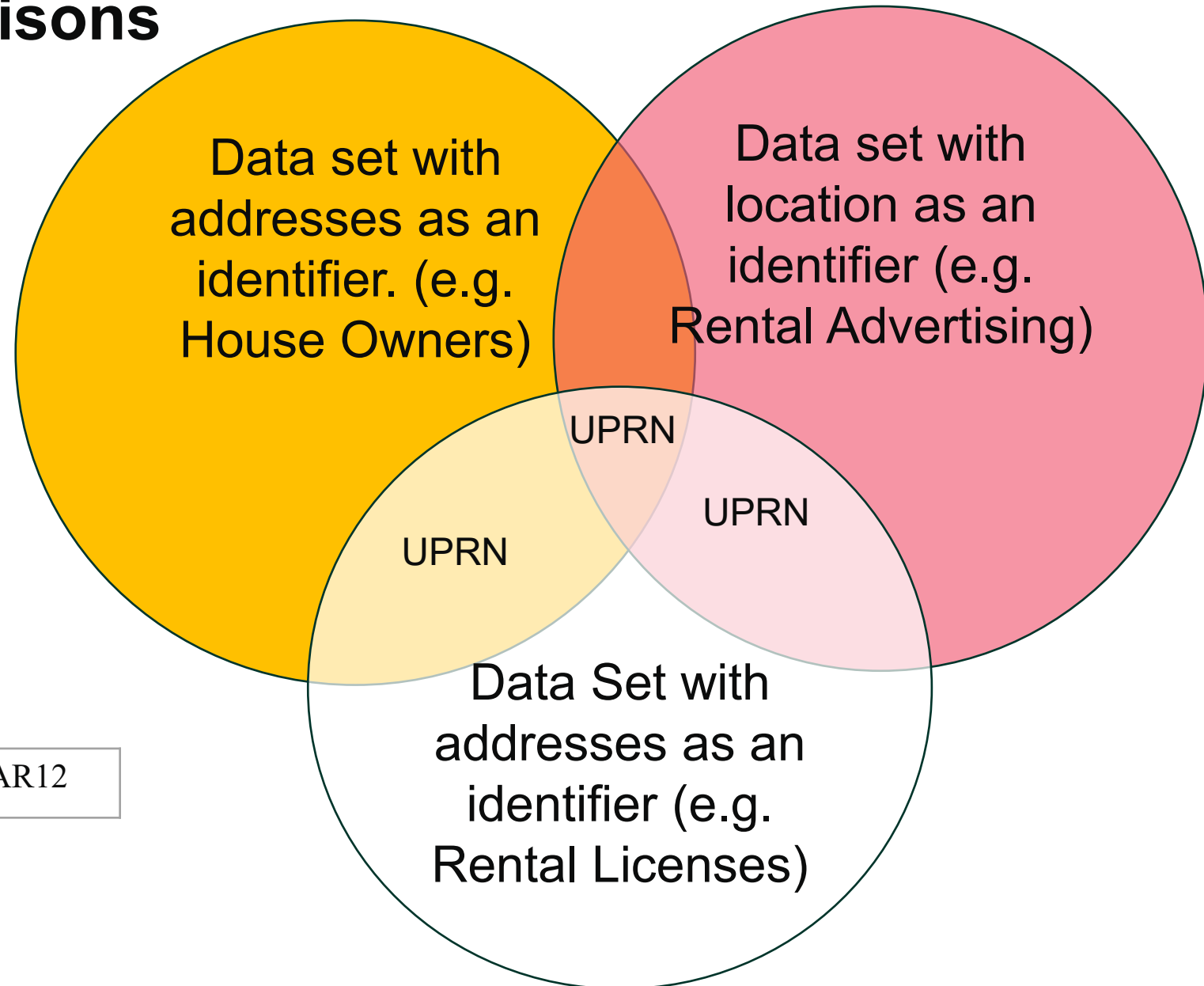
- Address lines are different: 35 vs 60 or 40
- Postcode length: 8 vs 10 (AANX NAA)
- Zip Codes (AK 99577-0727)
- Name of the Country physical field
- Inconsistent Underscore and Hyphen in names

