

POPULATION AND MIGRATION STATISTICS(PAMS) COMMITTEE (SCOTLAND)

Settlement and Locality Population Estimates

1. Introduction

This paper sets out the background and thoughts for moving forward post 2011 Census for population estimates for Settlements and Localities.

PAMS members are invited to comment on:

- the use of and demand for the estimates;
- how often they should be published;
- whether a consultation on boundaries should take place for outputs from the 2011 Census; and
- local authority involvement in quality assurance of subsequent estimates post 2011 Census.

Written comments will also be welcome to Esta.Clark@gro-scotland.gsi.gov.uk.

2. Background

2.1 Historical note on settlements and localities

Localities were first defined in the 1980s as there was a widespread interest in Census information for urban areas, which were more identifiable than administrative areas to answer questions such as what is the population of Paisley.

In 1999/2000, GROS published settlements data for the first time. These were introduced as settlements are more 'objectively' defined without requiring too much local knowledge and most policy requirements are for settlements rather than localities. However, figures for localities are still produced as these are more identifiable areas.

A full description of the history of settlements and localities is given in the Annex to this paper.

2.2 Recent estimates

Since the settlement and localities estimates published using 2001 Census data the following has been published:-

Latest [Mid-2008 Population Estimates for Settlements and Localities in Scotland](#)

Previous [Mid-2006 Population Estimates for Settlements in Scotland](#)

[Mid-2006 Population Estimates for Localities in Scotland](#)

[Mid-2004 Population Estimates for Settlements in Scotland](#)

[Mid-2004 Population Estimates for Localities in Scotland](#)

[Mid-2003 Population Estimates for Settlements in Scotland](#)

[Mid-2003 Population Estimates for Localities in Scotland](#)

'Mid 2008 Population Estimates for Settlements and Localities in Scotland' were published on 30 March 2010. The publication is a joint effort between the GROS Population and Migration Statistics branch and the GROS Geography team. The 2008 publication saw the introduction of a new system (FME) in the Geography department. Many of the problems/delays encountered during the process of the 2008 estimates were down to teething problems with the new system. It is hoped, that in future years, these problems /delays will not be encountered. More information on the current methodology can be found on our website.

2.3 Definition of settlements and localities

A settlement is defined as a contiguous group of high density postcodes with a population of 500 or more. A postcode is defined as high density (i.e. urban) if one or more of the following three threshold conditions are met:

- The number of residential addresses per hectare exceeds 2.1
 - The estimate of population per hectare exceeds 5
 - The number of non-residential addresses per hectare exceeds 0.1
- Otherwise, the postcode is classified as low density (i.e. rural).

Localities are intended to be more representative of the towns and cities in Scotland. Some settlements cover an extensive area, and consist of more than one distinct town or city. For example, the settlement of Glasgow consists of many towns, such as Paisley, as well as the city of Glasgow itself. So, some settlements are divided into constituent towns or cities ('localities'). The 2001 Census report 'Key Statistics for Settlements and Localities Scotland' is used as the basis for defining localities.

2.4 Use of settlement and locality population estimates

Settlements and localities are used in policy to define urban and rural areas. The main uses of the estimates are:

- To define 'ExcludedLand' in relation to the Community Right to Buy in Part 2 of the Land Reform (Scotland) Act 2003 - excluding settlements of over 10,000 people.
- To define areas as the basis of The Non-Domestic Rating (Rural Area and Rateable Value Limits) (Scotland) Order which gives rating relief to qualifying businesses in designated rural areas. This affects localities with a population below 3,000.
- To calculate the Scottish Government's urban/rural classification, this is updated every other year.
- To help reflect the needs of rural and remote communities across the range of Scottish Government (SG) policies and initiatives.

2.5 Demand

It is unclear how much demand there is for these estimates from users. Some councils produce their own settlement population estimates (based on GROS data). So, there is clearly some interest from local authorities. It is likely that local groups, such as community councils, would have uses for the estimates.

PAMS members are asked to give an indication of the demand and use of the estimates.

2.6 Timing

Settlement and locality estimates are not produced annually. The SG urban/rural classification, the main driver for the production of the estimates, is updated every two years. So the population estimates tend to be published to correspond with the update of the urban/rural classification.

