

# Geography – Background Information – 2011 Census

## Linkage Matrix

### **Linkage between 2001 Census Output Area and 2011 Census Output Area**

For the 2011 Census, National Records of Scotland (NRS) allocated 2011 postcodes to 2001 Output Area boundaries on a best-fit basis to create a first cut of 2011 Output Area boundaries. These were then amended to follow confidentiality thresholds, or maximum size guidelines, by either splitting or merging with neighbouring Output Areas.

We have produced two look-up files to supplement the 2011 Census Output Areas. These are produced in excel format and can be found on the NRS website. :

[2001 Output Area to 2011 Output Area – one to one](#) look-up file.

This links the 2001 Output Areas to the 2011 Output Areas using the grid references of the 2001 master postcodes<sup>1</sup> (or household weighted centroids) to provide a one to one relationship between the 2001 Output Areas and the 2011 Output Areas.

[2001 Output Area to 2011 Output Area – one to many](#) look-up file.

This enables users to identify which 2001 Output Areas make up the 2011 Output Area. A 2011 Output Area may be made up of a single 2001 Output Area or the 2011 Output Area may be made up of several 2001 Output Areas, including ones that have been split or merged. The grid references of the 2001 postcodes (that were used to create the 2001 Output Areas) were assigned to the 2011 Output Area boundaries to produce a one to many distribution.

We recommend users read the papers '[Background Information on 2011 Census Geographies](#)' and '[Best-fit and Exact-fit policy](#)', which can be found in the geography [2011 Census Supporting Information](#) section of the National Records of Scotland (NRS) website.

All Ordnance Survey mapping backgrounds shown in the examples are as at 2014.

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#### **Footnote**

1) The 2001 master postcode (or household weighted centroid) is selected using an algorithm which calculates the postcode centroid within an Output Area (OA) which has grid references closest to the household-weighted centre of the OA.

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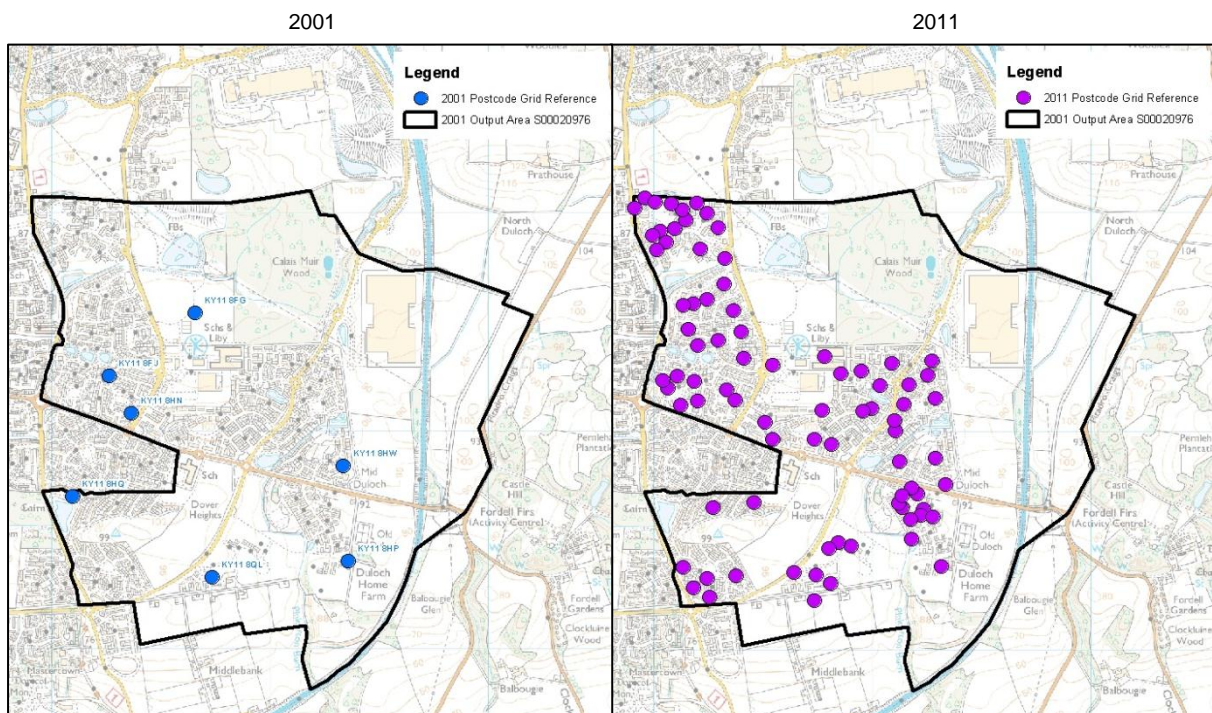
## Linkage Matrix

