Data Communications Company



RETAIL ENERGY LOCATION (REL) GUIDANCE DOCUMENT

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Reviews

Name	Title / Responsibility	Release Date	Version number
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Glossary of Terms

Abbreviation	Meaning		Abbreviation	Meaning
(i)DNOs	(independent) Distribution Network Operators		**LPI**	Land Property Identifier
API	Application Programming Interface		**ME**	Manually Entered (Address)
BAU	Business as Usual		**MPAN**	Meter Point Administration Number
BLPU	Basic Land and Property Unit		**MPID**	Market Participant Identifier
BS7666	British Standard which sets out the guidelines upon which the Local Land and Property Gazetteers and Local Street Gazetteers are built		**MPL**	Meter Point Location
CGI	CapGemini		**MPRN**	Meter Point Reference Number
CRS	Central Registration Service		**MPxN**	MPAN(s) and/or MPRNs
CSS	Central Switching Service		**OFAF**	One Fail All Fail
CSV	Comma Separated Value re REL Classification		**OS**	Ordnance Survey
DCC	Data Communications Company		**OS ABP**	Ordnance Survey AddressBase Premium
DIIA	Data Integrity and Improvement Approach		**PAF**	Postal Address File
DPA	Delivery Point Address		**PhID**	Physical Interface Design
DSP	Data Service Provider in Smart Metering		**PUIs**	Parties Under Integration
EES	Electricity Enquiry Services		**REC**	Retail Energy Code
ERDA	Electricity Retail Data Agent		**RECCo**	Retail Energy Code Company
GES	Gas Enquiry Services		**REL**	Retail Energy Location
GML	Geography Markup Language re REL Classification		**REL ID**	Retail Energy Location Identification (Number)
GRDA	Gas Retail Data Agent		**RMP**	Registrable Measurement Point
GUI	Graphical User Interface		**SD**	Service Definition
HMO	House in Multiple Occupation		**SI**	Systems Integrator
IPR	Intellectual Property Rights		**SMS**	Service Management System
JSON	JavaScript Object Notation		**UPRN**	Unique Property Reference Number

1. Executive Summary and Introduction

1.1 Obligations Under the REC

The Retail Energy Code defines obligations for all parties and is found within the REC Portal. It obliges parties to consult the REL before initiating a switch request for domestic or microbusiness consumers only. How this is achieved is up to the party in question, but interfaces are available to each of the enquiry services, and it is for party to determine the business logic they wish to implement to ensure that the correct meter(s) is (are) captured within the switch request. It is up to parties to determine which enquiry service is initially interrogated and how the REL ID is matched across different fuel types. The process can be undertaken by another party on the supplier's behalf.

Parties may also choose to consult the REL for I+C consumers but this is not mandatory.

1.2 Document Summary

The Retail Energy Location (REL) Guidance Document describes the components of the REL, together with its usage and the manner in which it is created and maintained. It also explains how actions are performed at a high-level. It covers the whole lifecycle of the REL from creation to termination (i.e. cradle to grave) but focuses primarily on the enduring phase (CSS 'Live Operation' or BAU (Business as Usual)) phase.

To provide context, Annexe 1 includes an overview of the Central Switching Service (CSS), which incorporates both the Centralised Registration Service and CSS Address Service.

1.3 The Purpose of the REL Guidance Document

The REL Guidance document provides a reference point on the Retail Energy Location and its components, including its definition and purpose.

The document provides key definitions on the following:

- The purpose of a REL and how it promotes positive and appropriate Switch Outcomes for consumers
- The definition and structure of a REL including its components (length and/or permitted values), their derivation and their purpose
- The creation of RELs (historically and within BAU)
- UPRNs (Unique Property Reference Numbers) and their role within the REL
- Systems which use REL data and their interfaces with CSS
- The maintenance of the REL and the relevant activities
- The retirement of a REL (Appendix A)
- Provides additional information on the alignment of address fields

Note, RELs within the CSS were either loaded as part of transition prior to the commencement of the switching service or have been created through the 'business as usual' (BAU) processes within live operations.

1.4 Composition and Purpose of the REL

The objective of the CSS is to facilitate faster and more reliable switching for Gas and Electricity customers, thereby improving switching outcomes. Owing to the perception of poor quality within legacy address data, the key objectives required the introduction of an industry recognised REL incorporating cleansed address data. This REL is then used to assist parties to ensure the correct MPxNs

are identified and captured as the subjects of any switch request. The introduction of the REL concept as defined by Ofgem improves the likelihood of switches completing right first time and over a shorter duration, thus improving customers' confidence and their experience within the switching process. The resultant increase in consumer engagement promotes competition within the industry. All these outcomes are aimed at fulfilling the objectives of the CSS.

The REL includes a clearly identifiable, standardised address within the CSS which is synchronised with both the Electricity Enquiry Services (EES) and the Gas Enquiry Service (GES). It enables the correct meters to be identified by enquiry service users which are then subjects of any switch request for a given property. Therefore, the enquiry services, together with Electricity and Gas Retail Data Agents (ERDA & GRDA respectively) and all parties who use the Central Switching Service benefit from having a consistent understanding of the REL and its components. The use of the REL together with the cleansing of source address data only reduces the occurrence of switch issues which previously would have resulted as a direct consequence of poor-quality address data and the introduction of **the REL will not correct issues which result from incorrect MPxN/address data provided at source**.

The CSS incorporates both the Registration and Address Services. This means both existing and newly created RMPs are recorded in 'one system,' together with their registration details and accurate address information specifying where energy is consumed. Whenever a REL is created or updated, that REL data is sent to the Enquiry Services via a secure message so EES and GES remain synchronised with the switching service. A common REL Identification number (REL ID) is applied to each MPxN at any specific premises which supports the identification, in the Enquiry Services, of meters included within a customer's switch request. This promotes improved switch outcomes and helps to achieve the overall objectives.

At a high level, the REL is a composite of two elements:

- a Registrable Measurement Point (RMP) (which represents the MPxN)
- and the address where the meter is installed and **assumed** to be where the energy supply is being **consumed** (e.g. the consumer's address or premises served; the location). In certain cases, the MPL will differ with the premises served and Comms Hub data is used to align the REL address to the premises served in the Enduring Phase.

A basic illustration of the REL diagram is shown in Figure 1 below:

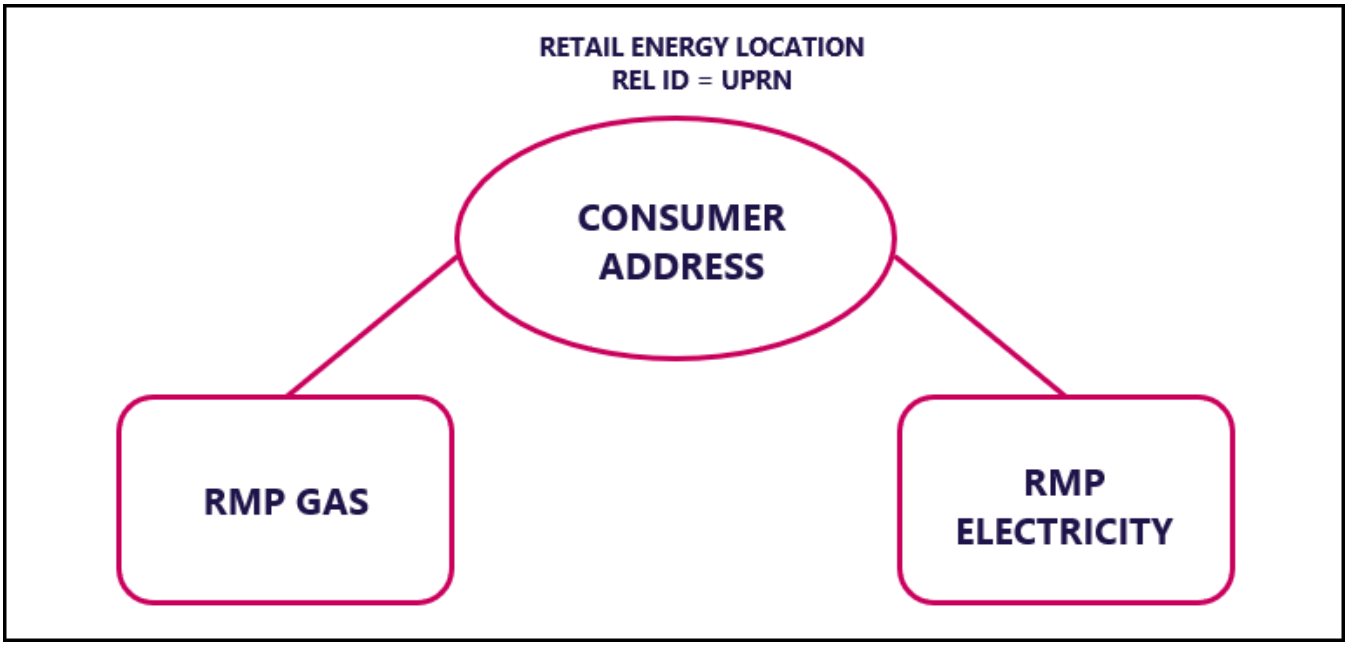


Figure 1 – A Basic Retail Energy Location

The REL is stored within CSS and includes a standardised address which is interfaced to the Enquiry

Services to help facilitate the identification of the correct electricity and/or gas meters (in this context meaning the MPxNs) which are then switched at any given property, in a reliable and efficient manner. When an address is supplied to CSS, a comparison is made between the place where the meter is positioned, i.e. the Meter Point Location (MPL) and the Ordnance Survey AddressBase Premium (OS ABP) address database which incorporates a British Standard (BS7666) compliant address database. Where a match is found which meets the 'Gold Standard' requirements (defined in Annexe 2), the UPRN (Unique Property Reference Number) is re-purposed and used as the unique REL ID (REL Identification Number) to correctly identify meters. In these cases, the REL address will be assigned a status of 'match' and all addresses pertaining to the UPRN as recorded in OS ABP (including PAF, Alternate, Historic etc) will all be attributed. If a match to OS ABP cannot be found, a 'Local' UPRN is assigned as the REL ID and the MPL address, supplied at source, is used as the REL Address. The 'Local' UPRN is an Ordnance Survey supplied number but comes from a range of UPRNs which the OS will never assign to a premises; it is essentially a spare and unused UPRN from OS's perspective but acts as a unique key within CSS.

Note: A 'Gold Standard' match meets the following criteria:

- Confidence Score => 90 when matching against a BS7666 address database AND it is the ONLY candidate address AND it 'stands clear' of other addresses with a confidence score close to threshold **OR**
- Confidence Score => 90 and has been manually assured to be the correct property where one or more candidate addresses exist **OR**
- Where manual address matching has determined an appropriate match against the BS7666 address database

Prior to Go Live to CSS, the MPL data provided by Xoserve and the (i)Distribution Network Operators ((i)DNOs) was used to determine REL Addresses for Registrable Measurement Points (RMPs) with active registrations. The matching was conducted outside CSS using a bespoke process. Where a source address could be matched to an address in OS ABP, the UPRN of the premises identified in the OS database was assigned as the reference number (REL ID) or each meter at that individual premises. The OS ABP array of addresses associated with the UPRN were then interfaced to EES and GES. If a match could not be found, the MPL address was used as the REL address and the MPxN's REL clearly marked as being unmatched until such time as either:

- the source data is corrected or a manually entered address is entered
- the OS ABP epoch is updated and a match can be established
- the MPxN is assigned a 'Local' UPRN as detailed above

In line with the Transition Runbook, these RELs were loaded into CSS once the RMP and Registration files had been loaded.

During 'live operation', new RELs are created and all RELS are maintained within CSS with the former being created as new RMPs within ERDS/GRDS and subsequently interfaced and registered within CSS. The CSS automatically attempts to match the MPL address to OS ABP within the CSS Address Service segment of the CSS and assigns a REL address of type 'match' and a REL ID of the UPRN if strict criteria are met. Otherwise, it returns the MPL address as the REL Address with a 'Local' UPRN and a REL type of 'MPL'.

Additional address information and inputs can be provided through DNOs, Gas Transporters (GTs), suppliers and Smart Metering information where it adds value to enable a 'Gold Standard' matched address to be assigned to MPxNs.

Diagrams within this document detail various REL scenarios covering different MPxN profiles are shown in Section 4.2 and a full set of scenarios were successfully tested within the REL Test phase. This test phase included REL testing scenarios undertaken by several Market Participants which were all passed and signed off, confirming the REL to be 'fit for purpose.'

The REL Guidance document is concerned with processes relating to the creation and maintenance of the REL during CSS 'live operation' and additional documents should be read in conjunction with the REL Guidance document:

Document	**Relevance**	**Link**	**Cat 3 Document**
DCC-0014 REL Lifecycle Document	Document produced pre-Go Live which details the REL and its purpose within the CSS	Service Now REL Lifecycle Document	No
DCC-0011 Data Integrity and Improvement Document (DIIA)	Defines the REL Address Measure and 'Gold Standard' and the Data Cleansing and Matching processes	Service Now Data Integrity and Improvement Approach Document	No
REC_Address_Management_ Schedule	Describes the CSS Address Management Service including business processes to create and maintain the MPL and the REL	REC V3 - Baselined Documents - REC Portal	No

Table 1 Additional Reference Documents

Useful Links:

Link	**Purpose**	**Note**
RECCo Page link https://recportal.co.uk/rec-v3-baselined-documents	Describes the Address Management Service provided by the CSS Provider, including the business processes required to create and maintain the Meter Point Location and the REL Addresses	Repository for key documents including: • Service Definitions (EES, GES, ERDS, GRDS and Switching Operator as well as the CSS) • API Technical Specification Documents
REC V3 - Baselined Documents - REC Portal (Cat 3 Products)	Sets out the expected behaviour of the EES	User Guide to the EES
	Sets out the expected behaviour of the GES	User Guide to the GES

Table 2 Useful Links

The objectives of the document are to:

- inform parties on how existing RELs have been created and are maintained in the enduring phase of CSS
- inform parties on how RELs are created and maintained for new RMPs
- ensure parties have a common and correct understanding of the REL and how it should be used within the Enquiry Services (in conjunction with the respective user guides) to ensure each switch request is populated with a complete and appropriate set of meters to be subjected to the switch, aligned to the consumers expectations. The correct use will improve switch outcomes.

1.5 Management Summary

The REL Guidance document is a CAT 3 REC document, authored by DCC (the CRS Provider encompassing the role of the CSS Provider) and incorporates review comments from an industry review. It is located within the REC Portal: REC V3 - Baselined Documents - REC Portal (Cat 3 Products).

The document illustrates updates which could occur to any given REL during its lifecycle and how these are processed through the interaction with the CSS. There are two distinct phases of the CSS programme; Transition and the Enduring Solution post 'Go-Live and this document covers both phases.

The Guidance document provides diagrams and tables which illustrate different scenarios pertaining to the constitution of the REL grouping (varying numbers of MPANs and MPRNs within a particular REL ID) and the use of the UPRN as a unique identifier for the REL ID.

Through the governance mechanism established within the Switching Programme, the content of the REL Guidance document is discussed and reviewed with all parties to ensure requirements and document purpose are met.

1.6 Intended Audience

- DCC
- RECCo
- Energy Suppliers
- Gas Transporters
- Distribution Network Operators (ERDA/GRDA)
- REC Service Users

2. REL Guidance Scope

The REL Guidance Scope section provides a summary of the topics covered and those deemed out of scope.

2.1 Topics Covered

- All data elements contained within the REL
- This includes all 3 'addressSources' which can be attributed to a REL:
    - **'Matched'** to OS ABP prior to Go Live and will be bulk uploaded into CSS via a data migration script once the RMP and registration files have completed migration. RELs will contain true UPRNs.
    - **'Manual'** - an initial address was used but the consumer insists it is incorrect a requires a 'Manually Entered' address to be used. This new address either correctly matches an address within the address service **or** reflects the 'best' address as specified by the consumer. The address might be matched to OS ABP or remain unmatched, dependent on the particular address provided.
    - **'MPL'** – i.e. remain unmatched if the 'Gold Standard' required to match the source address to OS ABP has not been matched and the MPL address will be used as the REL address until such time as a 'Gold Standard' match is made or it is manually updated in the enduring solution. 'Local' UPRN is assigned.

Note the use of 'Local' UPRNs for unmatched MPLs and the fact their RELs are denoted with addressSource 'MPL'. This will ensure all addresses still needing to be matched are easily identified. In addition, the confidence score field will be below 90, indicating the address remains unmatched.

2.2 Out of Scope of REL Guidance Document and Match Calculations

Only MPLs which relate to property types which are expected to be recorded within OS ABP will be deemed in scope. Locations (of meters) such as 'Mast in North Field near Holly Farm' are deemed 'Out of Scope' since they are neither a postal address nor do they carry a distinct, identifiable location which will ever be expected to appear in OS ABP. These locations are not included within the REL Guidance document or counted within the match rate calculations. The very nature of meters located at sites such as those in 'proximity' to a building, telecoms cabinets, bus stops, advertisement hoardings or masts in fields are all allocated an addressSource of 'MPL'.