There is no legal obligation to update the settlements annually (under the 'Right to Buy' act or the Non-Domestic rating legislation). It would appear that it is sufficient to use the latest available figures in these cases.

Settlement and locality population estimates tend to be published very late compared with other estimates for the same year. The 2006 estimates were published in July 2008 and the 2008 estimates in March 2010. This may encourage possible users who have a need for this data to look elsewhere for alternative, more up-to-date information. Aberdeenshire and Fife councils published their 2006 settlement population estimates ahead of GROS (with similar results) and other users may do the same.

PAMS members are invited to offer views on how often these estimates should be published:

- Do we need to produce settlement/locality population estimates on a biannual basis?
- Is there a demand for annual estimates?
- Would every three years be sufficient, if resources were scarce?
- Do we need to produce them at all?
- Are there alternatives that could be used?

3. Issues from the review of 2008 based estimates

3.1 Locality boundaries

- During the quality assuring stage of the 2008 estimates a number of inconsistencies were identified with Locality boundaries.
- It was expected, in general, that existing locality boundaries would match other sources such as Postcode Districts (e.g. EH49), Postcode Sectors (e.g. EH49 7), Local Authority (LA) boundaries, Assessor's Portal addresses (i.e. what town/locality a postcode is assigned to on www.SAA.gov.uk), [The Royal Mail website](#), ArcGIS (using it to look at geographical boundaries, like roads and farmlands) and to a lesser extent other internet sites such as Google.
- Although the vast majority of locality boundaries were as expected using these sources, a few varied slightly. Many of the variations were simply by the odd postcode so it was easy enough to switch them over. There were however several larger more interesting boundaries. Due to their size and the lack of time available to consult with PAMS LA members, these larger changes did not take place. Before the next publication one option is to consult with PAMS LA members to try and establish what boundaries to use. The main issues are:-
 - Mid Calder / East Calder in the settlement of Livingston
 - Glasgow boundaries, such as Clydebank / Old Kilpatrick. A large investigation on the whole of Glasgow is required.
 - Aberdeen boundaries
- Interestingly, the existing boundaries appear to match the Localities boundaries used in the 2001 Census (see <http://www.gro-scotland.gov.uk/census/censushm/scotcen2/reports-and-data/scotcen8.html>). This is likely to be the reason for the differences. They will have been left unchanged since this time (this does not mean it is correct though).

3.2 Settlement boundaries

Again there is the option for PAMS LA members to give their thoughts and opinions on settlements boundaries.

Issues with definition of settlements

Postcode boundaries

GROS Geography draw the postcode boundaries according to certain criteria (Royal Mail simply provide a list of households which are included within the postcodes). These criteria may not be suitable for defining settlement boundaries. We can get postcode boundaries changed, however this would only apply to future PAF files - it cannot be applied retrospectively.

A postcode with a small section of housing which is correctly included as part of the settlement also incorporates a rural area (for example, Ayr includes Preswick airport, a golf course and a caravan site, due to a few houses on the edge of the town).

Alternatively, part of the settlement can be excluded as it is part of a larger rural area and thus classified as low density.

Postcodes can also be multi-extent, with one part in a settlement and another part outside the settlement. This can also create problems when classifying postcode densities and deciding whether a postcode should be included in the settlement.

Multi-extent settlements

This is a settlement which used to be one whole area, but due to a change of a postcode from high density to low density, the settlement is now split into two. Should they be counted as two separate settlements? Also, any holes of low density postcodes with a group of neighbouring high density postcodes are added to the group.

Similarly, parts of a settlement can be missed altogether, if the smaller part of a town is separated from the rest by a low density postcode.

One condition that was applied in the past was that if two areas of high density postcodes were within 1 km of each other they were treated as the same settlement.

Lack of meaning of a settlement

Many settlements don't have meaning to those who live there, as they can cover extremely large areas, bringing together different towns. For example the settlement of Dunfermline covers the towns of Dunfermline, Crossgates, Dalgety Bay, Halbeath, Inverkeithing, North Queensferry and Rosyth. These settlements are split up into more local recognisable towns (localities), although the definition of localities can create problems.