Main Address Line1	ADR-STREET	CHAR60
Main Address Line2	ADR-STR_SUPPL1	CHAR40
Main Address Line3	ADR-STR_SUPPL2	CHAR40
Main Address Line4	ADR-STR_SUPPL3	CHAR40
Main Address Postcode	ADR-POST_CODE1	CHAR10
Main Address Country	ADR_DATA-CITY2	CHAR40
Main Address Foreign Country Indicator	ADR_FLAG	CHAR1

Imagine across an organisational boundary

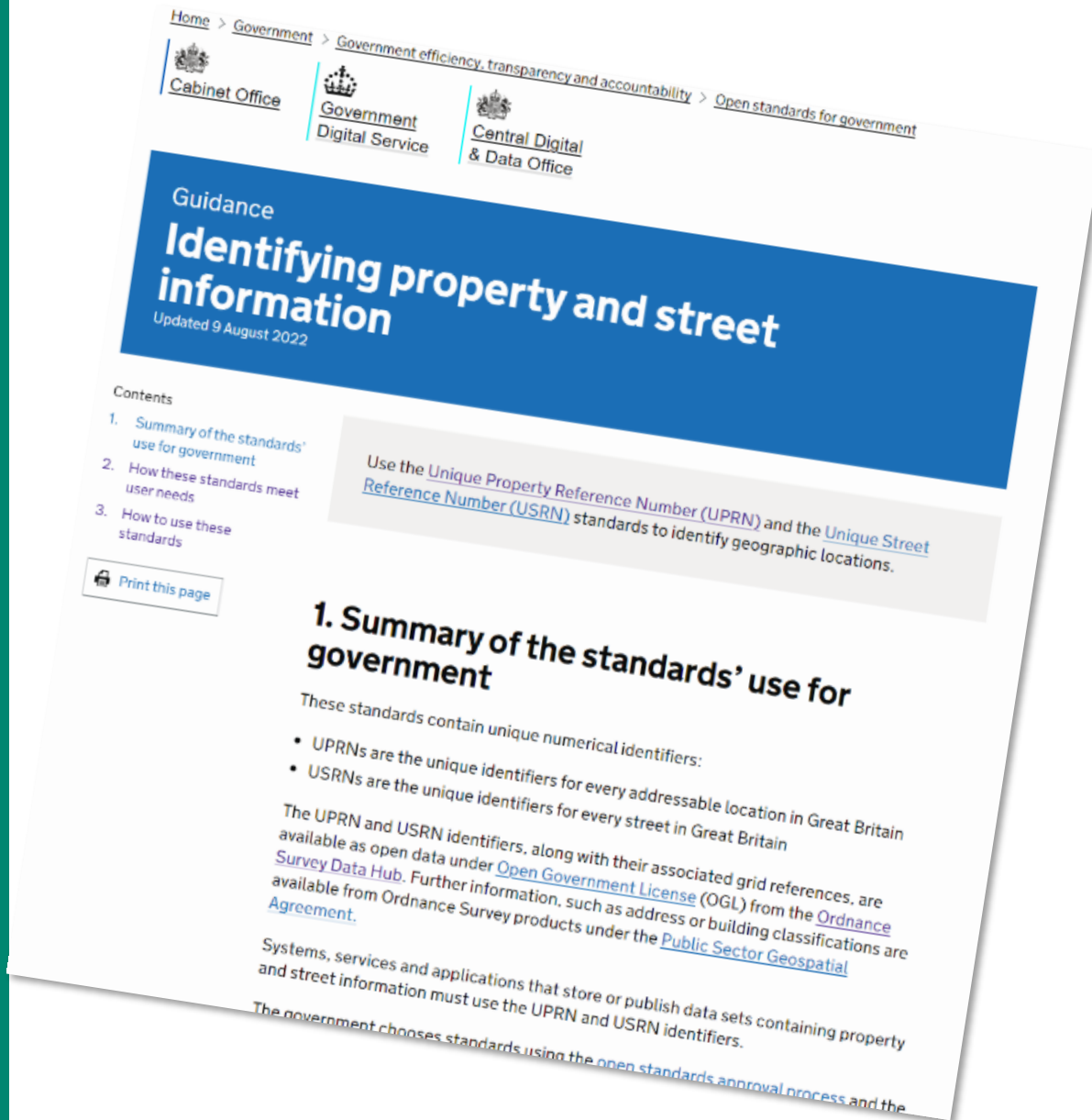
Address Comparisons

Blending Data Sets



UPRN	ADR_UPRN	CHAR12
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How is HMRC adopting UPRNs