### 2001 Output Area to 2011 Output Area – one to one

This provides a one to one relationship of 2001 Output Areas to 2011 Output Areas using the grid reference of the 2001 master postcode.

The 2001 Output Area boundaries are not always comparable with 2011 Output Area boundaries as there has been development during the 10-year period between Censuses.

In the example below, there were 7 postcodes in 2001 within Output Area S00020976. If you apply the 2011 postcodes to this same 2001 Output Area, the amount of change that has occurred in the area between the two Censuses becomes evident from the increase in postcodes (82 in total in 2011).



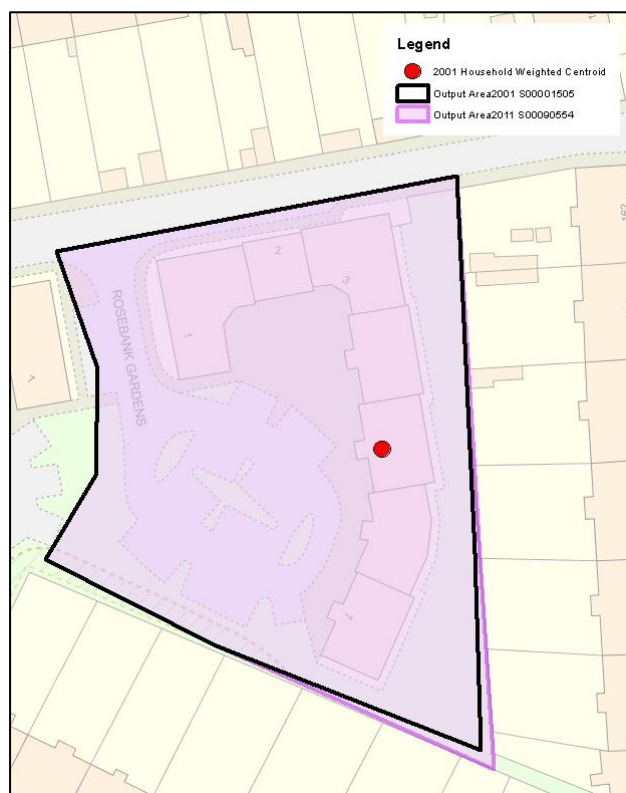
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### Linkage Matrix

In the example below the boundaries between 2011 and 2011 are comparable. In this case the underlying postcodes between the two Censuses have hardly changed.

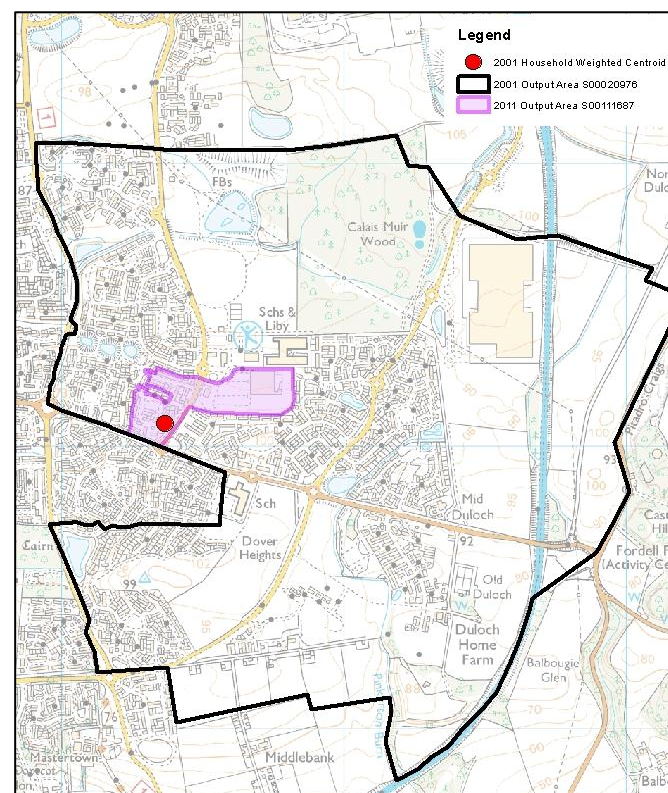
The master postcode for 2001 Output Area S00001505 is AB11 6WH. The one to one allocation using this 2001 master postcode shows S00090554 as the corresponding 2011 Output Area.