Is the definition of a settlement to define large stretches of urban areas, as opposed to rural areas, or is it to identify the larger towns which people can go to (i.e. the larger towns with a greater variety of services, as opposed to a collection of smaller towns together?). But in terms of service delivery, an area such as North Queensferry may not offer the same level of services as a city such as Dundee, even though they are both in the top 6 settlements (in terms of population size) in Scotland.

3.3 Breaking Settlements

When working on the 2008 publication, a number of settlements were found to have 'loose' connections between localities in the settlement. These loose connections usually consisted of urban postcodes coded '3' in the shape files. This means that they had manually been added to the settlement/locality in a previous publication. Similar to above, as time was short it was decided not to remove any of these urban postcodes, and hence 'split up' settlements, as these kind of changes should really be cleared with local knowledge first. The following Settlements

have 'loose' joins in them and could be looked at in more detail for future publications, for example:

- Alloa – boundary between Alloa and Tullibody
- Galston – boundary between Galston and Newmilns
- Falkirk – boundary between Falkirk and Hallglen
- Dunfermline – boundary between Dunfermline, North Queensferry and Crossgates
- Kirkintilloch – Boundary between Lenzie and Auchinloch.

Threshold for density of postcode

There are set criteria for the whole of Scotland for calculating whether a postcode is high or low density. However, in the 2001 Census 'Key Statistics for Localities and Settlements' publication, the threshold was altered for Eilean Siar and Shetland Islands. This wasn't repeated in subsequent years, as it was decided that the threshold should be the same across Scotland (the main point is why should the threshold be lowered for Eilean Siar and the Shetland Islands, but not Orkney Islands and parts of Argyll & Bute and Highland).

Should we have the same threshold throughout Scotland and do we need to revise the population density thresholds, given the recent changes in household sizes?

3.4 Communal Establishment data

For the 2008 based estimates, a lot of work was spent looking at what was the best communal establishment (CE) data to use. For 2008, the most up-to-date version of CE from the Household Estimates and Projections (HEP) branch was used and we believe this is the best way forward for intercensal estimates.

3.5 Quality Assurance of estimates

Currently the Settlements and Localities publication goes through a number of quality assurance techniques.

The Quality Assurance process

Once settlements and localities that need special attention have been identified, they then need to be QA'd to establish if they are indeed correct. Any reasons uncovered are recorded for future reference.

When Quality Assuring settlements/ localities the following are looked at:

- New postcodes added to settlements and localities.
- Postcodes removed from a settlements and localities.
- Increase or decrease in the population of postcodes
- New urban postcodes that now connect two existing settlements / localities or connect a settlement / locality to another group of high density postcodes.
- Locality boundary changing within a settlement.

Population change within a postcode:

Many changes may be able to be identified by changes in populations for postcodes in the area. Reasons for large changes include:

- New housing built / Old housing removed - Dwelling counts data, ArcGIS, Google maps, Royal Mail, PAF, SAA
- Change in Communal establishment population
- Big increase or decrease in 2008 SAPE data. This will then filter down to all the existing housing in the data zone
- Postcode switches datazone – this happens when more dwellings lie in a different datazone and so all the dwellings in that postcode move across to the new data

zone. This will in turn affect the number of houses in a data zone and hence alter the person per house ratio – PAF, ArcGIS

Postcodes switching between high and low density:

It should be noted that there are three reasons for a population to be defined as high density. If a postcode has switched from low to high or vice versa, a few things can be checked:

- All the reasons detailed above affect postcodes population. If the population changes then naturally the status of the postcode can switch.
- Number of non-domestic properties changes. This is slightly harder to check but ArcGIS and the PAF offer help.
- If the area covered by postcode changes, then the status can also change. ArcGIS can help with this by using an older version of a postcode layer to see size change. The PAF may also help.

Urban rating:

- Each postcode included in the 2008 data from Geography will be assigned a special 'Urban rating'. This number is effective in the QA process. The numbers are:
 - 0 – A rural postcode.
 - 1 – Urban postcode that has previously been included in a settlement
 - 2 – Urban postcode not previously included in a settlement.
 - 3 – Rural postcode that has been manually added into a settlement in the past.
- All settlements which were either 'new', potentially merging with another settlement or moving over a urban/rural threshold were identified, a case study was done for each allowing close examination of the results.