As for HMOs*, these have a single letter drop, hence a single postal address but could have multiple meters. However, provided the right to switch energy supplier is held at the HMO level, then this enables all rooms to be assigned a single REL ID represented by the UPRN for the HMO.

* a property rented out by at least 3 people who are not from 1 'household' (e.g who are not from the same family) but share facilities such as the bathroom and kitchen

3. Retail Energy Location (REL) and Its Purpose

An understanding of the design and use of the CSS is provided in Annexe 1 and provides context with regards to this section.

The REL has been introduced within the CSS to facilitate faster and more reliable switching for Gas and Electricity customers and, thereby, to improve switching outcomes. These are key Ofgem objectives and the Impact Assessment for the introduction of faster switching stated:

- 75% of ETs are caused by address data quality and of these 91% can be improved by the introduction of the Central Registration Service (CRS).
- 80% of delayed and unsuccessful switches are caused by address data quality and of these 91% can be improved by the introduction of the CRS.

Improvements to the address data quality will assist in achieving these objectives. The CSS ensures registered meters include a cleansed, industry recognised address (the REL Address) which is consistent for all meters at a premises i.e. all meters at a given property, for a given consumer must be grouped under the same REL identification (REL ID) reference number. The REL is used to improve the identification of meter points within the switching process to ensure the correct meter(s) are selected and switched 'right first time'. This, together with the appropriate level of data cleansing for each source address, significantly reduces the occurrence of 'Switch Failures' caused as a direct result of address data quality and promotes positive switch outcomes.

Figure 1 illustrates that the Retail Energy Location (REL) is a composite of two elements; a Registrable Measurement Point (RMP) which represents the MPxN and the address where the energy supply is being measured, or more accurately, where it is consumed (i.e. the consumer's address or premises served; usually aligned with the MPL (Meter Point Location)).

However, **unlike the MPL, the REL identifies the premises served by the meter**. An improvement in the quality of the data held, will ensure a higher percentage of meters are assigned the correct, industry recognised address prior to Go Live to the CSS. Therefore, from day 1, the reliability improvements in relation to a reduction in the number of poor switching outcomes which the programme is designed to deliver, are achieved. Note, not only is the REL process established prior to the inception of the CSS but it continues to be optimised in the enduring phase of the programme.

In the enduring phase of the CSS, existing RELs are maintained with changes to postcodes, addresses and other amendments including demolition of buildings and the retirement of meters being processed in the system. The processes for these updates are detailed in Appendix A.

Each REL is assigned a REL Identification (REL ID) which is a reference number denoting the premises served. For an MPL **matched** to OS ABP, the REL ID is the same number as used for the UPRN. Therefore, all **'matched'** meters at a given premises will share the same REL ID and this plays an important role in identifying the full complement of meters to be switched subject to the consumer's request.

Where an MPL remains **unmatched**, a 'Local' UPRN is assigned. This reference number is in the same format as a normal UPRN but will never be assigned to a real property by Ordnance Survey. Therefore, strictly for the purpose of CSS only, the 'Local' UPRN represents the REL ID for an unmatched meter until such time as an update occurs which enables a match to be found and a real UPRN can be assigned as the REL ID. Note, Ordnance Survey never formally accepts CSS's allocation of a 'Local' UPRN to a property, it only applies within the Switching Service and as a REL ID within the Enquiry Services.

The REL is constructed and maintained within the CSS using OS ABP as the gazetteer and MPL data

provided by gas transporters (GTs), distribution network operators (DNOs) and other data sources such as Smart Metering and suppliers. The REL is synchronised with the electricity and gas enquiry services, EES and GES respectively, together with ERDA and GRDA. It is available to all industry parties solely for the purposes of switching and represents the principle address which consumers are expected to provide (e.g. to a supplier or to a Price Comparison Website) when identifying the energy supply they wish to switch.

REL Addresses and other information are assigned through matching the address of a registered RMP to the OS ABP database where an unambiguous or 'Gold Standard' match is determined. Stringent criteria must be met to ensure the integrity of the match and to mitigate the risk of 'False Positive' matches.

Detailed explanations of the pre-transition matching process, Confidence Scores and the 'Gold Standard' are provided in the DCC-0011 Data Integrity and Improvement Approach document. Summary information is available in Annexe 2 In the Enduring Phase, address data quality will be subjected to 'Continuous Improvement' in terms of continued Interactive Address Matching to identify and match REL Addresses of addressSource 'MPL' to OS ABP, the amendment of false positives and the introduction of Common Identifiers.

Common Identifiers and Secondary Phrases are a set of standard words to be referred to within MPL addresses which relate to Landlord Supplies, Plot Addresses, Charging Points and Masts. They are often followed by a 'Secondary Phrase' indicating a proximity to a landmark or premises e.g. MAST NORTH OF being an example of a 'Common Identifier' (MAST) followed by a 'Secondary Phrase' denoting proximity.

Important Note: MPxNs with MPLs which remain unmatched still have a REL and a REL address, with the address based upon the MPL, clearly marked as unmatched in CSS, with a 'Local' UPRN assigned since a status of unmatched precludes a real UPRN being available. Since the 'Local' UPRN is specific to an unmatched MPL address, each unmatched meter, even if it is likely to be at the same premises as another, will have **its own, distinct 'Local' UPRN** and this must be considered when establishing the meters present at an 'unmatched' address. This is illustrated in Figure 2:

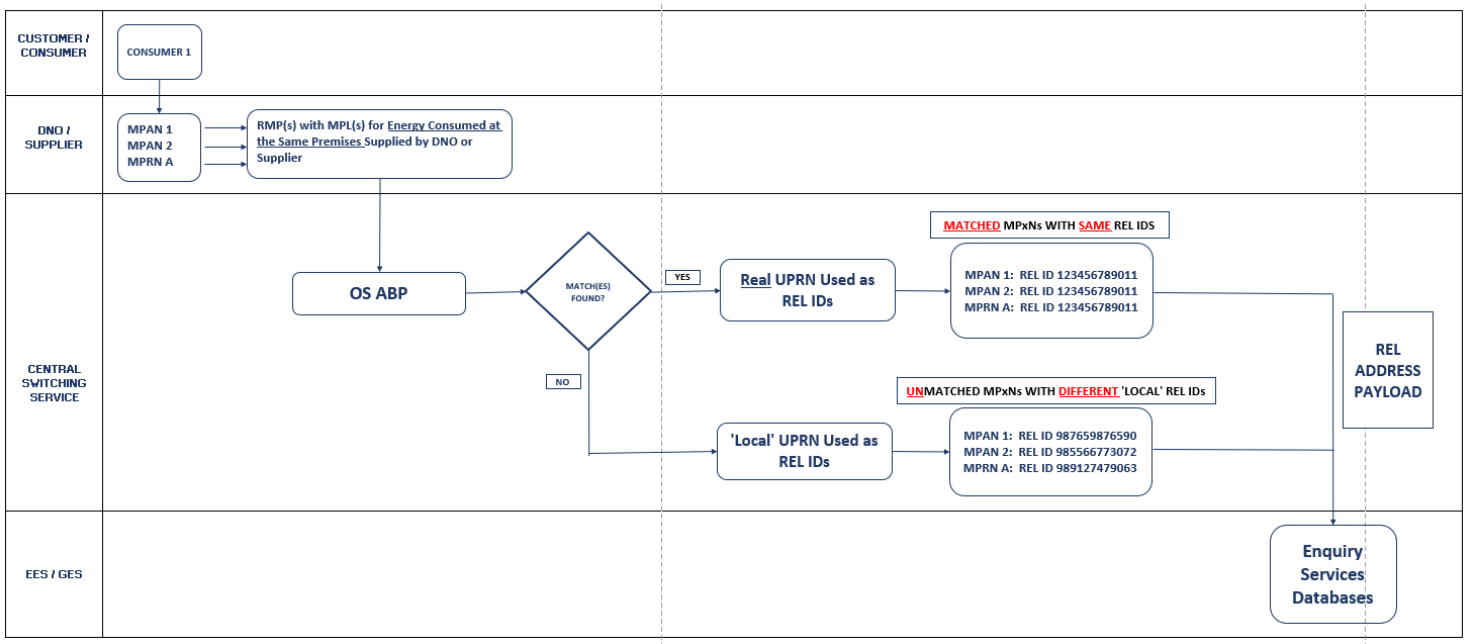


Figure 2 Assignment of Real and 'Local' UPRNs According to Match Status

3.1 Physical Structure of the Retail Energy Location

The definition of the REL in terms of its component fields were originally defined within the CSS Physical Interface Design Specification. This has subsequently been translated into the REC and the high-level REL fields are summarised in Table 3 below.

High-Level REL Fields				
MPxN	**Fuel Type**	**Address Source**	**UPRN**	**Addresses** **An Array of Addresses corresponding to the UPRN and covering:** REL Address (could be an address matched to OS ABP or a manually entered address) MPL Address Address in a language other the Eng (e.g. Welsh) Alternate, Historic Addresses etc

Table 3 High-Level Fields within the REL

The component fields are explained in detail within Table 4, but the following points should be noted:

Every MPxN is **unique** to a single UPRN, so it is the UPRN (and REL ID) which is the common identifier and is consistent for all (matched) meters at the same property and **NOT the entire REL itself**. This is consistent with Figure 1 where the REL **ID** represents a grouping (or family) of RELs; one REL for each MPxN at the consumer address (where MPLs have been matched to OS ABP).

A REL ID can consist of gas and/or electricity meter(s), so the Fuel Type of a REL will vary dependent upon whether the supply relates to gas or electricity for the specified meter.

The Address Source reflects the 'Match' status of the MPxN:

- a match means the REL address is an **array** of addresses reflecting current delivery, Local Authority, alternate (e.g. vanity) and historic (i.e. previously known as) addresses (DPA, Approved, Historic etc) represented by the UPRN as stored in OS ABP.
- if the source address remains unmatched, no 'Gold Standard match has been made against OS ABP, so the array of addresses is not available. In these instances, either a Manually Entered address is used as the REL Address ('Match' status equals 'Manual') or the MPL address is used ('Match' status equals MPL).

For a matched address, an enquiry based on the REL address returns all meters appropriate to that property with the potential to be switched. Obviously, a consumer might request a single fuel type to be switched, so it is not necessarily the full complement of meters that needs to be identified.

The individual components of the REL, their format and length, together with their meaning and an example column are shown in Table 4 for illustration purposes. Since the Physical Interface Design has been translated into the REC, readers should always refer to the REC for an up-to-date view of the contents of REL messages provided by CSS. Mapping of MPL and RMP attributes have been conducted and are embedded in the migration process.

Note, when reading the table, **no ordering should be implied.**

Field	Type	Length	Meaning	Example
MPxN	String	Electricity: 13 chars (numeric) Gas: <= 10 chars (numeric)	Meter Point Administration Number (MPAN) for Electricity or Meter Point Reference Number (MPRN) for Gas and is used to uniquely identify the meter	"1234567891122"
fuelType	String	1	Indicates type of fuel E (Electricity) G (Gas)	"E"
addressSource	String	10	Denotes whether the address is an MPL address (unmatched), manually entered and matched or matched directly to an address in the address service	"match"
uprn	Numeric	12	Unique Property Reference Number	"777456789123"
relAddress			**An array of the following fields:**	
primaryName	String	90	The primary addressable object of the property, usually the name or number of the property.	"22"
secondaryName	String	90	The secondary addressable object of the property, used where the property is a 'child' of a larger property – e.g. a flat within a building.	
Street 1	String	100	Main thoroughfare or street	"Acacia Avenue"
Street 2	String	80	Dependent thoroughfare	
Locality 1	String	35	Dependent locality – e.g. an area of a major city	
Locality 2	String	35	Double dependent locality – e.g. an estate within the dependent locality	
Town	String	30	Post Town	"Exeter"
Postcode	String	8	Post Code	"EX1 2AB"
logicalStatus	Numeric	1	Status of the address (see table 5)	"1"
Language	String	3	The language of the address. Uses the ISO 639-2 Code (eng for English and cym for Welsh)	"eng"
Organisation	String	60	Current organisation name of the property (if applicable)	
addressType	String	3	The type of address for this entry within the array (either LPI or DPA per table 5) Likely state is 2; one Land Property Identifier and 1	"LPI"

			Delivery Point Address (modelled in PAF)	
confidenceScore	Numeric	Up to 3	The degree of correlation between the input (source) MPL address for the MPxN and the REL address (per OS ABP database). Data Integrity and Improvement document provides more detail.	"97"
classification	String	6	Classification code of the property as per the AddressBase Premium classification scheme (GML or csv)	"csv"
Latitude	Numeric	10.6	Latitude of the property	"50.72385"
longitude	Numeric	10.6	Longitude of the property	"-3.526801"

Table 4 The Individual Components of the REL

Notes: The REL Synchronisation **payload** is in the OS ABP format, meaning some columns are concatenated using a semi-colon:
Therefore, for **unmatched** addresses:

- the primaryName field comprises deliveryPointAlias and subBuildingNameorNumberfields concatenated together by a semi-colon
- the secondaryName field comprises buildingName & buildingNumber concatenated together by a semi-colon

Additionally, for unmatched addresses:

- all the attributes from logicalStatus onwards are "null" (with the exception of the confidence score) as they are OS ABP attributes and thus not applicable
- "County" data is not stored nor returned for the REL, so all data supplied in the MPL "County" field is discarded (for all REL addresses in the payload whether or not they are matched).

3.1.1 Permitted Values for Non-Free-Text Address Element Fields

Some fields within the REL are restricted in terms of the values they can hold, and the following table details the permitted values for REL address element fields which aren't free text fields:

Address Element Field	Permitted Values	Meaning
Fuel Type	E	Meter relates to the provision of Electricity (E)
	G	Meter relates to the provision of Gas (G)
addressSource	MPL	MPL – the source address remained unmatched from the address service database, so the MPL is used as the REL address until such time as a match can be established.

	Manual	An initial MPL was used for the REL address, but the consumer insists it is incorrect and requires a 'Manually Entered' address is used. This new address either correctly matches an address within the address service or reflects the 'best' address as specified by the consumer. Note: A manually entered address request is a request (via a Switching SMS ticket) from a **supplier** to change the REL for any number of reasons – e.g. where the MPL isn't appropriate to be used as the REL (different locations - e.g. meter room vs unit no 5 within a complex)
	Match	Match – the address corresponds to a direct match between the source MPL or Manual address **and the address service**. i.e. meets the 'Gold Standard' required to assign matched status.
logicalStatus	0	For Delivery Point Address which does not have a logical status
	1	Approved
	3	Alternative
	6	Provisional
	8	Historic
	Note, there can be multiple address entries in the REL data sent via the REL synch message. The current REL address (1, approved) and any number of historic (logical status of 8), one for each of the previous addresses for which that particular UPRN has been known (e.g. for each vanity address such as 'Rose Cottage' used by the owner).	
addressType	LPI	Land Property Identifier – the address of the BLPU (Basic Land and Property Unit) but in a standard format which uniquely identifies the BLPU in relation to its street within the National Street Gazetteer
	DPA	A DPA (Delivery Point Address) is a property which receives mail from the Royal Mail services
Classification	CSV	ABP is distributed as either a comma-separated values (CSV) file or Geography Markup Language (GML) version).
	GML	

Table 5 Permitted Values for Non-Free-Text Fields within the REL

Although the REL is generally constant, there is scope for amendments throughout its lifecycle. If any one element changes (such as a periodic postcode update, the property being split into flats, or the re-naming of a street), the REL address will change.

An update to a REL might be caused by:

- An RMP update being supplied with a modified MPL address (Xoserve and (i)DNOs)
- The entry of a Manual address (suppliers via Switching SMS ticket)
- An ABP update containing new "metadata" for the UPRN for an address which is already matched

Note, <u>suppliers</u> can use APIs for other event types, such as switch requests, but can only amend the REL itself through Switching SMS tickets.

If an update goes into the epoch (version of OS ABP) and a UPRN is deleted/retired/ended, a flag is raised causing the CSS operative to look for a new UPRN for the property, in the first instance. If one can't be found, the status goes to 'unmatched' and the CSS Operative raises a service ticket to get feedback from supplier regarding the event.
If an address within a UPRN is marked as historic and a new one added, then this is considered a

“metadata” update. The UPRN stays the same, but a REL Synchronisation is triggered with the new address payload.

4. Characteristics of a REL and Example Scenarios

As shown in Figure 1 and again, in Figure 3 below, the REL is a composite of:

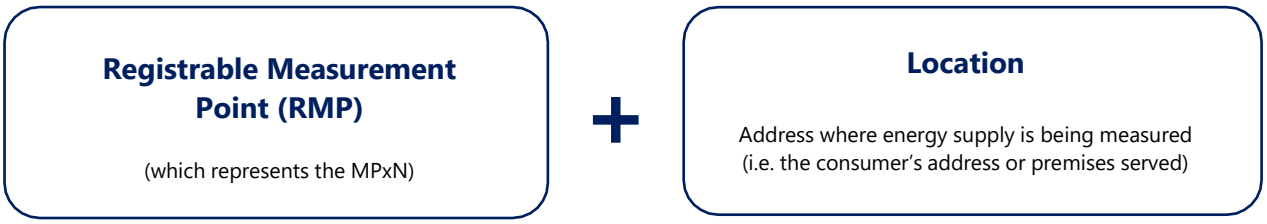


Figure 3 The Characteristics of a REL

Therefore, since MPxNs are unique, RELs will also be unique (in their entirety). However, the REL address element represents an industry recognised location which needs to be consistent for all MPxNs (with an OS ABP matched address) at the same property (i.e. with the same UPRN). Therefore, where MPxNs relate to precisely the same property and customer, all elements of the REL, with the exception of the MPxN number (plus fuel type and addressSource where appropriate), will be the same.

