

# Information Note

## Settlements and Localities

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National Records of Scotland (NRS)

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## Introduction

The settlements of Scotland are built-up areas which round to 500 people or more, with larger settlements divided into localities to reflect areas which are more easily identifiable as the towns and cities of Scotland.

The NRS Localities were first created for the 1981 Census, and Settlements were introduced for the 2001 Census. The Settlement and Locality geography is created normally every two years.

Settlement and Locality boundaries are co-incidental; however, large settlements can be subdivided into two or more localities.

The Settlements and Localities also feed into the production of the Scottish Government's Urban Rural Classification which provides a consistent way of defining urban and rural areas across Scotland based on settlement population size and accessibility.

## Settlement boundaries

National Records of Scotland (NRS) create Settlement boundaries by categorising postcodes maintained in the Scottish Postcode Directory (SPD) as either high or low density. A postcode was defined as high density if at least one of the following applied:

- It had more than 2.1 residential addresses per hectare;
- It had more than 0.1 non-residential addresses per hectare; or
- The estimate of the population per hectare exceeds five people

The threshold densities were set as they were found to give a good approximation to the built-up areas identified in previous Censuses using traditional methods. The second condition was included such that non-residential parts (e.g., industrial estates) of built-up areas could be identified and included.

An additional rule was implemented from the 2016 version, which stated that any postcodes which fell within the previous version Settlement boundary (based on centroid point in polygon assignment) would automatically be included in the new Settlement.

The classified postcodes were then grouped into areas of neighbouring high-density postcodes, or 'Settlements'. Areas of low-density postcodes completely surrounded by the high-density areas (i.e., 'holes') were incorporated into the settlement. Population estimates for each area were then calculated, and any settlement with fewer than 500 residents was discarded. Lastly, Councils were consulted for their views on the proposed boundaries and, where possible, their suggestions were taken into account.

The process of determining settlements requires the identification of contiguous groups of high-density postcodes with a combined population which rounds to 500 people or more. A boundary for each settlement will then be produced, which is formed by the outer boundary of its constituent postcodes, whose individual boundaries have been digitally created by NRS according to data received from Royal Mail. When an outer boundary has been defined for a settlement, any 'holes' created by low density postcodes within the settlement, but surrounded by high density postcodes, will be filled in. The boundaries are also clipped to match the Ordnance Survey Mean High Water lines. The processing is carried out using ArcGIS software.

Although the process of producing settlement boundaries is intended to be automated, there is a certain amount of subjectivity relating to unit postcode boundaries which may require manual adjustments to be made. For many settlements, particularly in rural areas, there will be postcodes on the outskirts of a settlement which will include some buildings that are part of the settlement but also a large amount of rural land, and possibly some buildings that are far from the rest of the settlement but still share a postcode in common with buildings that are closer. The decision of whether to include or exclude such postcodes is made on a case-by-case basis by NRS, with input from local councils through the consultation.

As the postcode boundaries are drawn to include all land in Scotland, many coastal postcodes also contain islands, and for consistency these are included in the settlement boundaries. These islands can be far from the rest of the settlement and may not be inhabited at all.

Because of these properties of postcode boundaries, the supplied boundaries of a settlement may contain more rural land than the boundaries of the built-up area it is attempting to approximate. Density figures for individual settlements or localities are therefore not published as they might be misleading.

The settlement boundaries also include some non-contiguous postcodes, where due to the arrangement of addresses a postcode has had to be split into two or more separate parts. In places where a non-contiguous postcode has one part within a settlement and one part elsewhere, the settlement boundary has been modified to exclude the part of the postcode outwith the settlement. When only part of a postcode is in a settlement, the entire population of that postcode will be included or excluded as a whole, depending on which part of the postcode has been excluded. This means that addresses considered in the population estimates will not always correspond exactly to the addresses within the settlement boundaries.

## Locality boundaries

When settlement boundaries have been finalised, localities are then created by assigning any postcode located within a settlement to a locality based on a point-in-polygon (PIP) process with the previous version of the Locality boundary.

If a postcode has no locality value, then it is either assigned one based on the nearest locality to it or a new locality could be created.

Councils are then consulted for their views on the proposed boundaries and, where possible, their suggestions are taken into account

## Settlement and Locality Centroids

Each population weighted centroid was calculated using a median centroid algorithm, the result of which is less influenced by outliers than the result of an algorithm to calculate the mean centroid.

The process for creating Settlements / Localities centroids is automated using ESRI ArcGIS, but the general method is as follows.

1. The median easting and northing coordinate pair for all postcodes within the Settlement / Locality is calculated, giving a notional centroid of the Settlement / Locality.
2. The distance from each of the postcode centroids to the notional (or median) centroid is calculated using Pythagoras' Theorem.
3. The postcode coordinate pair with the shortest distance to the median is then chosen to represent the centroid of the Settlement / Locality.

## Methodology

Population and Migration Statistics branch are the owners of the NRS Settlements and Localities product.

Further information on methodology can be found in the [methodology guide](#) in the [Population Estimates: Settlements and Localities](#) section of the NRS website.

Changes to the methodology and publication are consulted on through the [Population and Migration Statistics Committee](#).

## Alternate Localities

NRS are aware that there are a variety of locality geographies used in Scotland. They often have similar names. Despite this, they have been compiled by many different organisations in several different ways. They have also been compiled for a range of purposes, which are not always compatible. It can therefore be somewhat confusing to understand what is meant by 'locality' or 'locality geography'.

A [paper](#) has been made available to assist users on what the definitions of each 'Locality' geography has.

## Ordnance Survey Built Up Areas

On 7 December 2022 Ordnance Survey released their Built Up Areas product which has some similarities to Settlements and Localities.

A [paper](#) comparing the National Records of Scotland (NRS) Settlements and Localities (S&Ls) geographies with the Ordnance Survey (OS) Open Built Up Areas (BUAs) has been produced to explain the key differences to users.

Further details on the methods for Built Up Areas can be found on the [OS Open Built Up Areas product page](#).