

## **Assigning Postcodes to Defined Geographic Areas**

In this example the geographic areas considered are Electoral Divisions but the principles apply equally to any geographic area with a defined boundary.

There is no direct correlation between postcodes and Electoral Divisions.

Postcodes are created by Royal Mail and are designed as a tool for delivering mail. Electoral Divisions are designed for the democratic election of County Councillors. These two functions are quite independent of each other but it may be convenient to assign postcodes to Electoral Divisions to assist with some other administrative or demographic purpose.

In order to assign postcodes to Electoral Divisions the postcodes first have to be geocoded.

Geocoding is the process of finding associated geographic coordinates (in the UK expressed as eastings and northings) from other geographic data, such as street addresses, or postal codes. With geographic coordinates the features can be mapped and entered into Geographic Information Systems.

The methodology used is based upon sound geographic principals but is not one hundred percent accurate.

A postcode frequently refers to more than one address, approximately 15 addresses in a cluster (known as a postcode unit) is typical.

Postcode units are modelled for cartographic purposes as a single point and not as a polygon (an area with a boundary) because definitive postcode unit boundaries do not exist.

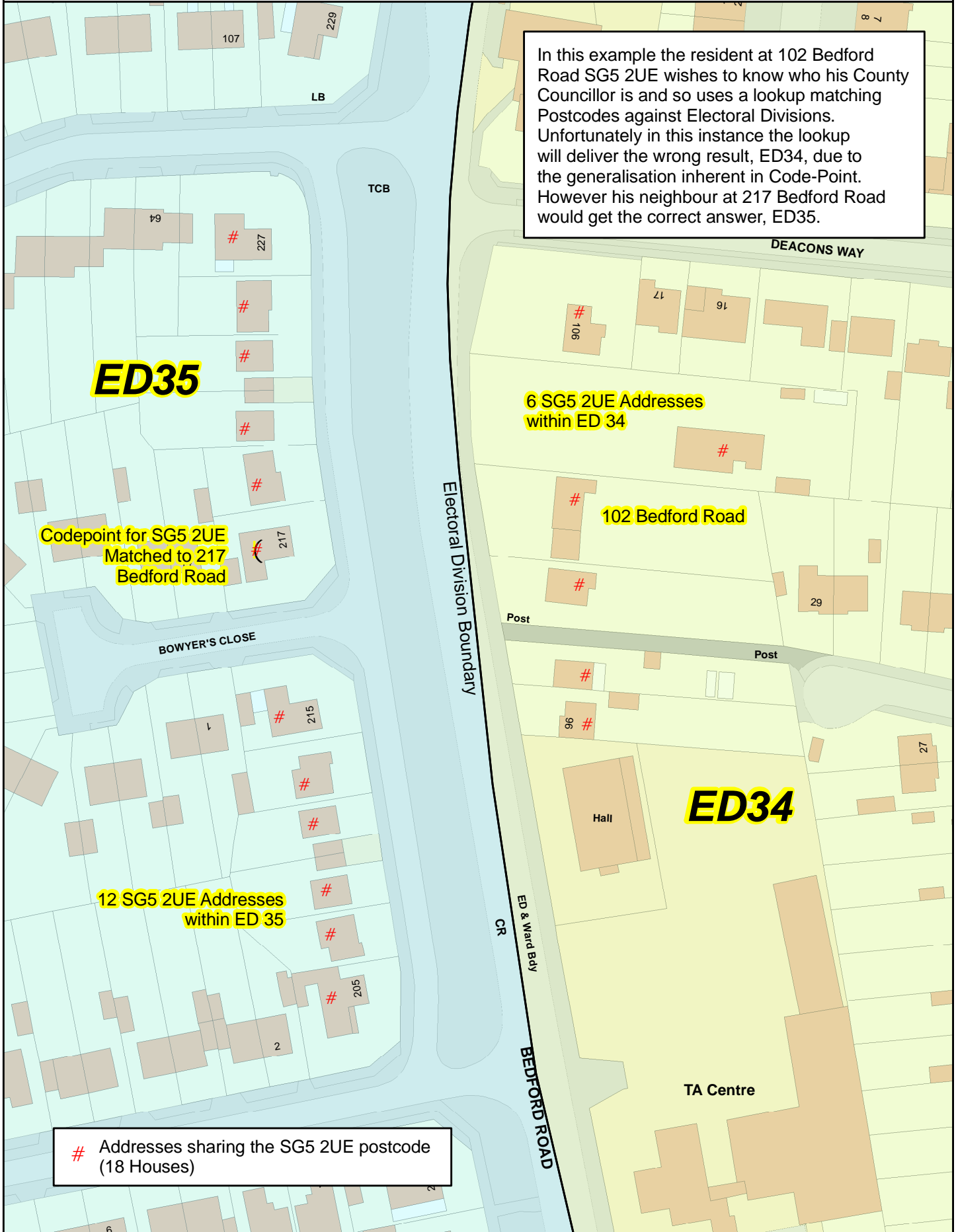
In an urban area the addresses making up a postcode unit are likely to be very close together but in a rural area the addresses may be more widely spread. One of the major factors affecting the accuracy of the geocoding, and subsequent matching against Electoral Divisions, is the degree of scatter of addresses relative to the centremost address.

The geocoded postcode data used comes from Ordnance Survey, and is called Code-Point. Code-Point represents postcode units geographically, and is derived from the centroid of the coordinates of all individual addresses which comprise each postcode unit. This point is then migrated to the location of the address nearest to the centroid. Such a rationalisation of many points to one representative point is known by cartographers as generalisation.

We can use a Geographic Information System to analyse the relationship between points and polygons and determine into which polygon (Electoral Division) each point (Code-Point) falls and generate a table associating postcodes with Electoral Divisions.

Generalisation will inevitably affect the reliability of the result. It is possible that although the address at the Code-Point falls within one area that some of the other addresses fall into a different area. The Electoral Division assigned would then be incorrect for some, although correct for the majority, of the addresses. This is more probable where the postcode unit, and thus the Code-Point, is close to an Electoral Division boundary. Postcodes nearer the centre of an Electoral Division will usually be correctly assigned, so a significant factor affecting the reliability of the result is the size and shape of the Electoral Division.

If it is necessary to be one hundred percent reliable some other method must be used. This is not a simple matter which is why the method described above, which is simple and broadly reliable, is commonly used. To achieve more reliable results it would be necessary to identify the addresses individually, and not by postcode alone, but this is often impractical where large numbers of addresses are involved. Other methods based on the Electoral Register or Community Charge Register might be used, but these registers can also contain errors and omissions and also require geocoding. A reliable and maintained source of geocoded addresses we could exploit is the National Land and Property Gazetteer but use of this resource has not yet been implemented in Hertfordshire County Council due to technical limitations which we hope may be overcome in 2010.



In this example the resident at 102 Bedford Road SG5 2UE wishes to know who his County Councillor is and so uses a lookup matching Postcodes against Electoral Divisions. Unfortunately in this instance the lookup will deliver the wrong result, ED34, due to the generalisation inherent in Code-Point. However his neighbour at 217 Bedford Road would get the correct answer, ED35.

**ED35**

Codepoint for SG5 2UE Matched to 217 Bedford Road

12 SG5 2UE Addresses within ED 35

6 SG5 2UE Addresses within ED 34

102 Bedford Road

**ED34**

# Addresses sharing the SG5 2UE postcode (18 Houses)