

NRS Settlements and Localities and OS Open Built Up Areas

Note to users

This paper compares the National Records of Scotland (NRS) Settlements and Localities (S&Ls) geographies with the Ordnance Survey (OS) Open Built Up Areas (BUAs) product. The NRS Localities were first created for the 1981 Census, and Settlements were introduced for the 2001 Census. OS first released the BUA product in December 2022.

S&Ls and BUAs are produced independently of one another, using different methods, but show considerable overlaps. S&Ls represent areas of high density population and tend to reflect villages, towns and cities where people live, whereas BUAs represent areas of land use where people either live or work which are built up, and include features such as air fields, power stations and out-of-town science parks (but exclude transport links, e.g. motorways).

These geographies can help users to understand local areas and to aid decision making. S&Ls are published by NRS around every four years. BUAs are produced by OS and will be updated around every two years.

This note outlines the methods by which the geographies are created, their similarities and differences, and potential use cases.

How are they created?

The two sets of geographies are based on different 'building-blocks'. S&Ls are created by joining groups of densely populated postcodes together. Scotland is split into around 150,000 postcode units. Postcodes are classed as having high population density if they meet at least one of the following conditions: 5 people per hectare, 2.1 residential addresses per hectare, or 0.1 non-residential addresses per hectare.

Groups of adjacent, high-density postcodes that meet a population threshold of 500 people are then classified as Settlements. Settlements are separated by low-density postcodes. Settlements are sometimes split into smaller Localities to reflect historically recognisable towns and cities. For instance, the Settlement of Greater Glasgow is split into Localities such as Paisley, Giffnock, and the City of Glasgow itself. The boundaries and names of Localities are determined through consultation with Local Authorities, given their local knowledge of the areas. Further details of the method can be found in the [S&Ls Methodology Guide](#).

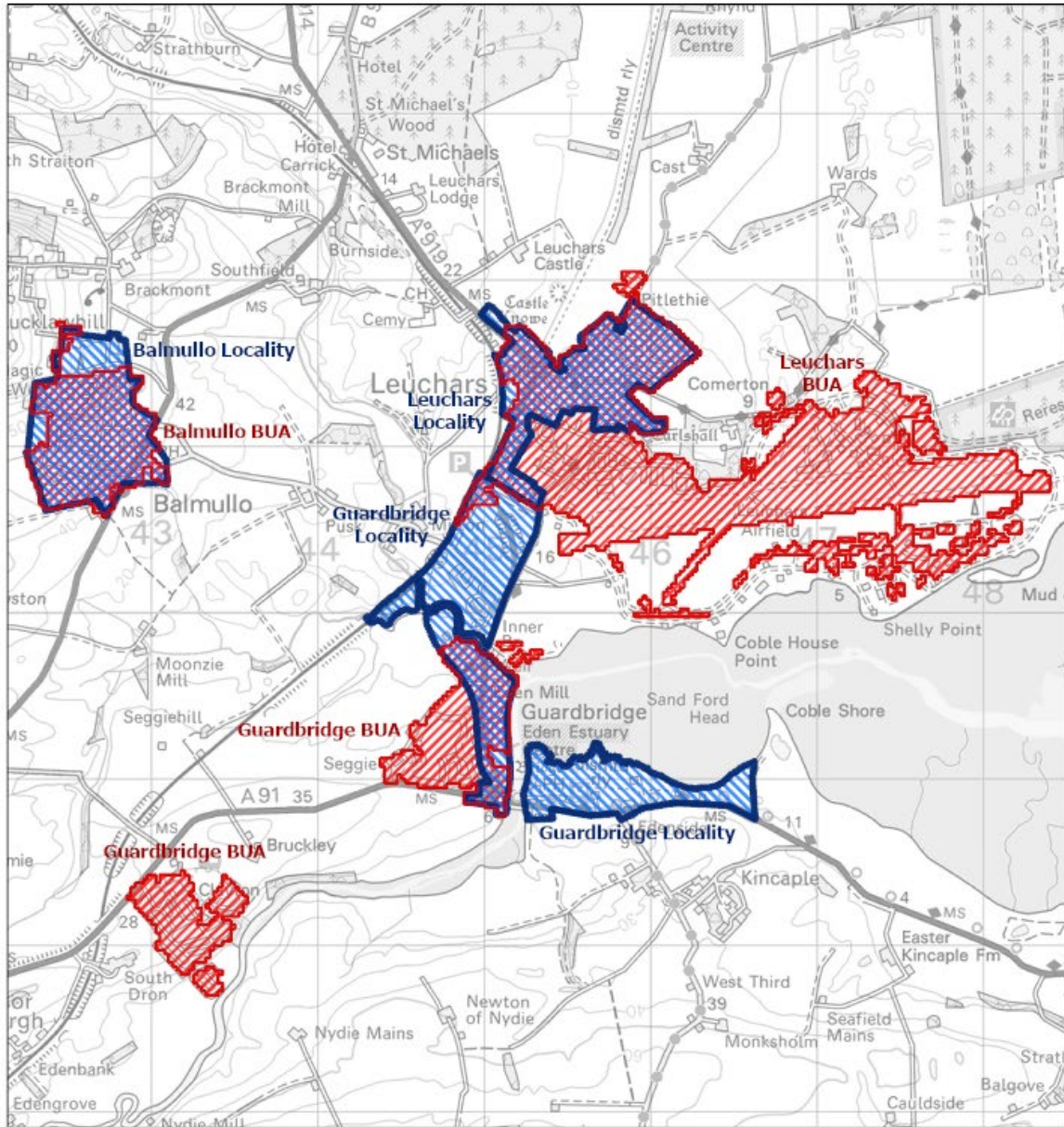
Built Up Areas (BUAs) are not aggregations of postcodes. Instead, the building blocks are 25m x 25m grid squares which cover Great Britain (GB). OS use topographic and land use site data to identify grid squares which are defined as 'built up' based on the proportion of features such as buildings, residential gardens, made surfaces (concrete, tarmac) and some roads contained within them. Names are then