For MPxNs with unmatched addresses, the MPL addresses for different fuel types have come from disparate sources and will contain differing address data. Therefore, these will each be given their own, distinct 'local' UPRN and the REL ID will not be the same, despite the fact the meters actually serve the same premises. This is where accurate CommsHub System ID address data or address cleansing at source is required in order to 'pair' meters to the same premises.

The same applies where one or more meters are matched (e.g. the MPANs) but another (e.g. the MPRN) isn't matched since the addresses came from different sources and were of differing quality. In this example, the MPANs will have the same REL ID but the MPRN will have a different (local) UPRN and corresponding REL ID.

Where consistent address data has been provided for both fuel types, and for illustration purposes only, consider the situation where the property in Table 4 also contains a gas meter (MPRN 9987654321), i.e. a set of paired meters exists. Note, the customer can request to switch one or both types of energy supply:

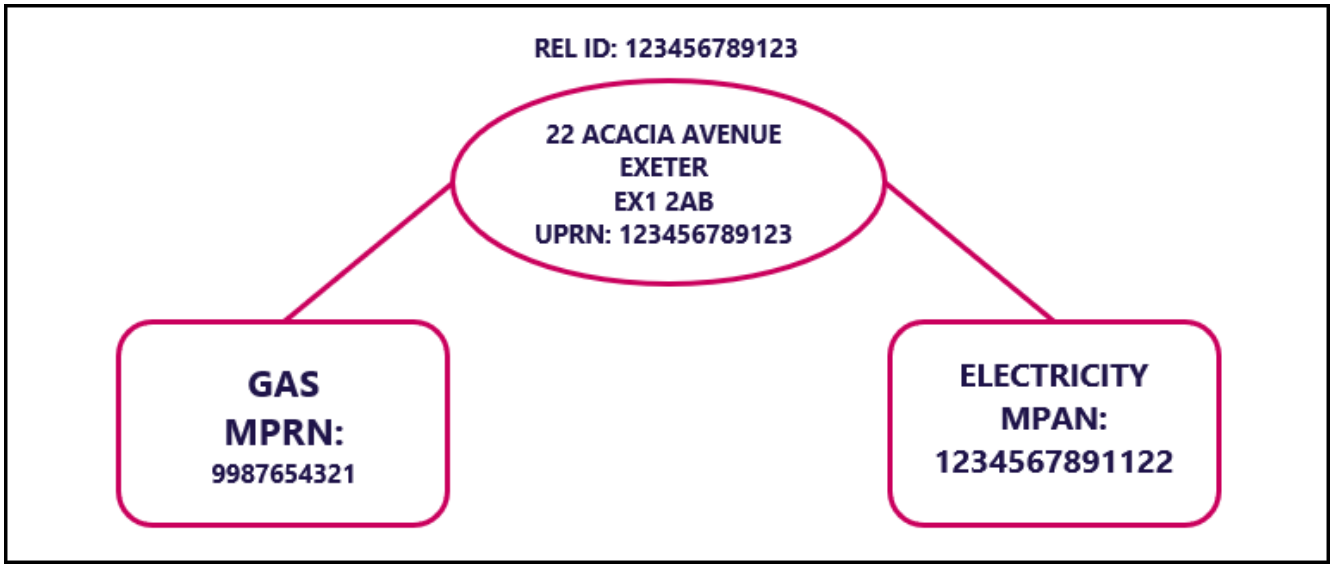


Figure 4 The REL for a Set of Paired Meters (Dual Fuel Supply for the Same Customer and Property)

In CSS, the REL for each MPxN is stored but since they relate to the same consumer and location in the above example, their UPRNs and hence REL IDs are the same. The REL address element remains constant for each meter (since UPRN is the same) but the high-level fields differ (red characters) as shown in Table 6:

High-Level REL Fields				
MPxN	**Fuel Type**	**Address Source**	**UPRN**	**Addresses:** An array of addresses covering one (or more) of the following: REL Address MPL Address Historic Addresses etc
1234567891122	**E**	**Match**	123456789123	REL Address: 22,,Acacia Avenue,,,,Exeter,EX1 2AB,1,eng,,LPI,97,csv,50.72385,-3.526801
9987654321	**G**	**Match**		

Table 6 An Example of a REL for Dual Fuel Consumer

Other scenarios relate to properties containing varying combinations of MPANs and MPRNs with addresses from different sources being matched/unmatched to OS ABP prior to Go Live to CSS. These examples are detailed in Section 4.2.

4.1 Unique Property Reference Number

The UPRN (Unique Property Reference Number) is the unique identifier for every addressable location in Great Britain. It provides a simple and unique reference point and represents one element of the REL address. An understanding of its lifecycle is useful in order to understand its potential impact on the REL.

All local authorities in the UK have a statutory obligation to manage and maintain their address register to British Standard BS7666 such that every unit of land and property is allocated a Unique Property Reference Number (UPRN) and geographic coordinates, ensuring there is an authoritative code for each address. When address changes are made, they are done so against the UPRN, enabling accuracy of address maintenance, as well as providing access to the full history of an address. Local authorities and Ordnance Survey allocate UPRNs with local authorities also having the statutory permission to name and number every street and property in Great Britain and also allocate UPRNs to other objects. In addition, Ordnance Survey can identify other features in the landscape, such as masts, that might not have a 'normal' address and allocate a UPRN. The UPRN is used to create trusted, robust connections between disparate sources of data which share a common location.

Each local authority submits their address register (including the UPRN) to the central hub where the data is collated into a national dataset called AddressBase. This represents the address standards for Great Britain.

The UPRN is, therefore, assigned by the Local Authority when outline planning permission is approved. There is then a 'Plot to Postal' period during which the property is built, and a house name and/or number is assigned. At this point, the Royal Mail assigns a postcode and a full REL address can be created once the address is reflected in the current version of AddressBase Premium. Over the lifetime of the property, many changes to the address might occur:

- A change in the vanity name
- A change in postcode; a small set of postcodes change each year
- A change in the structure of the building – e.g. a house could be converted into distinct flats plus a shell. These would be distinct properties so they would require distinct UPRNs. The MPAN in

the original house might now relate to the shell of the property (landlord supply) or to any of the new flats.

- Flats within a building could be knocked through to create fewer but more spacious flats.
- Eventually, the property will be demolished and the UPRN(s) will be archived.
- The land might be re-developed, and the cycle repeated in future.

The UPRN lifecycle is shown in Figure 5 and **illustrates** potential changes to the property and how they might impact on the UPRN and the REL:

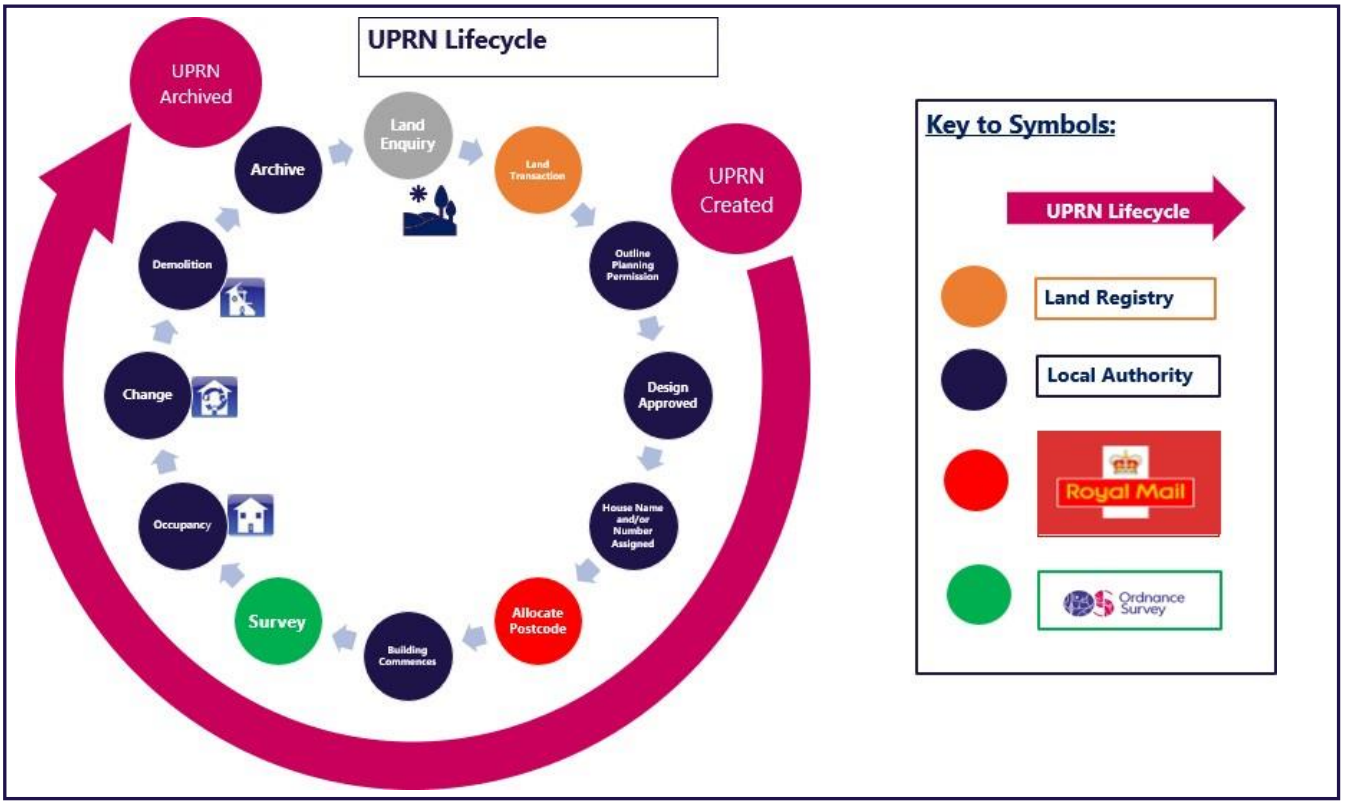


Figure 5 The UPRN Lifecycle

The UPRN is a key component of the REL and its own lifecycle plays a significant role in the lifecycle of the REL. Examples include when a meter is installed within a 'Plot' location, when the plot gets assigned a postcode and a postal address, occupancy and changes thereof, repurposing of the building, address changes (including changes to 'vanity addresses, postcode or street name changes and ultimately demolition of the property.
Note, the REL address is formed once the RMP details are entered on CSS and the meter is registered.

4.2 Example Scenarios

The UPRN is used as the REL ID reference. Therefore, using the simple, dual fuel information from the example column in Table 6, the REL ID for MPAN 1234567891122 and MPRN 9987654321 is 777456789123 and the REL address is :

High-Level REL Fields				
MPXN	**Fuel Type**	**Address Source**	**UPRN**	**Addresses:** An array of addresses covering one (or more) of the following: REL Address MPL Address Historic Addresses etc
1234567891122 9987654321	E G	**Match**	777456789123	REL Address: 22,,Acacia Avenue,,,,Exeter,EX1 2AB,1,eng,,LPI,**97**,csv,50.72385,-3.526801

Table 7 An Example REL

i.e. both meters are consistently matched and have the same REL IDs and REL addresses.

When the MPL is referenced, the MPL Address Payload message is sent to / from CSS but for a matched address, the MPL is not an attribute of the REL. Therefore, once matched, it is no longer sent to EES and GES via the REL synchronisation message. Only the current REL address is sent. The MPL is retained in CSS for audit purposes but not within the construction of the REL. Only when unmatched, does the REL address (MPL) within the synch contain any data sourced from the Delivery Point Alias field of the MPL. Therefore, for matched addresses, the Delivery Point Alias information is still available from the enquiry services but not within CSS. In addition, a copy of all MPL addresses was provided at 'Go Live.'

As stated, the REL address element will be returned as an array and will generally contain an LPI (Local Authority) and/or a Delivery Point address (PAF type address) but could also contain any number of 'historic' addresses held for the property whilst the current UPRN has been valid.

Any additional meters at the same property (i.e. the same UPRN) must hold the same REL addresses, since they are derived from the UPRN. This ensures an enquiry on the REL address will return all MPxNs at that property. A User Guide to demonstrate how the Enquiry Services GUI should to determine the correct group of meters to be processed in the Switch Requests are documented in the EES and GES guides.

There are some outliers to the general rules (e.g. for meters dealing with communal supply in a block of (say 4) flats, where each flat has its own UPRN and where OS haven't assigned a UPRN to the shell of the block) but the following examples provide a good overview of the use of REL in certain scenarios:

Examples:

1. Single Fuel Consumer
2. Dual Fuel Consumer (1 Gas, 1 Electricity)
3. Dual Fuel (1 Gas, 3 Electricity)
4. Shell Property (Landlord) plus 4 Flats (All Electricity)
5. Dual Fuel Consumer (1 Gas, 1 Electricity) but source address data quality for BOTH meters was too poor to determine matches to OS ABP, so meters remain unmatched.

4.2.1 A Single Fuel Consumer

Property A, with just one electricity meter with UPRN (REL ID) = 5398033633:

Address	1 Daisy Street, Manchester, M2 1AB	
MPAN	2342342342345	
MPRN	N/A	
REL A = REL ID (125398033633)	1 Daisy Street, Manchester, M2 1AB	
	Gas N/A	Electricity 2342342342345
UPRN	125398033633	

Table 8 A REL for a Single Fuel Consumer

The corresponding REL diagram is:

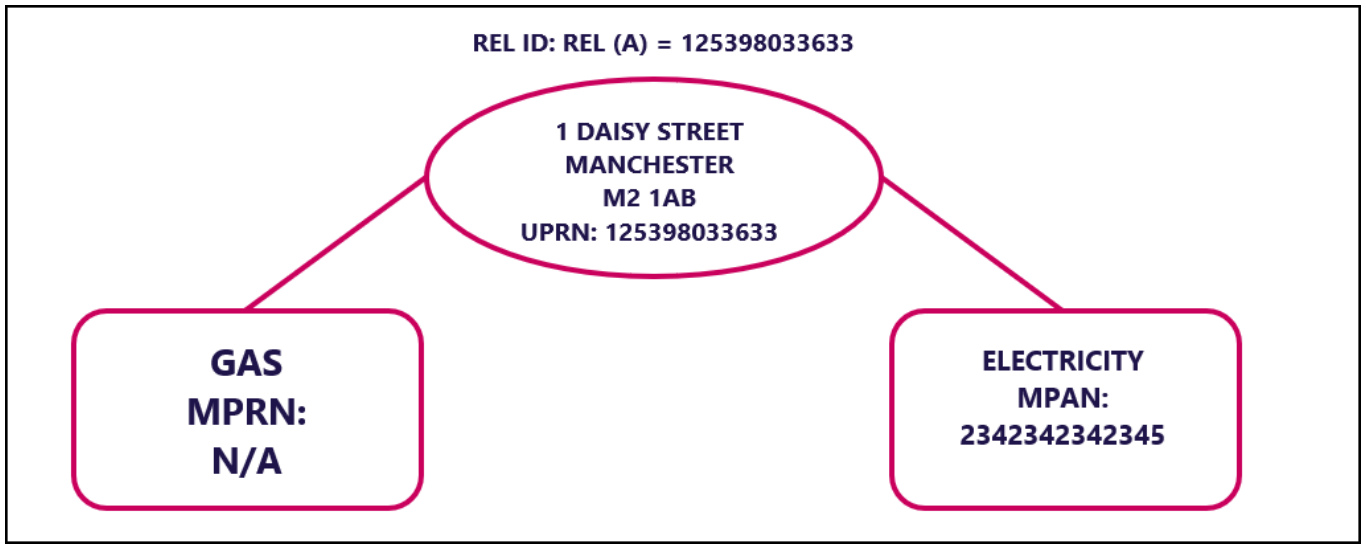


Figure 6 Simple REL Diagram for a Single Fuel Consumer

4.2.2 Dual Fuel Consumer (1 Gas, 1 Electric)

Property B, with one gas and one electricity meter with UPRN (REL ID) =128745874511:

Address	2 Rose Street, Newcastle-upon Tyne, N3 2AC	
MPAN	2348776490823	
MPRN	5675675678	
REL B (128745874511)	2 Rose Street, Newcastle-upon Tyne, N3 2AC	
	Gas 5675675678	Electricity 2348776490823
UPRN	128745874511	

Table 9 A REL for a Dual Fuel Consumer

The corresponding REL diagram is:

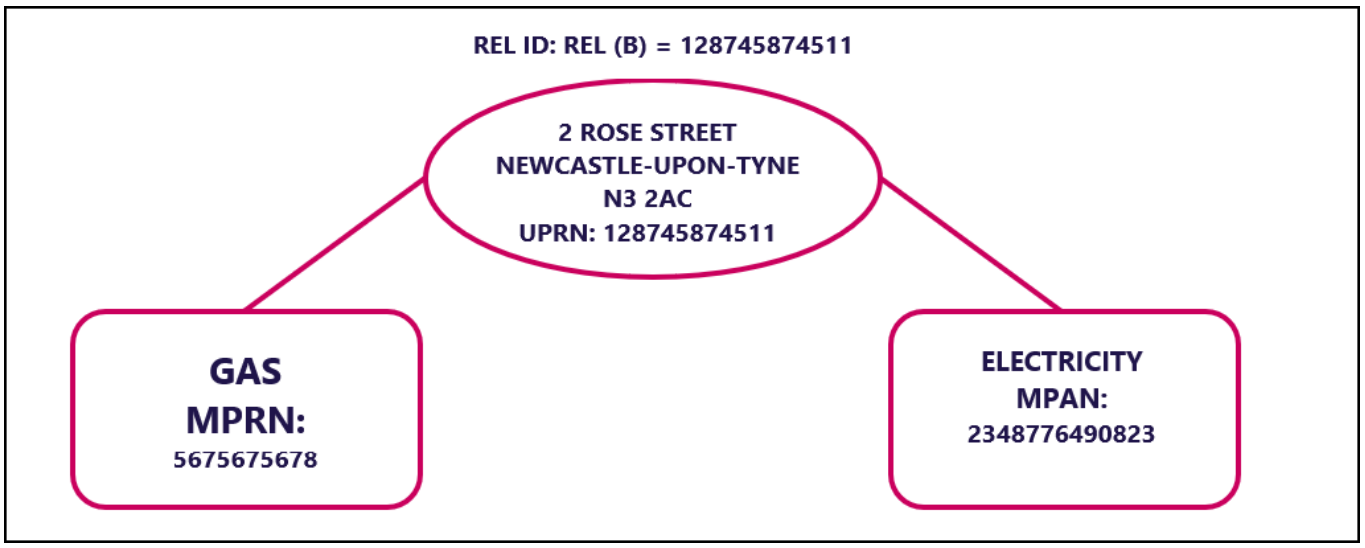


Figure 7 REL Diagram for a Dual Fuel Consumer

4.2.3 Dual Fuel Consumer with Multiple Electricity Meters (1 Gas, 3 Electric)

Consider property C, with one gas and three electricity meters with UPRN (REL ID) = 331088736746:

Address	3 Gerbera Road, Portsmouth, PO3 3TT	
MPAN	9759759759751 7951237951231 5793217593211	
MPRN	9801212980	
REL C (331088736746)	3 Gerbera Road, Portsmouth, PO3 3TT	
	Gas 9801212980	Electricity 9759759759751 7951237951231 5793217593211
UPRN	331088736746	

Table 10 A REL for a Dual Fuel Consumer (Multiple MPANs)

The corresponding REL diagram is:

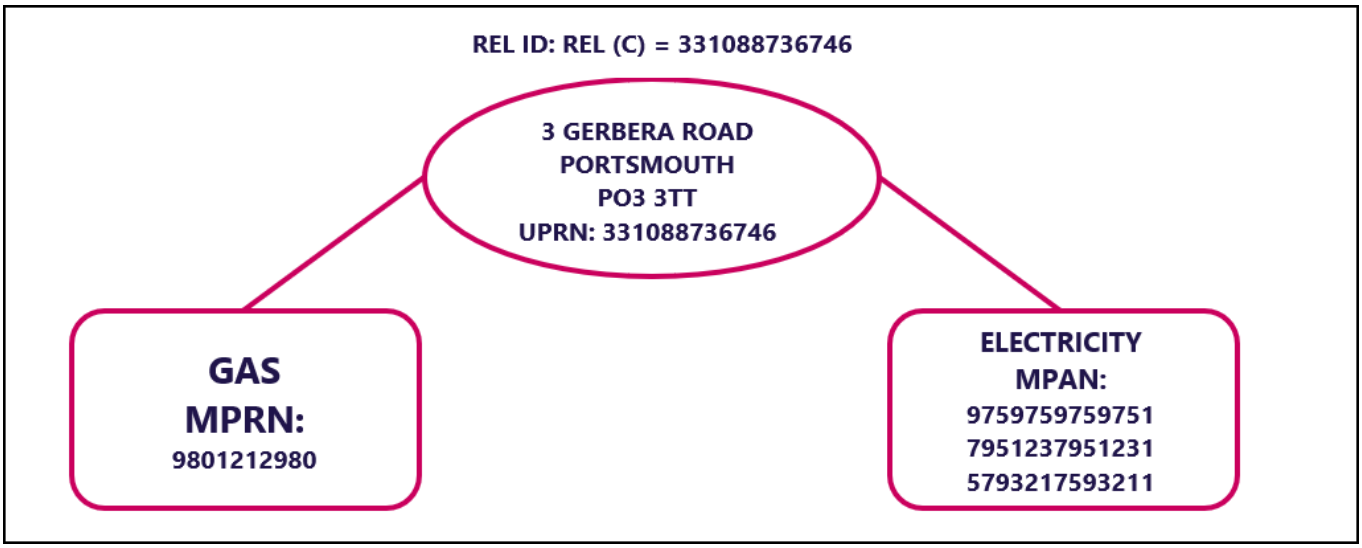


Figure 8 REL Diagram for a Dual Fuel Consumer (Multiple MPANs)

Therefore, an enquiry based upon the address would return 1 gas meter and 3 electricity meters in GES and ESS respectively, all with REL ID 1088736746. The consumer request might be a single or dual fuel switch and the meters would be selected accordingly.

4.2.4 Shell (Landlord) plus 4 Flats (All Electricity)

Property D consists of:

- a landlord responsible for 3 'communal' type meters (UPRN of 'shell' of property (REL ID) = 1088736749) plus
- a number of separately owned flats, each with a single MPAN and the right to choose its supplier. Flat 1 has UPRN (REL ID) = 841088736750 and Flat 2 UPRN = 841088736751 etc:

Address (Shell) – Landlord	**LLS, 4 Lily Close, Leicester, LE5 5SL**	
MPAN	5439875439870 (Outside Lights) 5448779881031 (Stairwell Lights) 5200520052009 (Hall and Landing Lights)	
MPRN	N/A	
RELI D (841088736749)	4 Lily Close, Leicester, LE5 5SL	
	Gas N/A	Electricity 5439875439870 5448779881031 5200520052009
UPRN	841088736749	

Table 11 A REL for a Shell (Landlord, Single Fuel Consumer, Multiple MPANs)

For the flats:

Attribute	Flat 1	Flat 2	Flat 3	Flat 4
MPAN	4459989989985	4480998521167	4464915593148	4420093711113
MPRN	N/A	N/A	N/A	N/A
REL Address	Flat 1, 4 Lily Close, Leicester, LE5 5SL	Flat 2, 4 Lily Close, Leicester, LE5 5SL	Flat 3, 4 Lily Close, Leicester, LE5 5SL	Flat 4, 4 Lily Close, Leicester, LE5 5SL
UPRN	841088736750	841088736**51**	841088736**52**	841088736**53**

Table 12 RELs for 4 Flats (Single Fuel Consumer)

The corresponding REL diagram for the whole flatted property is:

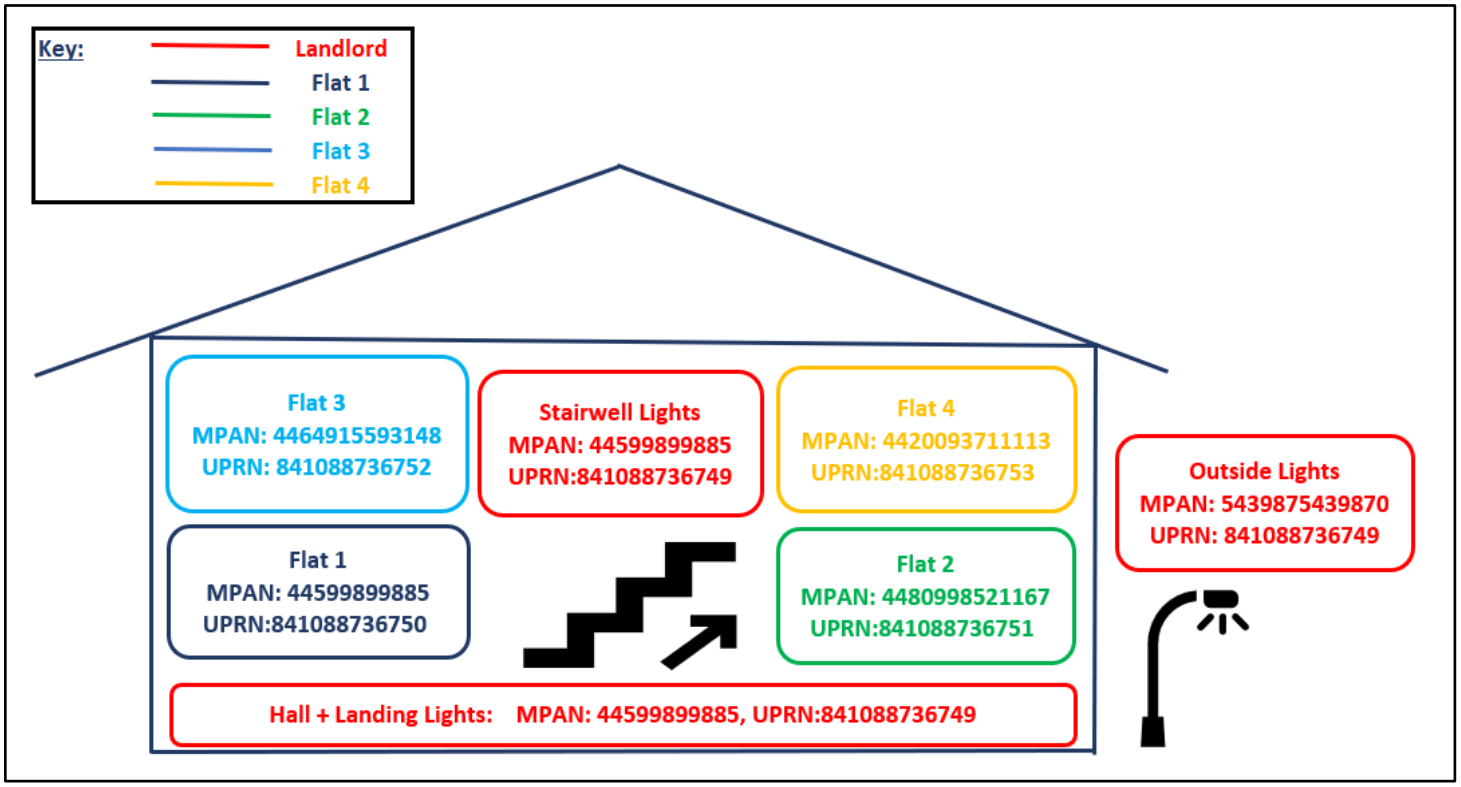


Figure 9 A REL for a Shell (Landlord, Single Fuel Consumer, Multiple MPANs) plus 4 Flats

4.2.5 Dual Fuel Consumer

A dual fuel consumer (1 Gas, 1 Electric) where **the source address data quality for BOTH meters was too poor to determine matches to OS ABP**, so the meters remain unmatched and have different REL IDs as a consequence of the source data being from disparate sources and of poor quality.

Consider a fictitious example:

	Electricity	**Gas**
MPxN	7265734598709	30377822
MPL Address Provided	17 – 19 Acacia Avenue, Liverpool, L4 2AA	17 Ark Acer Road, Liverpool, L4
'Local' UPRN Applied	1000345111285	1000345282927
Neither address relating to the premises consuming the electricity or gas could be matched, so both addresses got assigned a **different** 'Local' UPRN, despite the fact they both should have been addressed as 17 Acacia Avenue, L4 2AA		

Table 13 Dual Fuel Consumer with Poor Quality Address Data Preventing a Match

In the above example, it would be extremely difficult to identify the MPxNs if the consumer at 17 Acacia Avenue requested a switch with the gas address being particularly poor. The REL IDs for the 2 MPxNs to be included in the switch request would not be the same. Therefore, these addresses are subjected to ongoing cleansing and only once the source records get amended, the addresses get matched and the REL (including the UPRN) is amended and updated within the CSS via messaging, do the correct meters become readily identifiable.

4.3 Creating Retail Energy Locations in CSS

There are two distinct phases during which RELs are created:

- At Transition using the OS UPRN information 'banked' for matched addresses and the MPLs provided within migrated RMP files as the REL address for unmatched records
- Through API and Ticket updates during 'live operation.'

4.3.1 The 'Interim' Period to Transition

During the interim period, unmatched addresses were cleansed and corrected in order for them to be resubmitted through the matching process. This process included automated and interactive cleansing as well as cleansing by the data source provider and is described in detail within the DCC-0011 Data Integrity and Improvement Document. Once matched against OS ABP, the UPRNs of the addresses were 'banked' and overlaid against the RMP data migrated during transition to provide the address element of each REL where the AddressSource equals 'Match.' In this manner, the array of addresses associated with the UPRN was captured.

Any remaining unmatched source addresses (MPLs) were captured in CSS via the RMP migration and their RELs assigned an addressSource of 'MPL' and assigned a 'Local' UPRN meaning that each record was initially populated with just the MPL address as the REL address. These unmatched records are subject to cleanse and update during BAU activity.

The 'Transition Period process is shown in Figure 10 below:

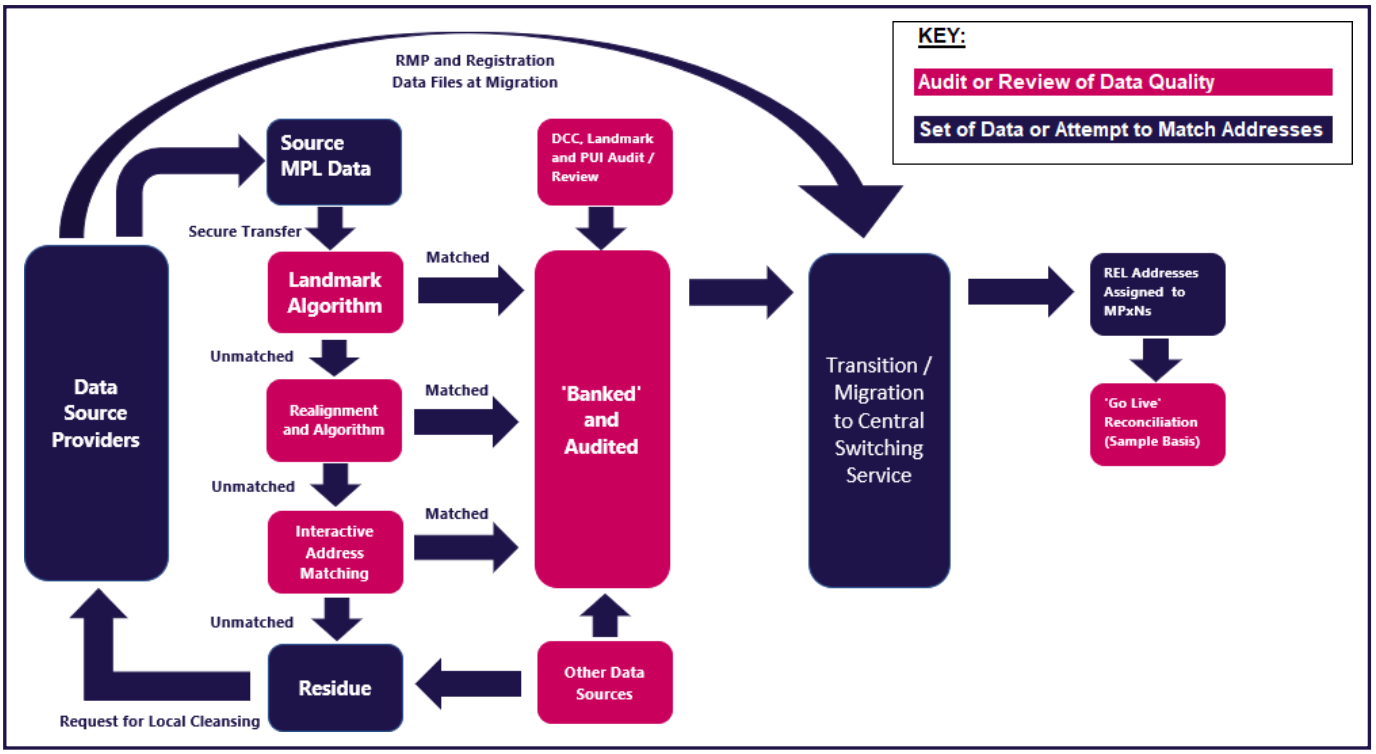


Figure 10 Cleansing, Matching and Banking Source Addresses and Data Quality

Files detailing matched records were made available to parties on sftp in order to compare MPL with REL addresses and assure themselves on quality control and that the correct REL address had been assigned without the introduction of 'false positives.' DCC have embedded processes in order to mitigate the risk of 'false positives' but for transparency, the parties needed an opportunity to audit their own data.