- Ensure a UPRN Data field is inside every system alongside the address representation
- Change all digital front ends to **select** the address and store the resultant UPRN
- Change non-digital front-ends to evaluate at the earliest opportunity
- ~~Whenever an address is moved between systems, if there is no UPRN, add it.~~
- When comparing addresses use the UPRN first, then rules on the remaining (inc foreign) addresses
- ~~Bulk evaluate and correct addresses in major systems etc. store the UPRN~~
- Add UPRN in key platforms – Operational CRM, Analytic Matching
- Change all APIs to and from external providers to require the UPRN alongside the address

How is HMRC helping Government

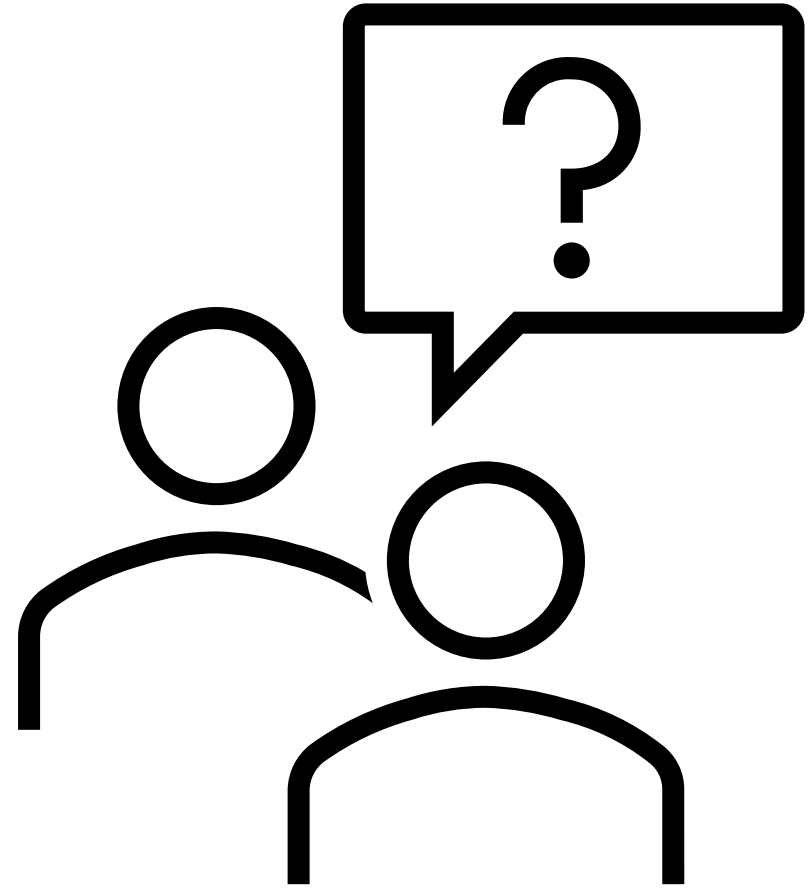
Influence, awareness and use

Talk about UPRNs A LOT.

Sponsor major platform vendors to natively support

Change standards on addresses to require UPRNs

What about International UPRN?





Artificial Intelligence (Gen AI)

Do we still need UPRNs or similar now we have Gen AI?

Yes!

Robust data underpins the generation of new data.



HM Revenue
& Customs

A real (not an HMRC) example

Two Chimneys

High Street

Urchfont

Devizes

Wiltshire

SN10 4QH

UPRN:

100120990799



Rules

1. To find house numbers or names submit the first line to find numbers, remove the rest.
2. Add the Name/number to the street.
3. Only Post Towns have meaning so remove all other parts of an address after the street.

2 High Street

DEVIZES

SN10 4QH



2 High St (there is no Number 2)
Devizes
SN10 1AT

2 Nags Head
High Street
Urchfont
Devizes
SN10 4QH

UPRN: 10033387128