assigned to each grid square using the OS Settlement Named Area dataset. Adjacent identically named grid squares are merged together. This step can create multiple polygons which share the same name but are not contiguous. If the area(s) for each individual name add up to a total area of at least 200,000 square metres, they form a Built Up Extent (BUE). The next step then fills in any holes within the Built Up Extent, i.e. all the grid squares which were not identified as 'built up' such as parks, greenspaces, water and roadside land (termed Non Built Up Extents), to create the full Built Up Areas. Further details of the method can be found on the [OS Open Built Up Area product page](#).

The example below shows the Localities and BUAs of Leuchars, Balmullo and Guardbridge in Fife. A further example below shows Aberdeen and the surrounding area.

NRS Localities (2020) and OS Built Up Areas (2022)

Example covering Leuchars, Guardbridge and Balmullo, Fife
 Overlaps between BUAs and Localities shown by hatched areas



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Scale 1:2,611,118

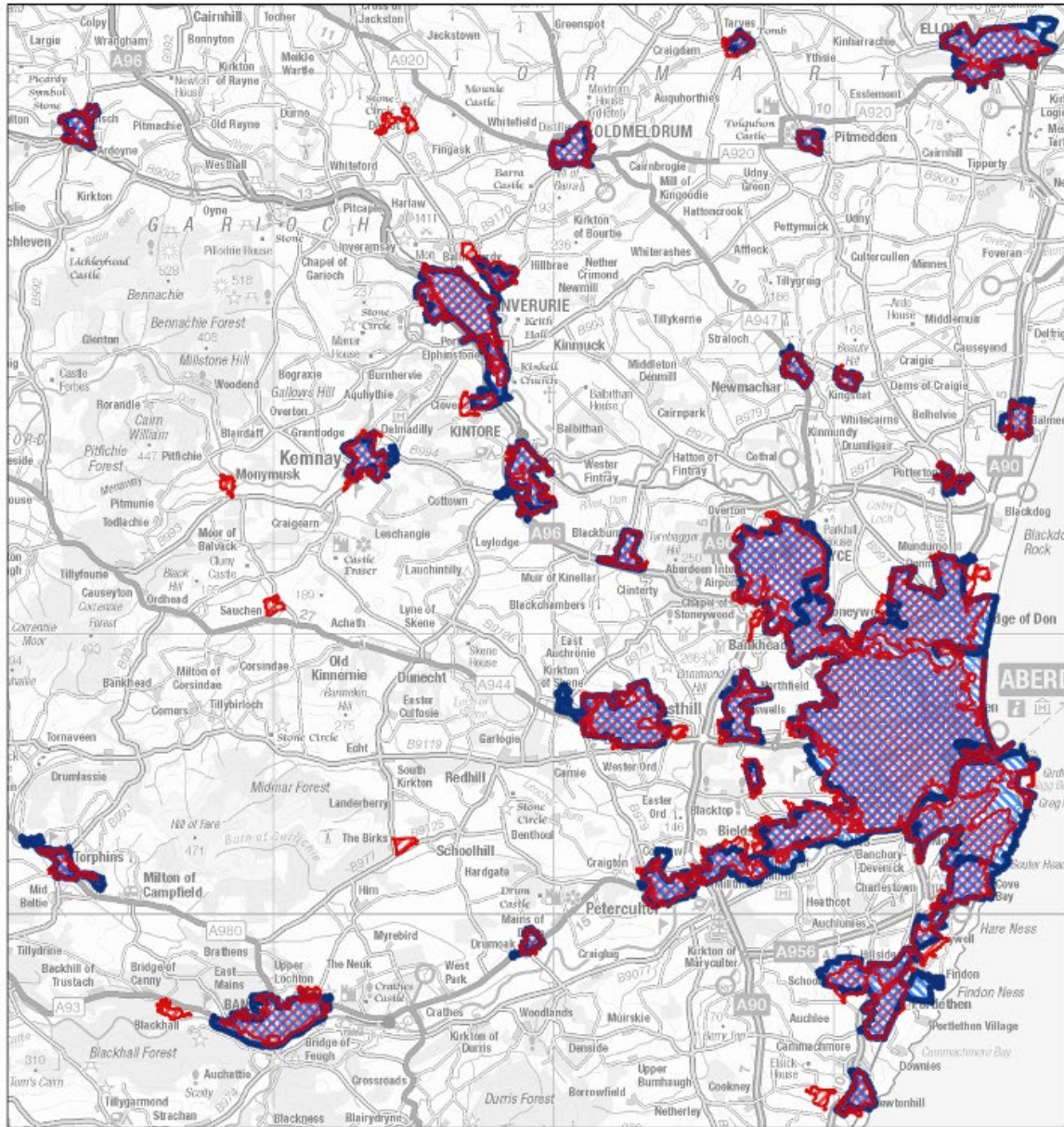
Scottish Government Geographic Information Science & Analysis Team, November 2022. Job6277.

 OS Open Built Up Areas 2022
 NRS Localities 2020

 Scottish Government
 Riaghaltas na h-Alba
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NRS Localities (2020) and OS Built Up Areas (2022)

Example covering Aberdeen and the surrounding area
Overlaps between BUAs and Localities shown by hatched areas



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Scale 1:2,611,118

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What are the key similarities and differences?

There are more BUAs in Scotland than there are S&Ls: 822 BUAs (December 2022 release) versus 656 Localities and 514 Settlements in mid-2020. As described above, BUAs are based on land use types, rather than population density. So, for example, air fields, power stations and out-of-town science parks may be classified as BUAs, but not S&Ls (unless they fall within areas of high population density).

Since S&Ls use a minimum population threshold whereas BUAs uses a minimum area threshold, there are some differences in terms of the smallest villages which are captured by each methodology. All BUEs (and therefore BUAs) have a minimum size of 200,000 square metres although, as noted above, a single BUA can be made up of multiple polygons (illustrated by Guardbridge and Leuchars in the example above). The population of BUAs can be under 500, and a small number of BUAs do not have any population living within them. S&Ls are always contiguous (unless split by water, as illustrated by Guardbridge in the example above), and do not have a minimum area (there are a small number below 200,000 square metres), but each S&L must contain a minimum of 500 people.