At the start of the transition process to CSS, parties supplied their RMP and registration data files for migration. For registered meters, the CSS was populated with the MPL address specified within the RMP file. This is then held within CSS as an MPL address against a particular meter. For all MPxNs against which a 'banked' matched address was held, the matched addresses were then applied to the records in CSS, thereby creating the REL and the REL address.

By the end of Transition Stages, the following outcomes from data migration were realised:

- Meter Point Location address data together with Registration data were migrated into the CSS
- CSS address matching and creation of REL addresses had been applied to the migrated records
- REL addresses were provided to EES and GES via CSS interface ElectricityRegistration and GasRegistration and could be used by Energy Suppliers and other parties.
- Note, the REL Synchronisation message is sent to EES, GES, GRDA and ERDA with the DNOs fulfilling the ERDA role as per REC.
- **Mastering of Registration data and the REL then passed to the CSS.**

4.3.2 CSS Live Operation

Tasks relating to the **creation, maintenance and retirement of RELs** include:

- How to create a REL for a newly registered MPxN
- How to correct a REL address element if it is found to be incorrect or changes (e.g. as a result of a property being split into flats)
- How parties will be advised of bulk changes to REL addresses (e.g. as a result of postcode changes)
- How to retire a REL if the MPxN is defunct (e.g. once a property is demolished)

The REL is mastered in CSS and **the effective 'ownership' or maintenance responsibility** is governed through the Switch API and by the registration ownership since this determines the energy supplier. The gaining supplier can review and amend aspects of the REL and the REL address, in particular, through the Event Types detailed within Appendix A.

There are several reasons why a REL might need to be updated and these include:

- An RMP update being supplied with a modified MPL address (Xoserve and (i)DNOs)
- The entry of a Manual address (suppliers via Switching SMS ticket)
- An ABP update containing new "metadata" for the UPRN for an address which is already matched

Note, suppliers can use APIs for other event types, such as switch requests, but can only amend the REL itself through Switching SMS tickets.

If an update goes into the epoch (version of OS ABP) and a UPRN is deleted/retired/ended, a flag is raised causing the CSS operative to look for a new UPRN for the property, in the first instance. If one

can't be found, the status goes to 'unmatched' and the CSS Operative raises a service ticket to get feedback from supplier regarding the event.
If an address within a UPRN is marked as historic and a new one added, then this is considered a "metadata" update. The UPRN remains unchanged but a REL Synchronisation is triggered with the new address payload.

A monthly REL Update report will be available in SMS to parties which details current and previous REL address attributes where there has been a change to any of those attributes during the reporting period.

Section 4.4 describes the processes for the creation and update of RELs.

4.4 The Central Registration and Address Services and the Creation and Updating of REL Data

In 'live operations', new RELs will be created and maintained through either:

- API Messaging (Xoserve and DNOs)
- Tickets raised on Service Management System (suppliers)

4.4.1 The Creation and Registration of a New RMP and its REL Through API Messaging

This section describes the manner in which:

- A REL is created (by the CSS following an initial registration
- How to update a REL
- How to terminate a REL through a 'Registration Deactivation API Request'

Prior to registration, the new RMP must be created in CSS. The function 'POST' is used to create any new resource such as an RMP or to initiate a process. REL information is only assigned to the meter once the newly created RMP's registration becomes 'Active.'

4.4.1.1 Creation of a New RMP

The format of all API Messaging is mastered within the CSS Physical Interface Specification Design document (translated into the REC) with the latter being the definitive source. This document does however provide an overview of messages which are particularly relevant to the process of creating, maintaining and 'terminating' a REL.

A new RMP is created via the successful submission and validation of a trigger message (of method type 'POST') to the RMP API. Similarly, an update to RMP data can be requested via a request of method type PATCH and these requests are available to the following parties:

Available to: GRDA, ERDA, DCC SM
Availability Notes:

- Only GRDA/ERDA can create (POST)
- GRDA/ERDA can update (PATCH) all fields bar commsHubLinkDeviceId
- DCC SM can only update (PATCH) the commsHubLinkDeviceId field

POST:

Using a gas meter as an example, the formatted 'POST' message is in the format:

Route: /rmps/gas

Method: POST
Body:
{
"**mpxn**": "string", --*
"**networkProvisionMpId**": "string", --*
"**networkProvisionRole**": "string", --*
"**networkProvisionFromDate**":"string", --*
"**rmpStatus**": "string", --*
"**rmpStatusFromDate**": "string", --*
"**mplAddress**": {MPLAddress}, -- *
"timeBoundaryAlignmentStatus": "string",
"dccServiceInd": 44oolean,
"assetOwnershipMaps: [{
"**mpid**": "string" -- *,
"**role**": "string" --*
}]
}

Therefore, the MPL Address is supplied to the CSS within the above message and, later in the process, is checked against OS ABP to determine a match.

4.4.1.2 The Creation and Validation of a New Registration

The above message establishes the RMP and its MPL address but it must have an active registration before it is assigned a REL. The following process is used to register a new RMP:

1. The Market Participant (MP) submits an initial registration request to CSS for the new RMP.
2. CSS receives the request and validates the data against both a schema and a set of Business Validation Rules. This checks the validity of the format and the content of the request.
    a. FAIL: If the registration request fails validation, an error code message is returned to the MP who can correct and re-submit or raise a Switching SMS request for support.
    b. PASS: If the registration request successfully passes validation, an acknowledgement message is sent to the MP via the relevant webhook. The MP also receives a **registration pending** notification and a Registration Pending synchronisation notice is sent to the relevant market domain participant. The request is stored with a state of 'Submitted'.
    c. When all validations are complete, the request state is changed to 'Confirmed', with **the registration state as 'Pending'**
3. **The validated registration request triggers the creation of new REL record.**
4. The MPL from the RMP is passed to the Address Matching software and run against a Gazeteer of standardised UK addresses (OS ABP):
    a. If the 'Gold Standard' isn't met (i.e. no match found), the MPL address is used to populate the address element of the REL. The MPL address is stored in the gazetteer to enable a possible future match and the record is flagged with a status of 'MPL'.
    b. Where a 'Gold Standard' match is found, the UPRN of the address from the gazetteer is allocated to the REL together with the confidence score of the match. This information is used to enrich the REL and the MPxN record is flagged with a status of 'Match'. The meter now has an array of REL addresses associated with the UPRN (i.e. all the OS ABP addresses including DPA, Alternate, Approved, Historic etc by which the premises at that UPRN is or has been known). In addition, the

MPL is retained within CSS against the MPxN for audit purposes and the UPRN is also re-purposed as the REL ID for the meter.

5. **The CSS data store is updated with the** REL (whether it is a matched address or an MPL) and the state of the request is set to **'Secured Active'**. At this point, **the registration is completed** and the MP, Supplier Appointment and domain participants are notified and the status updated to 'Secured'.
6. If the MP disagrees with an address selected as the REL Address, a Switching SMS request must be made to replace it with a Manually Entered address (ME).

Note: a new Registration ID is generated for each new registration or switch request and is included within the outbound Registration Data Payload messages.

The above processes are illustrated in Figure 11:

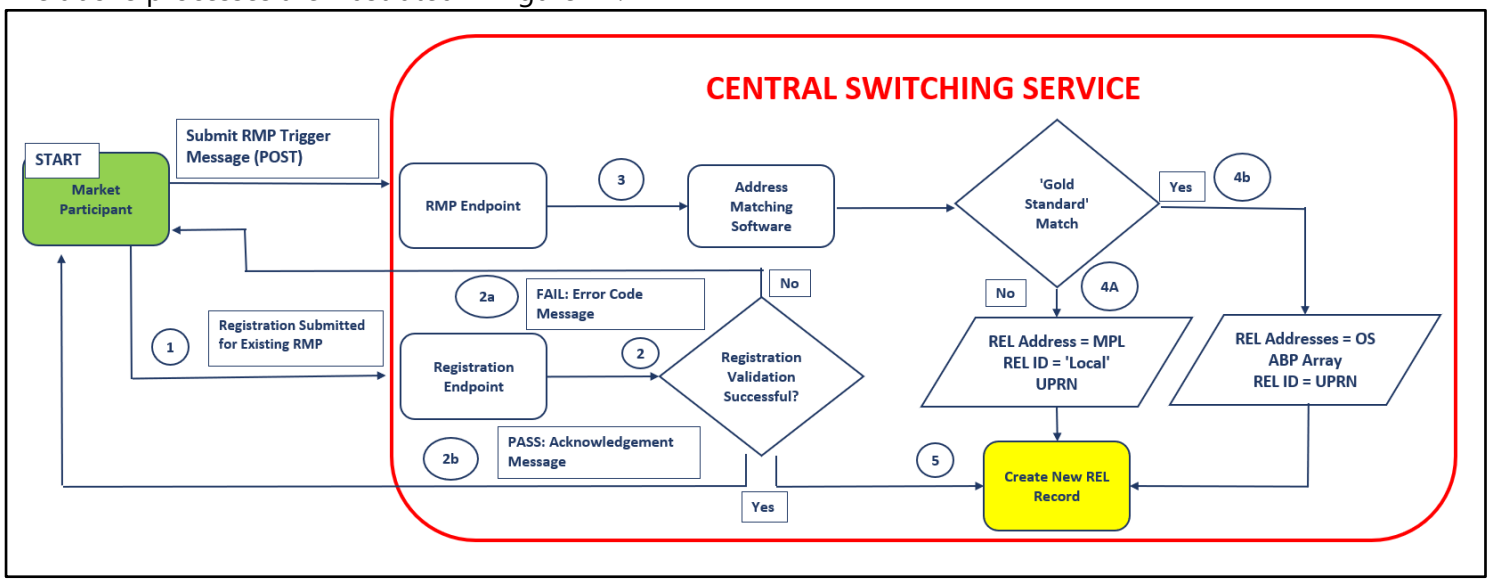


Figure 11 The Creation, Validation and Registration of a New RMP

4.4.1.3 Process to Update an RMP

To **update** information against a pre-existing RMP, including the MPL Address, the party would use the method of 'PATCH' rather than 'POST.' The message format for an electricity meter is shown below:

Route: /rmps/electricity
Method: PATCH
Body:

```
{
    "mpxn": "string", --*
        "data": {--*
            "dccServiceInd": boolean,
            "networkProvisionMpid":  "string",
            "networkProvisionRole":  "string",
                "networkProvisionFromDate":  "string",
            "meteringPointEnergyFlow":  "string",
                "meteringPointEnergyFlowFromDate":  "string",
            "meteringPointMeteredInd": boolean,
                "greenDealFromDate": "string",
            "greenDealToDate": "string",
                    "rmpStatus": "string",
```

"rmpStatusFromDate": "string",
"mplAddress": {**Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.**MPLAddress},
"commsHubLinkDeviceId": "string",
"timeBoundaryAlignmentStatus": "string"
}
}

Therefore, all of the above fields can be updated using the RMP API 'PATCH' request for an existing RMP.

If a 'patch' for a meter is received where a 'Manually Entered' address had been used to create the REL, whether or not a match, then CSS does not update it. Instead, CSS raises a ZenDesk ticket and instigates a review as to why the ME address is no longer required.

4.4.1.4 Registration Deactivation API Request

A Registration Deactivation Request is made by the current energy supplier to indicate that the registration is no longer active and is not being switched to another supplier.

See Appendix A for details of this message and other messages impacting the REL.

4.5 A Switch Request

During BAU activity, Switch Requests will be actioned within the CSS and are central to the service provision. In terms of REL, it should be noted that **once a Switch Request passes validation, the REL for the RMP switch is 'called' from CSS in order to enable the switch.**

4.6 Manually Entered (ME) Addresses and Their Impact on the REL

From a business process, perspective members of the Switching SMS team are expected to process any given request to correct ME meter addresses within a time frame of 24 hours.

There are several reasons why a Manual Entry request for a meter point might be required and these include:

- MPL is not sufficient to find a correct match, so an ME is needed to correct the REL
- REL address needs to be in a different location or property to the MPL
- Consumer requests their address is altered

An overview of the ME request process is provided below:

- Ensures Market Participants of type 'Suppliers' are able to request changes to the REL since they do not have access to the API
- Enables addresses to be verified against the standardised set of GB addresses used by CSS
- Updates the REL and provides confirmation to the Market Participant
- Identifies internal requirements for Manual Address entry

All manual address update requests will be logged for auditing purposes and this data feeds into the CSS Reporting Component which is used to generate configurable reports and supply them to the Switching SMS system.

The scope of this business process covers:

- Incoming manual address requests from Market Participants or other authorised CSS parties within the CSS ecosystem
- Receipt of the request
- Processing of the request
- Providing list of potential addresses in the event of 'no match' (point 7 below)

Process Steps:

1. Address Validataion Initiation – the energy supplier identifies the need for a Manual Entry address and completes a proforma which captures the ME address details
2. The supplier then raises an ME Service Request in the portal
3. CSS Operations receive the request, updates both the ZenDesk ticket and the Switching SMS ticket with a receipt going back to the originator
4. CSS Operations validates the request, checking the following from the CSS Registration Service database:
    i. Is the MPxN registered in CSS and not terminated?
    ii. Is the Service Request Originator the current energy supplier for that MPxN? Only the current supplier has the authority to request anaddress change
    iii. Is the MPL and REL in the same geographic region? If not, query with originator.
5. The MPxN provided in the Switching SMS ticket enables the Registerable Meter Point (RMP) to be looked up against the address database and leads to the retrieval of accurate address information currently associated with the meter in question.
6. If any validation check fails, the Manual Entry Service Request is rejected and the Service Request ticket is updated in Zendesk and Switching SMS
7. Using the Address Matching Software and AddressBase Premium database, the CSS Operator checks for an address match, using the address details supplied in the ME Service Request
    i. If a match is found then the UPRN is recorded and the REL is set to Match and a REL update to CSS Registration service and AddressBase Gazeteer is performed
    ii. If multiple matches are found the user has the option to select one of the matches and set the REL to Match, or select none and set it to REL-ME, or use the MPL address (REL-MPL)
    iii. If a logical result isn't available within the returned possible matches, then the Energy Supplier is contacted to confirm which address is to be used

    Status of the REL is set to Match if one of the options from OS ABP is used, ME if the provided 'manual' address is used and 'MPL' if the decision is taken to use the MPL address. On completion of the ME process, the REL is updated, REL Sync notices are sent out from CSS Registration service and a confirmation is sent to the originator of the request
8. Original ticket is updated and closed.

Note: The Gazetteer stores the manually entered addresses as 'Local Only' data. It is stored in the same format and with the same level of validation as the AddressBase Premium data provided by OS.

4.7 Service Desk Management (Switching SMS)

CSS Service Provider offers 2nd and 3rd line service management support via the CSS Service Management system. This support covers:

- Incident management
- Problem support
- Service Requests (including ad hoc reporting requests)

- Change Requests
- Address fixing

Therefore, the Service Desk function provides a means by which requests can be submitted for address fixes.

4.8 MPL Addresses and RELs

Network Operators or Suppliers may identify changes which need to be made to MPLs and RELs.
MPLs are mastered by DNOs and Gas Transporters within ERDS and GRDS respectively and these systems are the source of truth for the MPL. Therefore, any MPL update has to be actioned within ERDS and GRDS using the existing process, otherwise ERDS and GRDS will fall out of synch with CSS. Updates processed within ERDS/GRDS are then sent to CSS as messages and the Central Address Service element of CSS attempts to determine an OS ABP match based on the new MPL information and amends the REL address and REL data fields, as appropriate. A REL Synchronisation message is then sent from CSS.

It is important to recognise the fact, RELs are mastered within CSS which represents the source of truth for RELs including REL Addresses and IDs. MPLs, on the other hand, are mastered within ERDS/GRDS. REL addresses represent the premises where the energy is consumed, whereas MPLs represent where the meter is located. These will not always be the same and MPLs often include non-addressable information, which is perfectly acceptable, but it must be recognise it will not be present in the REL addresses of address Source 'matched.'