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However in the next example you can see that the Output Area boundaries have changed quite dramatically between the two Censuses.

The master postcode for 2001 Output Area S00020976 is KY11 8HN. The one to one allocation using this 2001 master postcode has provided S00111687 as the 2011 Output Area.



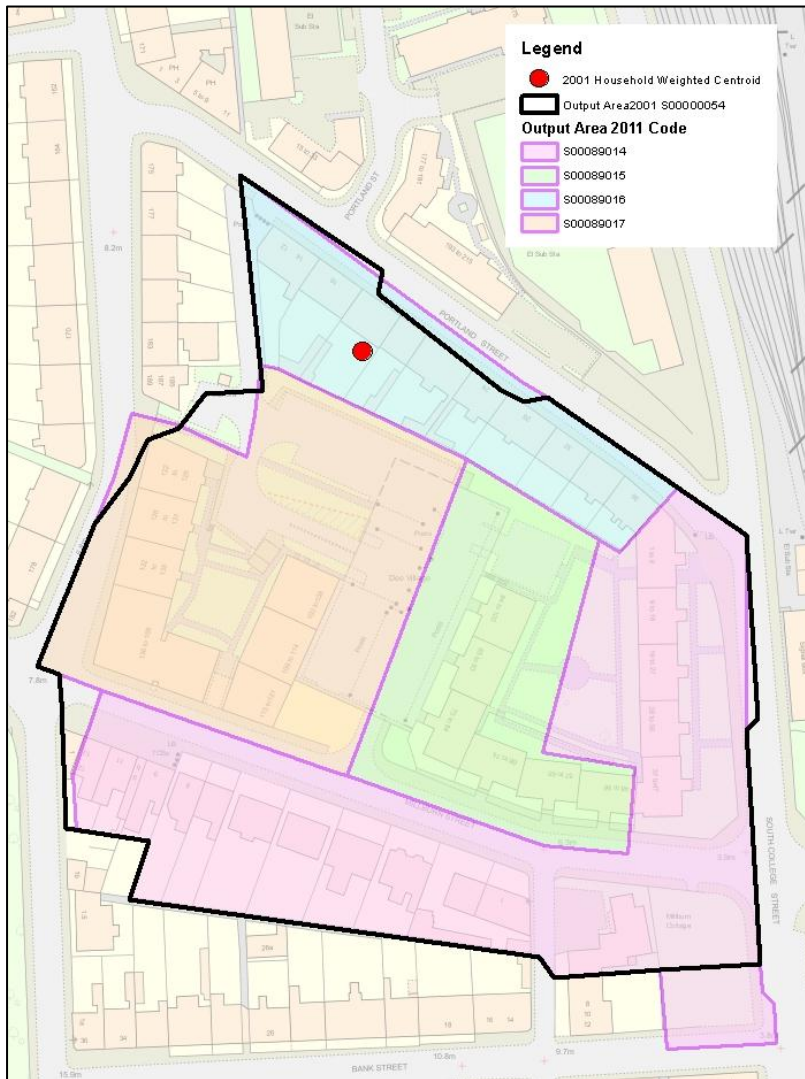
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There are 4,919 2011 Output Areas that are not allocated in the one to one look-up. This is due to the 2001 Household Weighted Centroid falling outwith the 2011 Output Area boundaries.

As shown in the example below the master postcode for 2011 Output Area S00000054 is AB11 6LL. The one to one allocation using this 2001 master postcode has provided S00089016 as the 2011 Output Area. There are 3 other 2011 Output Areas (S00089014, S00089015, and S00089017) within the 2011 Output Area S00000054 that have not received an allocation to a 2011 Output Area, as the 2001 master postcode does not fall within their boundaries.