Additionally, since S&Ls use postcodes (which are manually drawn to follow recognisable features, where possible) whereas BUAs uses grid squares, the boundaries of the areas estimated by each method are not fully aligned.

What are the uses and potential use cases of these geographies?

The two geographies will likely have different uses. An important difference is that BUAs cover GB whereas S&Ls are only created for Scotland. If carrying out GB-wide analyses in which harmonised methods are important, BUAs might be the most appropriate geography to use. The same method is applied consistently across the entirety of GB, and Local Authorities do not have any input into the final boundaries, unlike for S&Ls which can be amended based on local knowledge.

Another potential use case for the interim BUE layer (which is the BUA without the holes filled in) is land use analyses, such as estimating the area of 'built up' land use within Scotland (excluding transport links, e.g. motorways).

For Scotland-only analyses, and in particular the dissemination of [population estimates](#) and [Census outputs](#) for Scotland, S&Ls would be the most appropriate geography. Settlements will also continue to be used to create the [Scottish Government Urban Rural Classification](#). Users may also prefer to use S&Ls to visualise the geographic areas of villages, towns and cities, as the boundaries often follow recognisable features, rather than a grid square pattern.

Reporting statistics

As described above, postcode units are used as the building block to create S&Ls boundaries roughly every 4 years. The population estimates are calculated per postcode unit, and can therefore be considered an exact fit to the S&Ls boundaries for the snapshot in time which they represent (e.g. that latest version of S&Ls represents the mid-2020 population). Over time, as the postcode units are revised

and updated in line with changes made by Royal Mail, it becomes necessary to best-fit the postcode units to the S&Ls. The NRS [Scottish Postcode Directory \(SPD\)](#), which is released twice per year, provides an up-to-date lookup of postcodes in Scotland to higher geographies, including S&Ls. BUAs are not currently included on the SPD.

For a majority of Official Statistics, Pillar 4 of the [GSS Geography Policy](#) is followed, which states that a best-fit approach should be used to report statistics for higher geographies. In Scotland, the best-fit building blocks are Output Areas (OAs) and Data Zones. For the Census in Scotland, the OAs are designed where possible to fit exactly within the Locality boundaries which are available at the time of the Census, and therefore produce a very accurate fit as a building block. For the 2011 Census, the OAs were designed to fit within an updated version of 2010 S&Ls. A lookup was published by NRS within the [OA to Higher Areas Index](#) and a further lookup published for the [2012 S&Ls](#). The further the date from the last Census, the less accurate the OA fit to S&Ls will likely be (e.g. there are two 2020 Localities which do not contain a 2011 OA centroid), therefore OA lookups are not published for non-Census versions of S&Ls. The OAs do not fit as accurately to BUAs, as the geographies are derived completely independently of one another; there are 55 BUAs (2022) which do not contain a 2011 OA centroid.

It is not recommended to use Data Zones as a building block for the full S&Ls or BUAs datasets, as the best-fit is not considered to be sufficiently accurate for a large proportion of S&Ls or BUAs. Therefore, neither of these geographies will be added to the Data Zone lookup on the Open Data Portal, [statistics.gov.scot](#) (only the population estimates built directly from postcodes are published for S&Ls on [statistics.gov.scot](#)). It is possible to report statistics for a small number of just the largest S&Ls or BUAs (e.g. those containing over 25,000 people) using Data Zones, as the quality of fit is deemed acceptable.

Links to further information

The S&L boundaries and background information are available on the [NRS website](#). The BUA boundaries are available on the [OS Open Data webpage](#). The BUA methodology documents are available on the [OS Open Built Up Area product page](#).

For queries on NRS S&Ls, please contact statisticscustomerservices@nrscotland.gov.uk
For queries on BUAs, please visit the [OS contact us webpage](#).
For queries on the NRS SPD, please contact geographycustomerservices@nrscotland.gov.uk