If an **electricity supplier**, for example, wishes to update an MPL, it will submit a D0381 for the DNO to update ERDS. ERDS then submits an RMP API to CSS and CSS will try to match the MPL address to OS ABP and will amend the REL accordingly. **Alternatively,** the supplier can create a manual ticket through Switching SMS to update the MPL for any unmatched MPANs. However, this route means the supplier should also inform the DNO of the new MPL detail since, if the new REL is matched, the REL Synchronisation Message from CSS only contains the array of REL addresses and not the MPL. In the case of electricity suppliers, this process is illustrated in Figure 12 below:

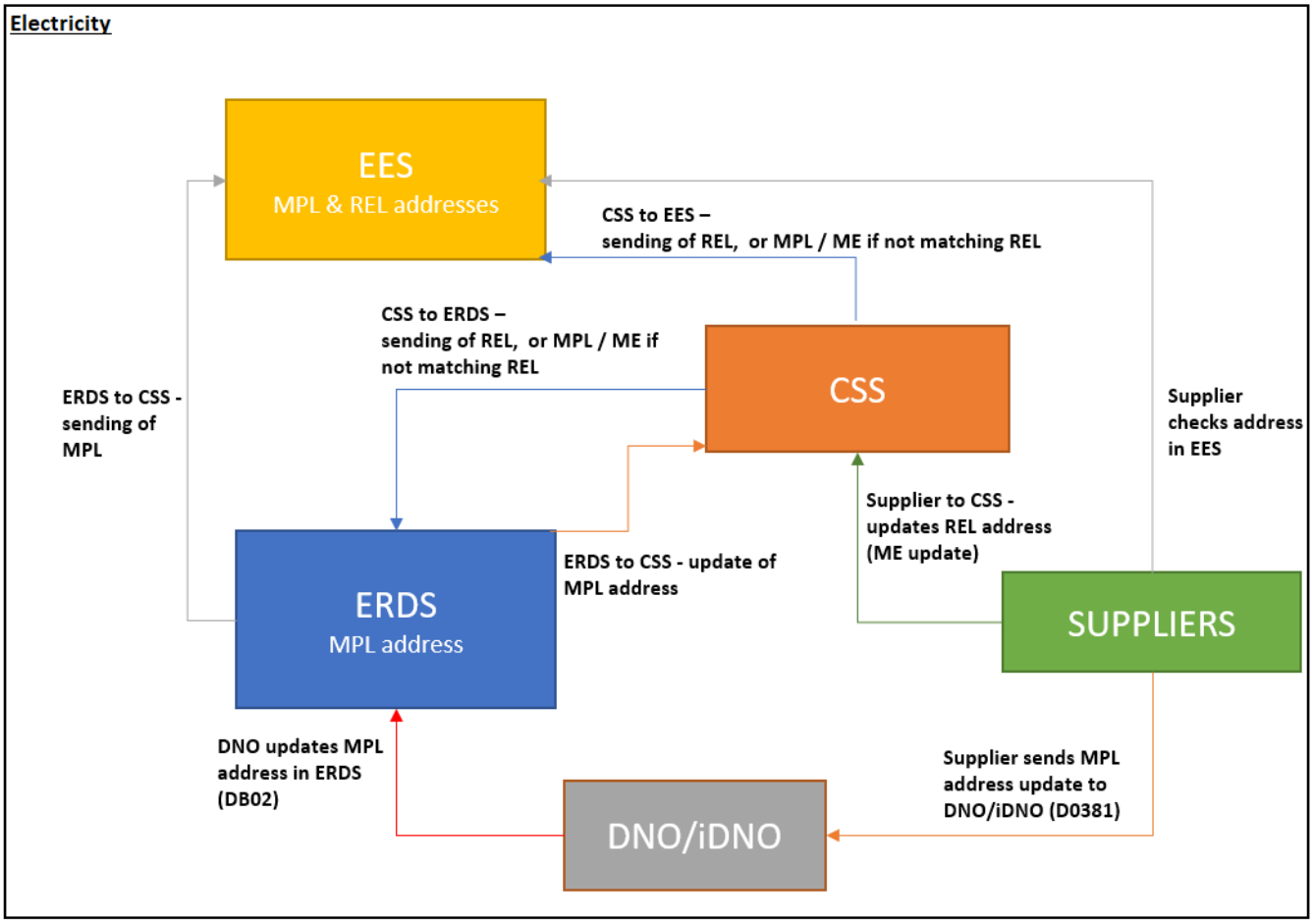


Figure 12 Suppliers Amending MPLs

The equivalent diagram for gas is shown in Figure 13, whereby the supplier can go via the shipper to request an MPL update or can raise Service Now ticket for Manually Entered addresses:

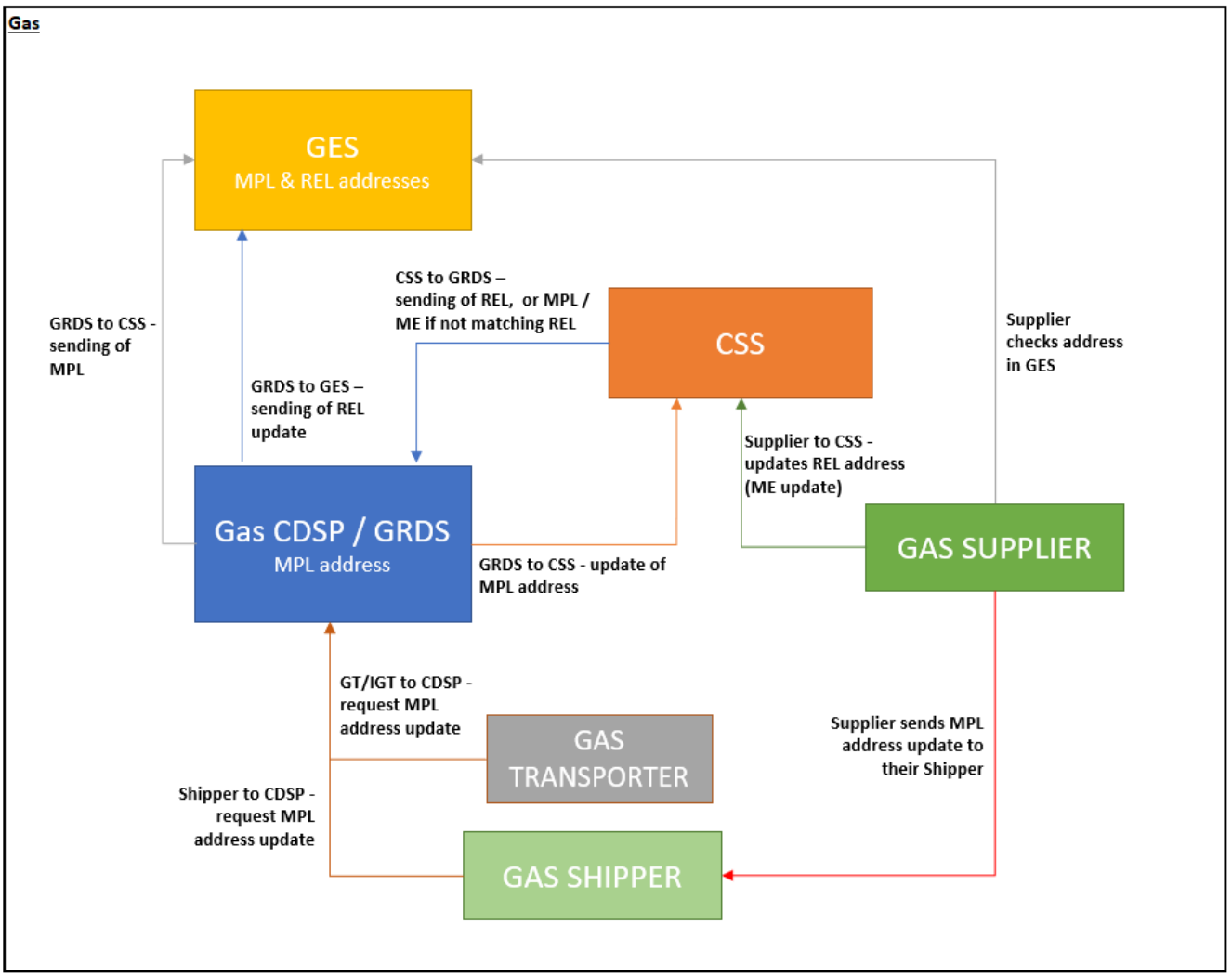


Figure 13 Gas Transporters and Suppliers Amending MPLs

CSS receives regular updates from Market Participants. Where a modification to an MPL address is received, the new MPL address is passed through to the Address matching software.
The revised MPL address will be matched using the same logic as an MPL provided during the registration process.

In summary:
ERDA/GRDA can send an API Request to create or update MPLs
Suppliers can either follow current process and request ERDA/GRDA to amend the MPL or they can raise a Switching SMS Ticket to amend the MPL within CSS and advise ERDA/GRDA of the same because the REL Synchronisation Message output by CSS only contains the REL Address and not the MPL address.

Reference should also be made to the REC Schedule on address management which defines the following steps:

Update MPL Address RMP Record in CSS:

- Where the GRDA or ERDA amends the MPL Address for an RMP within its Switching Data Service, it also sends the amended MPL Address to the CSS Provider.
- Upon receipt, the CSS Provider applies the update to the relevant MPL Address and retains a record of

the previous MPL Address.

- The CSS Provider determines whether to update the REL Address for the RMP in accordance with the Address Quality Objective.
- Where the REL Address is changed, the CSS Provider sends the relevant Market Messages. The CSS Provider shall also keep a record of the previous REL Address.
- The relevant Gas Transporter or Distribution Network Operator is the Data Master for the MPL Address; and the CSS Provider and the Registered Supplier are Data Responsible Users for the MPL Address.

Manually Entered Addresses:

- Where applicable, the Registered Supplier for an RMP shall submit a Manually Entered Address to the CSS Provider.
- Upon receipt, the CSS Provider shall determine whether to update the REL Address for the RMP in accordance with the Address Quality Objective.
- Where the Manually Entered Address is considered most appropriate to represent the REL Address, the CSS Provider updates the REL Address and sends the relevant Market Messages, updates the Registered Supplier who instigated the request and keeps a record of the previous REL Address.

5. Mapping of Address Fields

There are many different formats used to denote addresses and these often differ to the BS7666 format.

BS7666 is a standard which establishes the **guidelines** along which a gazetteer (a geographical index) should be built. The Standard is based on the concept of a land parcel unit, or Basic Land and Property Unit, such as a residential home or a business unit. It is important to note, each BLPU has:

- its own UPRN which provide a unique, numerical references for each separately identifiable premises. These have been re-purposed within CSS as REL IDs
- one or more Land and Property Identifiers (LPIs) which provide the address in a standard format which uniquely identifies the BLPU and references it to a street (as per the National Street Gazetteer)

Principal components of the LPI are:

- UPRN
- Unique Street Reference Number (USRN)
- Elements from Primary and Secondary Addressable Objects (including house name, number plus sub-building information such as flat number etc). These all combine to uniquely identify the BLPU.

STREET (USRN)	Name, description and number plus unofficial name
BLPU	UPRN
Land and Property Identifier (LPI)	UPRN Primary and Secondary Addressable Objects (House name and number etc) Postcode / Post Town USRN Status (e.g an approved, alternate or historic record)

Address Field	Comment	Example
Building Name	Used in OS ABP and PAF	7
Sub-Building Name		
Dependent Thoroughfare Name	Distinguishes between similar thoroughfares	Deer Crescent
Thoroughfare Name	Main Road	High Street
Double Dependent Locality	Sub-division of the Dependent Locality into a smaller geographical unit	Fallow Estate
Dependent Locality	Defines an area within a postcode town	Venison Village
Post Town	Town or City	Windsor
Postcode	Postcode for a UK address	SL4 1WW

PAON	Primary Addressble Object Name - name of the addressable object such as building name or street
SAON	Secondary Addressble Object Name - name of the addressable object such as Flat 3 or Third

Figure 14 Recording of Data in BS7666 Standard

Within the Switching Service, MPLs, RELs, ME, PAF and Local Authority Addresses all have a role. Table 14 details the structures of different address formats covering Source, PAF, REL and Enquiry Services addresses.

Note, any ordering within this table is for presentational purposes within GUI of the Enquiry Services only and not a representation of the order in which data elements will be presented within the enquiry service APIs to CSS. Users of the API messages must ensure their systems take the correct data items from the correct elements of the JSON messages and not rely on any particular ordering.

	Address Type				
	Source Addresses from Pre-Migration Data Cuts (MAP09)	Meaning (as defined in PAF)		REL Address and REL Synchronisation Message	Address Displayed within EES and GES
Premises	deliveryPointAlias	Free Text - e.g. to signify Plot			
	subBuildingNameOrNumber	Sub-Building Name			
	buildingName	Building Name	primaryName	The primary addressable object description; normally the name and/or number	secondaryName
	buildingNumber	Building Number	secondaryName	The secondary addressable object description - e.g. Flat 1	primaryName
Thoroughfare	dependantThoroughfare	Dependent Thoroughfare Name or Description	street1	Thoroughfare (a main road or passageway)	street2
	thoroughfare	Thoroughfare (a main road or passageway)	street2	Dependent Thoroughfare Name or Description	street1
Locality	doubleDependentLocality	Double Dependent Locality (A geographical area. A locality which represents a further subdivision of the dependent locality where required. E.g. an area or estate within a ward)	locality1	Dependent Locality (A geographical area. A locality which further defines the Post Town where required)	locality2
	dependentLocality	Dependent Locality (A geographical area. A locality which subdivides the Post Town such as a ward within the Post Town)	locality2	Double Dependent Locality (A geographical area. A locality which further defines the dependent locality where required)	locality1
	postTown	Post Town	town	Post Town	town
	county	County	N/A		
Postcode	postcode	Postcode	postcode	Postcode	postcode

Table 14 The Structure of Different Address Formats

- Source addresses for electricity (MPANs) are supplied in MAP09 format with each field having the meaning described in the left-hand side of Table 14, above.
- The REL Address and REL Synchronisation Messages refer to primary and secondary name within the 'Premises' portion of the address and streets within the 'Thoroughfare' section. Localities 1 and 2 are used to denote the dependent and double dependent localities respectively.
- **It is important to note, the REL Synchronisation Message is sent in JSON format which is agnostic to the sequence in which data is presented. It provides Key / Value pairs that allow the JSON message to be parsed and individual data elements to be obtained.** In the example below, 'Acacia Avenue' might be the second field in the REL Synchronisation Message but it is not guaranteed that data will always be presented to the user in any particular order within a message over an API. It is the fact 'Acacia Avenue' represents 'street 1' within the message which is important. This field is then ordered (sequenced) within the Enquiry Services GUI for presentational purposes.

This is illustrated in the following 2 examples:

Example 1 – A Basic Address

'Address'
1 Acacia Avenue, London, W1 2AB

PAF Structure	
Sub Building Name	
Building Name	
Building Number	1
Dependent Thoroughfare	
Thoroughfare	Acacia Avenue
Double Dependent Locality	
Dependent Locality	
Post Town	London
Postcode	W1 2AB

REL Address (per Synch Message) Sequence or Order Ambivalent Uses Data Field Names		
primaryName	1	
secondaryName		
street1	Acacia Avenue	Thoroughfare
street2		Dependent Thoroughfare
locality1		Dependent Locality
locality2		Double Dependent Locality
town	London	
postcode	W1 2AB	

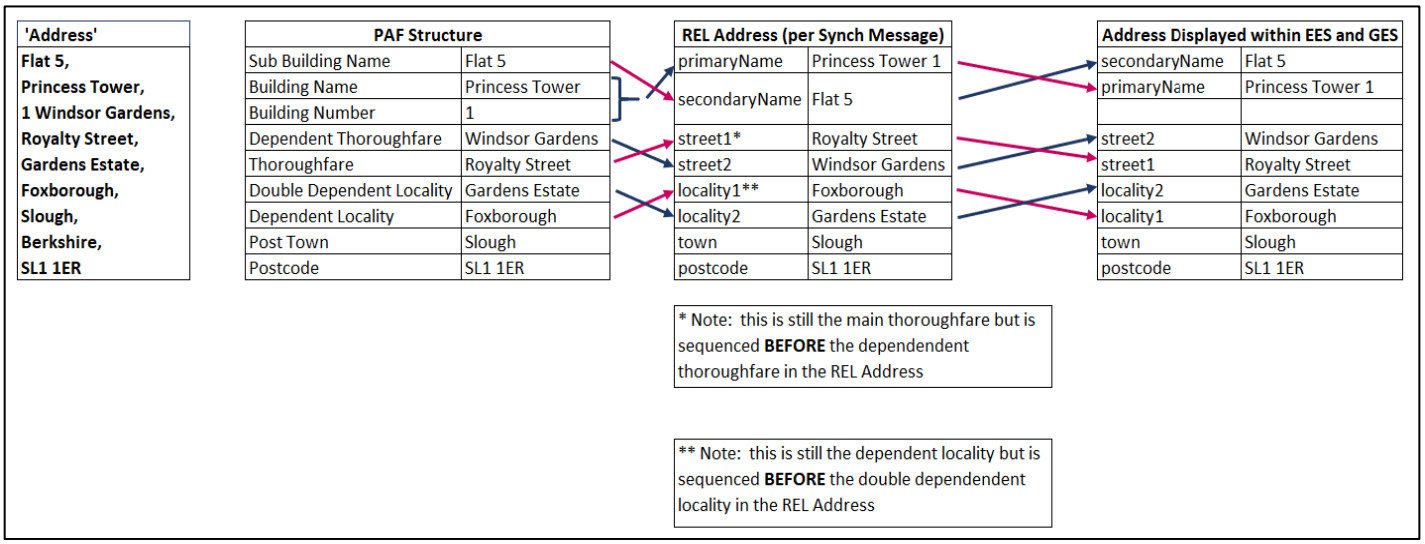
Address Displayed within EES and GES	
secondaryName	
primaryName	1
street2	
street1	Acacia Avenue
locality2	
locality1	
town	London
postcode	W1 2AB

Table 15 A Basic Address and Its Mapping

The 'street1' precedes the 'street2' in the REL Synchronisation Message but **this is irrelevant since 'street 1' is the data field name and has been defined as the Thoroughfare and 'street 2' as the dependent Thoroughfare** in the PhID (translated into the REC). These fields are reversed in the Address displayed within the Enquiry Services to ensure the 'Dependent Thoroughfare' appears prior to the 'Thoroughfare' as would be the case in a written address. The same applies to localities.