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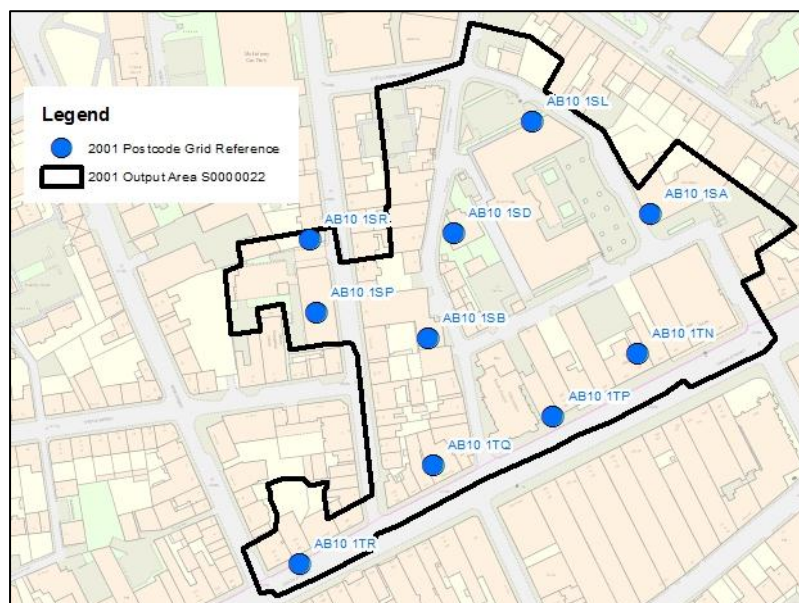
## Linkage Matrix

### 2001 Output Area to 2011 Output Area – one to many

This look-up lists all the 2001 Output areas that make up a 2011 Output area including part 2001 Output Areas.

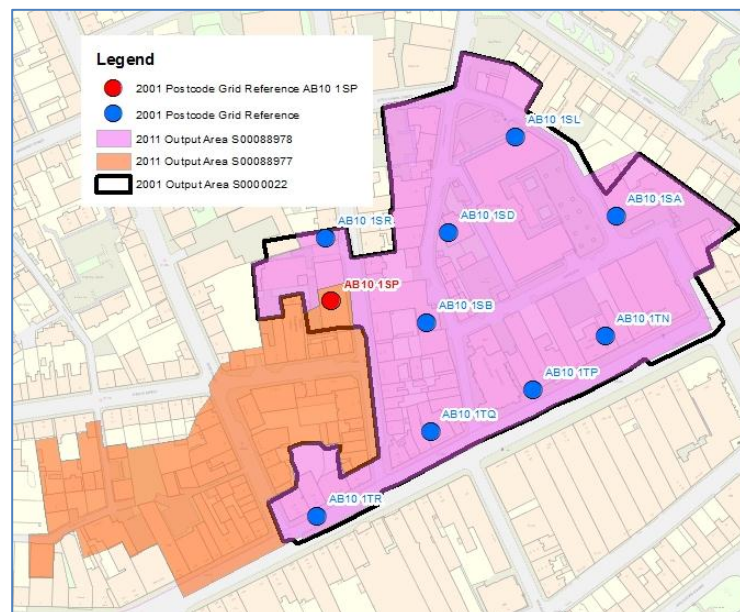
Since 2001, postcode boundaries have changed, new postcodes have been introduced and old postcodes have been removed. This erodes the link between postcodes and Output Areas, therefore postcodes for the intervening years are aggregated to Output Area level on a best-fit basis.

In the example below 2001 Output Area S0000022 contains 10 2001 postcodes.



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When you apply these 10 postcode grid references to the 2011 Output Area boundaries you get the best-fit allocation of 2011 Output Areas S00088977 and S00088978. This is due to one 2001 grid reference (AB10 1SP) falling within S00088977, and the other 9 2001 grid references falling within S00088978.



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The '2001 Output Area to 2011 Output Area – one to many' file provides a one to many look-up for all 42,604 2001 Output Areas (based on 2001 postcode grid references).

The breakdown per 2001 Output area is as follows:

Number of 2011 OAs (per 2001 OA)	Number of 2001 OAs
1	36,881
2	4,725
3	747
4	188
5	41
6	14
7	5
8	3
Total	42,604