This is illustrated with the more complex address in Example 2:

Example 2 – A Complex Address



'Address'
Flat 5,
Princess Tower,
1 Windsor Gardens,
Royalty Street,
Gardens Estate,
Foxborough,
Slough,
Berkshire,
SL1 1ER

PAF Structure	
Sub Building Name	Flat 5
Building Name	Princess Tower
Building Number	1
Dependent Thoroughfare	Windsor Gardens
Thoroughfare	Royalty Street
Double Dependent Locality	Gardens Estate
Dependent Locality	Foxborough
Post Town	Slough
Postcode	SL1 1ER

REL Address (per Synch Message)	
primaryName	Princess Tower 1
secondaryName	Flat 5
street1*	Royalty Street
street2	Windsor Gardens
locality1**	Foxborough
locality2	Gardens Estate
town	Slough
postcode	SL1 1ER

Address Displayed within EES and GES	
secondaryName	Flat 5
primaryName	Princess Tower 1
street2	Windsor Gardens
street1	Royalty Street
locality2	Gardens Estate
locality1	Foxborough
town	Slough
postcode	SL1 1ER

* Note: this is still the main thoroughfare but is sequenced **BEFORE** the dependendent thoroughfare in the REL Address

** Note: this is still the dependent locality but is sequenced **BEFORE** the double dependendent locality in the REL Address

Table 16 A Complex Address and Its Mapping

In the above example, note the positioning of the Flat, its number, Thoroughfares and Localities AND the fact Building Name and Number are concatenated when displayed within the Enquiry Services so they are both presented in the primaryName field.

6. The Enquiry Services and the Use of the REL

User Guides to the EES and GES Enquiry Services have been written and are available on the REC Portal using the links provided in Table 2.

These reference documents provide screenshots of each step of the process whereby a segment of the address or other search criteria can be entered to identify the consumer's address and all meters of that fuel type for that specific premises. These searches also provide the REL ID associated with each meter and a check must be made to ensure all meters identified to be switched relate to the same REL ID (i.e. are serving the same UPRN) where the status is 'Match'. In the case of a dual fuel switch, the meter(s) relating to the opposing fuel type will also share the same REL ID provided these are also of status 'Match'.
This document does not attempt to replace the user guides for the Enquiry Services and readers of this document should check those user guides for a definitive view of how to access data from those enquiry services.

7. Information and Observations from Market Participants

The intention of this section is to note any information or knowledge on any aspects of the REL and its usage which Market Participants consider will assist in understanding. It is intended as a knowledge share.

[This section will be populated by comments captured from Market Participants with the aim of sharing knowledge and experiences of how best to use the REL in practice. This includes enquiries upon the REL and how to ensure the correct meters are selected for switching).

8. Obligations Under the REC

The Retail Energy Code defines obligations for all parties and can be found within the REC Portal. It obliges parties to consult the REL before initiating a switch request for a domestic or microbusiness consumers only. How this is achieved in is up to the supplier. The interfaces to each of the enquiry services are available and it is for market participants to determine the business logic they wish to implement to ensure that the correct meter is the subject of the switch request. It will be for market participants to determine which enquiry service is initially interrogated and how the REL ID is matched across different fuel types. The process could be undertaken by another party on the supplier's behalf.

Suppliers may also choose to consult the REL for I+C consumers but is not mandatory.

9. Ordnance Survey Licence Conditions

The use of the REL under the Ordnance Survey Licence is for the “purposes of switching” only.

Note, the Address Management Schedule of the Retail Energy Code refers to the use by Switching Parties - defined in the Interpretations Schedule.

Access to the REL is via the enquiry services and is governed by the Data Access Schedule in the REC.

Annexe 1: The Central Switching Service (CSS)

Sections 3 and 4 consider the REL and its address elements within the CSS. However, an understanding of the CSS and the manner in which parties can interact with it is required since it directly affects how RELs are mastered and maintained throughout their lifecycle. This is covered within Annexe 1.

The CSS is a cloud-based service which links to ZenDesk, through which it links to the SMS (Service Management System, Switching SMS)). It is built and operated from the Azure Public Cloud (as an Integration Platform As A Service (IPAAS) in a serverless environment) which provides a readily scalable environment in-line with demand. It masters both **Registration and Addressing elements**, distributes information pertaining to Registerable Measurement Points (RMPs) and provides the conduit between subscribing parties to facilitate messaging and changes to enquiry and administration services (EES, GES, ERDS and GRDS). It utilises the OS ABP database which is compliant with BS7666 and accommodates all character sets including Welsh and Gaelic.

The DCC manages and maintains the Central Switching Service (CSS) to facilitate reliable and efficient switch outcomes for consumers. This includes responsibility for the REL and the database used to store REL data. The CSS makes REL data available to parties through its synchronisation with the enquiry services (EES and GES).

The CSS encompasses four core components and only the first two are relevant to this document:

1. Registration Service - manages the gas and electricity registrations and associated data including the Retail Energy Location (REL) addresses and RMPs.
2. Address Service - underpins the management of addresses associated with RMP's and REL's. It utilises Ordnance Survey's AddressBase Premium (OS ABP) database (compliant with BS7666) against which it endeavours to match source addresses (MPL and ME) to establish a REL address and to facilitate switching activities.
3. Data Testing component
4. Identity and Directory Services segment

The CSS **Registration Service** includes an Azure Cosmos DB which is a highly secure datastore with controls to prevent unauthorised access or data removal. It provides the primary store for RMP, Registration and market data required for switching. The data storage solutions are encrypted at rest using AES-256-bit encryption. The database provides the following containers:

- **Domain:** This container holds all the system parameters (MDD and SDD) and data submitted via the Market Participant Data API
- **RMP:** Holds all the data held about RMPs including data sent via the RMP API
- **Registration:** Holds all the data held about registrations and registration requests.

Real-time messaging (APIs) is based on a predefined JavaScript Object Notation (JSON) format. It is important to note, **JSON formatted messages do not specify the order of components or data fields** but instead, provides the field heading and its corresponding value.

The CSS also links to Switching SMS which is hosted within its own data centre and supports the CSS product in life. The SMS provides the central ticketing system by which messages are communicated to and from ZenDesk (the system within CSS which is used by CSS Operatives to manage workflow). Switching SMS is a central repository which stores and manages all Incidents, Service Requests, Switching Service Operational Changes and queries relating to the Switching

Arrangements. It also stores and provides self-help information to be published via the Switching Portal to aid in the resolution of queries.

The REL Guidance Document is primarily concerned with the Central Address Service (CAS) Segment but for context, also provides a high-level view of the Central Registration Service (CRS) Segment.

In summary:

The **Registration Service** provides the mechanism for:

4.4.1 Initial registrations

4.4.2 Switch requests, including Switching Domain Data and Market Domain Data

4.4.3 Retail Meter Point (RMP) and REL management

4.4.4 Addressing Service

The **Addressing Service** provides:

- The address database
- The mechanism for searching the database to attempt to secure a matched address for the MPL

An overview of the CSS is shown in Figure AN1.1:

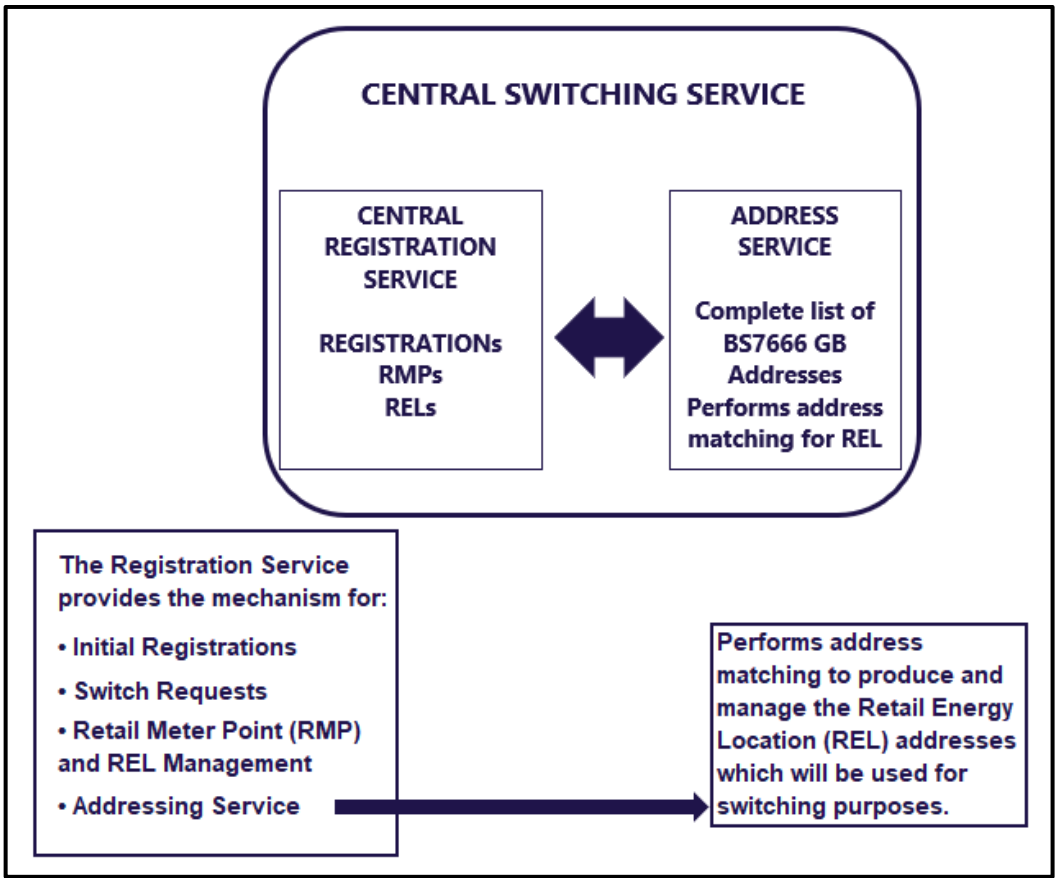


Figure AN1.1 The Central Registration and Address Services within the CSS

Overall, the CSS provides a system:

- by which RMPs are created and registered in line with System and Market Domain Data (SDD and MDD respectively)

- which facilitates faster and more reliable switches to be processed and completed (via automated Registration and Address Services) in line with consumers' expectations.
- which reduces the occurrence of Erroneous, Delayed and Unsuccessful switch requests and improves both reliability and consumer confidence in the switching process through improved data quality and the introduced of a REL and REL Address, with the latter providing an industry recognised, accurate, and unambiguous reference address.

The CSS uses messages to interface with other systems and to communicate with a number of parties. Figure AN1.2 illustrates the central position held by CSS within the parties' systems and controls the passage of messages.

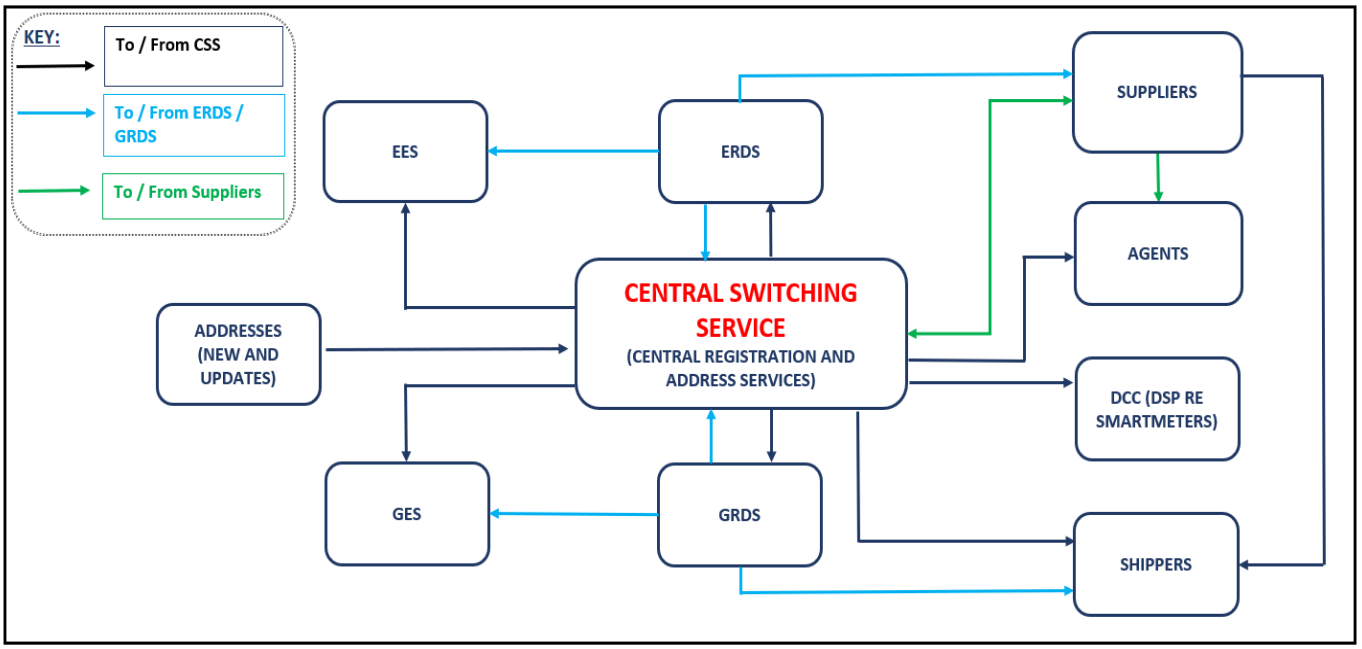


Figure AN1.2 Central Position Held by the CSS

Effectively, the CSS is a messaging service within which parties and their systems interact with one another. It also provides a front-end portal providing access to a knowledge base where users can access articles and tickets to affect change can be raised through Switching SMS. Therefore, **there are effectively 2 gateways through which parties can interact with the CSS:**

- Through **a web-based interface using webhooks**: a secure gateway is used to create or amend both registration and address details via API formatted messages. These messages concern specific 'Event Types' and are validated and sent to other systems or used to update data mastered within CSS.
- Through **a portal** into the Service Management System (Switching SMS) and the completion of a ticket.

A basic, high-level CSS diagram is shown in Figure AN1.3:

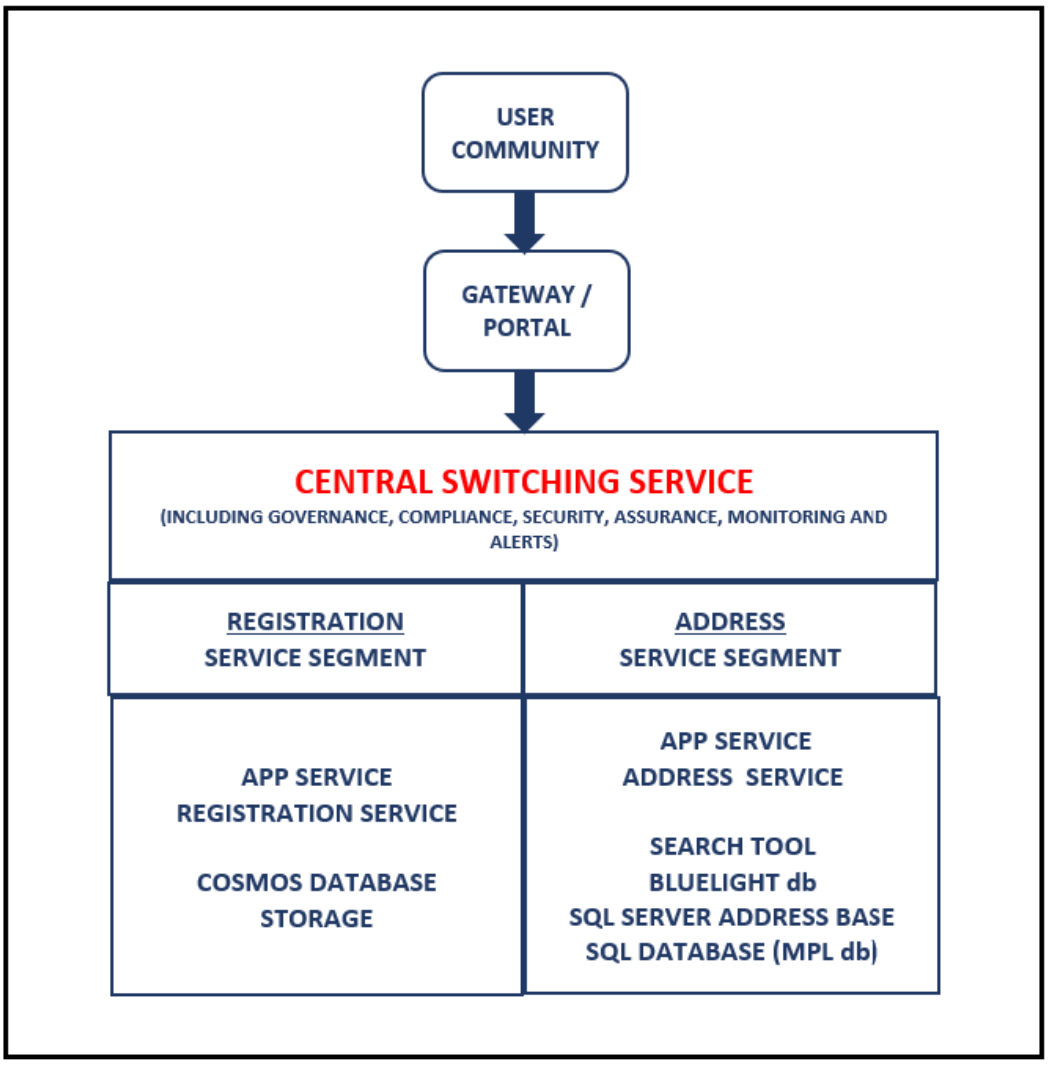


Figure AN1.3: High Level Central Switching Service Diagram

Key points to note are:

- Controlled access and security (via Secure Public Key Infrastructure message authentication and encryption)
- Distinct but linked segments (Registration and Address Services with the Data and Identity Segments not shown)
- App Services for both Registration and Address Services
- Cosmos Database stores meter details including REL information and the REL ID (UPRN)
- BlueLight Database stores the British Standard compliant addresses related to each UPRN. It is gazetteer which facilitates sharing accurate and up-to-date addresses across an organisation and its systems.
- The majority of CSS Service users or Market Participants (Energy companies) connect over the Internet, but Private Network Connection is also supported.
- The Portal (Switching Portal) is the switching 'shop window' for Market Participants and agreed interested parties, providing key information about the Switching Arrangements to users. This includes dashboards, the FSOC (forward schedule of change), and knowledge base and switching announcements.

The Portal provides the means to raise Incidents and Service Requests through the use of templates which ensure all key information is included in a request, thus promoting reliability and efficiency.

The **CSS Operative and Service Desk** shall use the CSS Service Management System to co-ordinate activities required to provide the required Service to the CSS Users and manage the end-to-end CSS service provision.

The Switching Operator uses the Switching Service Management System to:

- store all tickets
- track progress and manage their resolution
- investigate and resolve problems
- publish bulletins and dashboards
- resolve recurring incidents and problems
- publish reports to Portal Users
- co-ordinate the Switching Operational Change function for all Switching Data Service providers

The core Registration and Address services are supported by a number of ancillary services:

- Initial registrations/feed into the CSS
- Maintaining RMPs throughout their lifecycle
- Address matching through the Address Service within CSS
- Switching activities
- Reporting services
- Service desk and support

Interactions are initiated by 'Senders' and received by the appropriate 'Endpoint' at the CSS (there are distinct 'Endpoints' for Registrations, Switch Requests etc), with outputs sent to 'Receivers' via Webhooks. To receive these output messages, a recipient must register target endpoints for each market participant role they hold, so that all outgoing messages applicable to that role are sent to these endpoints by CSS. See Figure AN1.4.

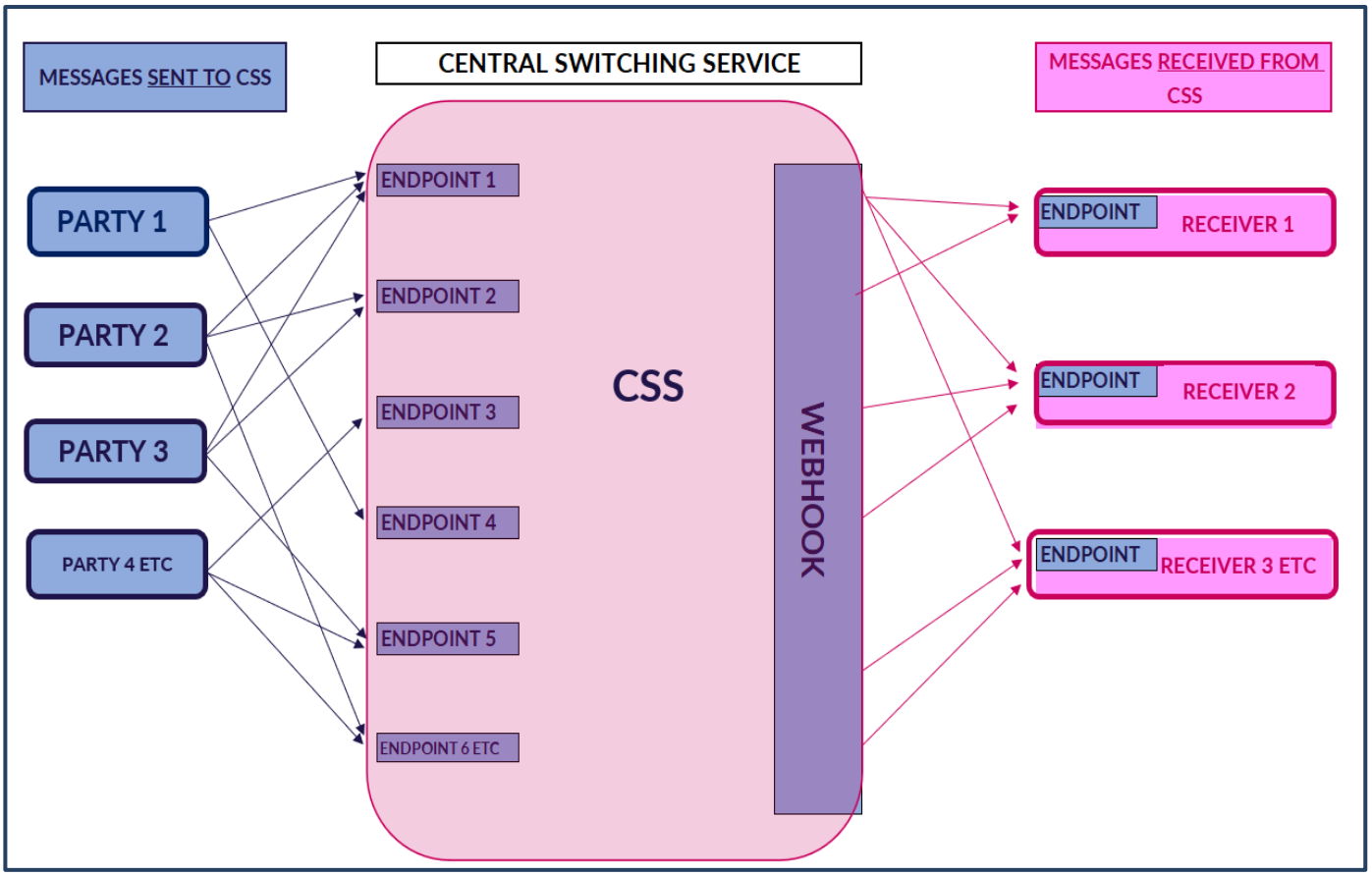


Figure AN1.4 - Messaging Sent Via the Central Switching Service

Message Signing

Messages to and from the CSS Registration Service are digitally signed by the sending party using the JSON Web Signature standard and uses the digital signature certificate provided by the centrally managed Public Key Infrastructure (PKI) solutions. The digital signature validates the authenticity of the sender and verifies the data integrity by validating that the message was unmodified during transit. Therefore, not only the integrity of the message but also the fact it derived from an appropriate, authorised source are established and maintained.

Annexe 2: The Confidence Score (CS)

The confidence score represents the degree to which an input address correlates to an OS ABP address. It does not necessarily determine the confidence placed in the address being correct, only that elements of the source address match, or closely match, that of an ABP address.

Each address field is assigned a weighting which represents the maximum number of points available to that element of the address for an exact match. A close match receives a slightly lower score, and the score reduces to zero if an input value bares no correlation to an OS ABP value. Fields such as building number and postcode consequently have high weightings since they are fundamental to an address match. The county field is less important since it can be determined from the postcode, so it receives a very low weighting.

The 'Match Multiplier' is a number used to accentuate or dampen the weighting score to further define its significance or importance relative to other address fields.

The confidence score is derived from the sum of the confidence scores for each 'MPL Address Element' used within the ABP match algorithm.

CONFIDENCE SCORE = SUM ('WEIGHTING' X 'MULTIPLIER')

Each element and its confidence score ('Weighting' multiplied by the 'Match Multiplier') can be amended to skew the profile and, thereby, increase or lessen its significance in determining whether a positive match is made. The actual profile used is subject to IPR but is based upon best practice and a wealth of experience.

The confidence score is defined and in order to determine whether or not a perspective address match in ABP exceeds, meets or fails to meet the 'confidence' threshold and an 'address match' is only made if a **single, stand-alone' match** above the threshold is returned. If there are multiple candidates above threshold or no such ABP addresses are found, the MPL address is returned as 'unmatched'.

A standard requisite for a 'Gold Standard' address match is for the confidence score to exceed a pre-determined threshold. If a high threshold is established, meaning a high correlation to the ABP address is required, and a single candidate address is returned by the algorithm, the risk that an incorrect REL assignment is made is deemed low enough to be discounted. A check is made to ensure near threshold candidate addresses with a CS just below threshold don't exist which might result in an incorrect 'above threshold' address being selected. i.e. the candidate match address must 'stand-alone' and be the only candidate address which exceeds the threshold. If this is the case, the match is made and the REL address is assigned.

The confidence score is a key component in determining whether an address can be matched. However, if the threshold for a 'Gold Standard' address is **set too low**, it will allow 'false matches' which are similar address to be accepted and this will prevent the correct match standing as the only candidate address, so the address would remain unmatched. Incorrect matches or the inability to find the correct match owing to alternative candidate addresses meeting the threshold, should **be rigorously avoided to ensure the integrity of REL addresses and to promote address data quality**.

For illustrative purposes only and to respect Intellectual Property Rights, an example of the confidence score is shown in the table below. This profile demonstrates how a score is configured and does not represent the actual profile used in the analysis.

Address Element	Weighting	Match Multiplier	Confidence Score
	A1	B1	A1 x B1
Sub Building Name or Number	10	0.5	5
Building Name	10	0.50	5
Building Number	15	1.3	19.5
Thoroughfare	20	0.75	15
Dependent Locality	5	1	5
Post Town	10	1	10
County	5	0.10	0.5
Postcode	20	2	40
Total			100

Table AN2.1 – Example of the Confidence Score

Note, in the above example, the postcode is a key component of the overall score, whereas the county address field barely contributes to the overall achievable score. This reflects the comparative importance of these fields.

Once the pre-process steps are applied, the above table is used to measure the correlation between source address and ABP address. Perfect content for each address element results in a maximum confidence score of 100.

In the event of less than perfect comparisons between source data and ABP, the maximum value is reduced accordingly and the mechanics of this are defined within the algorithm. Therefore, elements of the address can be weighted far more significantly than others in determining the overall confidence score for a given source address and in determining whether the threshold criteria are reached.

A range of confidence scores were considered to determine the most appropriate threshold to use. **Sensitivity analysis and a data insight exercise (whereby unmatched addresses were reviewed to ensure they were correctly excluded, and positive matches were reviewed for 'false' matches) together with an Address Management Company's 13 years of experience were used to set a Confidence Score => 90 as the threshold to be achieved by automated matching before an address can be even considered as being 'matched' to ABP**.

Therefore, the 'Gold Standard' criteria for a match to be assigned, is defined as an address which meets the following conditions:

- Confidence Score => 90 when matching against a BS7666 address database AND it is the ONLY candidate address AND it 'stands clear' of other addresses with a confidence score close to threshold **OR**
- Confidence Score => 90 and has been manually assured to be the correct property where one or more candidate addresses exist **OR**

- Where manual address matching has determined an appropriate match against the BS7666 address database

Therefore, once parsed, the ABP tool and the confidence threshold are applied to each source address to identify whether a single address exists which exceeds the confidence threshold. These are deemed as 'matched' addresses and no cleansing effort is required.

Note, REL addresses with addressSources of MPL and ME will also have an associated confidence score value within the REL information. REL addresses of type 'MPL' will usually have a Confidence Score of <90 since the threshold requirement within the 'Gold Standard' criteria tends not to have been met. Occasionally, there could be two candidate addresses each with a score over 90 or the candidate address isn't a 'stand-alone' address. In these cases, the REL address may have a confidence score =>90 but an addressSource other than 'Match.' Where an ME is used as the REL address, the confidence score could be any value and, once again, the two candidate addresses and 'stand-alone' criteria are factors in determining the match status.

Appendices: A) API Messages

All messages were sourced from the Physical Interface Design specification which has been translated into the REC where version control is applied. Therefore, the REC must be consulted for definitive messages.

A1. MPL Address Payload

Where the MPL address is referenced, this will be the payload required or sent out from CSS:

```
{
"deliveryPointAlias": "string",
"subBuildingNameOrNumber": "string",
"buildingName": "string",
"buildingNumber": "string",
"dependantThoroughfare": "string",
"thoroughfare": "string",
"doubleDependantLocality": "string",
"dependantLocality": "string",
"postTown": "string",
"county": "string",
"postcode": "string",
"uprn": number"
}
```

A2. RMP API Request

This API is used to add (POST) a new API or to update (PATCH) an existing API.

Available to: GRDA, ERDA, DCC SM
Availability Notes:
Only GRDA/ERDA can create (POST)
GRDA/ERDA can update (PATCH) all fields bar commsHubLinkDeviceId

E.g. for Gas:
Route: /rmps/gas
Method: POST
Body:

```
{
    "mpxn": "string", --*
    "networkProvisionMpid ": "string", --*
    "networkProvisionRole":  "string", --*
"networkProvisionFromDate":"string", --*
    "rmpStatus": "string", --*
"rmpStatusFromDate": "string", --*
    "mplAddress": {MPLAddress}, -- *
"timeBoundaryAlignmentStatus": "string",
    "dccServiceInd": boolean,
"assetOwnershipMaps: [{
"mpid": "string" -- *,
```

"**role**": "string" --*
}]
}

Use 'PATCH' for updating information belonging to the RMP.

A3. Registrations

This API is used to add (POST) initial registrations and (PATCH) updates to existing registrations.

Available to: Energy Suppliers, GRDA
Route: /registrations
Method: POST
Body:
{
"**mpxn**": "string", --*
"**fuelType**": "string", --*
"**supplierMpid**": "string", --*
"**supplierRole**": "string", --*
"**supplyStartDate**": "string", --*
"**domesticPremisesInd**": boolean, --*
"supplierGeneratedReference": "string",
"shipperMpid": "string", -**
"shipperRole": "string" --**
}
** required for Gas

To update, or patch any of the properties in the "data" objects with some properties dependent on the user's Role within the CSS.

Available to: **Energy Suppliers**
Availability Notes:
All Energy Suppliers can update (PATCH) the domesticPremisesInd property.
Only Gas Energy Suppliers can update (PATCH) the shipperMpid, shipperRole and shipperFromDate property.

It is not possible to cancel an Update Current Active Registration request where a future dated change of shipper has been requested. An additional request must be submitted.

Route: /registrations/{registrationId}
Method: PATCH
Body:
{
"**mpxn**": "string", --*
"**data**": {--*
"shipperMpid": "string",
"shipperRole": "string",
"shipperFromDate": "string",

"domesticPremisesInd": boolean
}
}

Registration Deactivation API Request

This request is made by energy suppliers to indicate that the registration is no longer active and is not being switched to another supplier.

Available to: Energy Suppliers

Route: /registrations/{registrationId}/deactivation
Method: POST
Body:
{
"mpxn": "string" --*
}
Responses:
Status Codes: 202, 400, 401, 403, 404, 429, 500, 503
Body:
{
Error! Reference source not found.
}

A4. API Switch Request

An energy supplier submits a request to this API to initiate a registration switch.

To achieve a **One Fail All Fail (OFAF) switch**, all MPxN related properties involved in the OFAF must be included in the 'registrations' property array and all entries in this "registrations" property array are presumed to form an OFAF grouping. There is no way to inform the CSS of multiple switches using the registrations property array without creating an OFAF. To perform an individual MPxN switch simply provide one entry in the "registrations" property array.

Available to: Energy Suppliers

Route: /registrations/switch
Method: POST
Body:
{
"**supplyStartDate**": "string", --*
"supplierGeneratedOfafGroupReference": "string",
"**registrations**": [{--*
"**mpxn**": "string", --*
"**fuelType**": "string", -- *
"**supplierMpid**": "string", -- *
"**supplierRole**": "string", --*

"**changeOfOccupancyInd**": boolean, -- *
"**erroneousSwitchResolutionInd** ": boolean, -- *
"**domesticPremisesInd**": boolean, -- *
"shipperMpid": "string", -- **
"shipperRole": "string", -- **
"supplierGeneratedReference": "string"
}]
}

**mandatory for gas only

Note, "registrations" is a mandatory array of the registrations to switch, at least 1, if there are more than 1, then these will form an OFAF group with an auto generated group id generated by CSS.

A5. REL Address Payload

Where address (REL) information is sent out, the following is included within the address payload:

```
{
    "secondaryName": "string",
    "primaryName": "string",
    "street1": "string",
    "street2": "string",
    "locality1": "string",
    "locality2": "string",
    "town": "string",
    "postcode": "string",
    "logicalStatus": number,
    "language": "string",
    "organisation": "string",
    "addressType": "string",
    "confidenceScore": number,
    "classification":"string",
    "latitude": number,
    "longitude": number
}
```

The REL address will be returned as an array. Where available one of these will be a delivery point address, this is denoted by the addressType field. See 3.1 for a description of the data elements.