Further checks on remaining settlements and localities:

- Once problematic settlements and localities have been identified from the QA process and have been fully checked, a final check of other settlements and localities is required.
- It involves going through each settlement systematically and checking the boundary and also assessing if anything looks suspicious on ArcGIS. The boundaries separating localities also need to be looked at to make sure they have not changed and still look logically right. Checking the boundaries involves looking for:
 - Postcodes that do not look high density but are included within the boundary
 - Postcodes that do look high density and are not included
 - Either on their own right or
 - Because they are not connected to the settlement due to a low density postcode (e.g. a new housing estate on the other side of a river).

Despite all these checks there is always room for further Quality Assurance. Below are some of the future possibilities:

- While calculating the postcode population estimates it is necessary to first calculate the 'population per household'. This is currently calculated by dividing the Small Area Population Estimates (SAPE) population (minus any communal establishment population first) by the number of residential delivery points in the data zone. Some of these data zones, as a consequence, will have unrealistic populations (e.g. in 2008, some DZ had populations of less than 1 person per house – due to large areas of vacant dwellings skewing the results). If time permits, it may be worthwhile investigating why some of these data zones have particularly high (or low) populations. This unfortunately was never done in detail for the 2008 based estimates. There could be several reasons for high/low levels:

- High level of empty properties or 2nd homes in a data zone
 - New housing developments which have not been filled yet
 - Area set for demolitions e.g. tower blocks being cleared
 - Change in communal establishment data either due to a new building (like a new student hall) or the closure of one.
 - Quality of the SAPEs.
- Seeking PAMS representatives' views on the publication and boundaries of both Localities and Settlements. In order to do this, more time would need to be built in to the publication process pushing back the publication date as the work needs to be completed early in order to give time for feedback and if necessary, changing boundaries etc.

4. Methodology Going Forward

- As a branch we are always looking to introduce and improve statistical methodology that will result in increased accuracy and efficiency. There are a few routes this publication can go down in order to try and improve the quality of the outputs.

Community Health Index (CHI) analysis

- CHI can be used to estimate populations at postcode level, as on the dataset postcodes are included. A few issues resolve around the CHI:
 - The CHI currently overestimates the population. This is traditionally around young males. If the CHI was to be used then an appropriate weighting system would be required to pro-rata it back to the same populations as the SAPEs.
 - A large methodological change like this would require lots of planning and analysis, as well as consultation with user groups. It is potentially a lot of work.
- Potentially the CHI could provide an accurate alternative to the current methodology used. However, the 2012 estimates will likely be ready for publication towards the end of 2013. At this point we are likely to have Census data which will be more accurate than the CHI. It therefore has to be decided if all this extra work is worthwhile for one publication – the 2010 estimates. We believe that time is better spent QAing the Localities boundaries and/or the SAPEs. Both of these exercises will likely have a bigger impact on the quality of the estimates produced. It does however remain an option.

Scottish Assessors' Portal

- The Assessor's portal can provide a snapshot of all ratable dwellings at any particular date. It is possible that this count will be more accurate than the current Royal Mail household count. As an administrative dataset, the quality is good and it is updated regularly (rather than twice every year like the PAF). Also of interest, is that if a data set is specially requested, the number of 'habitable' rooms is also available. This has the potential of being able to alter the population per house to reflect the size of the house. It does have disadvantages though:
 - 'Habitable' rooms per dwelling is not available in Shetland and different assessors' regions may have different definitions of habitable rooms. The latter should not be too big an issue as data zones are in large unique to Assessors' region. The former results in two methodologies being used. Again, this should not be major problem.
 - The snapshot also contains around 2,000 dwellings that do not have a postcode designated to them. The Matchcode PC and manual match work can be used, however this is time consuming. This work is carried out every year by the Households branch, but their work is based on data requested at the start of the year, not in mid-year which ideally is what is required.

- The snapshot also contains lots of new builds, some of which may still be unoccupied. Including these dwellings could affect the true populations. This however could also be the case for the latest PAF.
- Regardless of what household address list is used to calculate postcode populations, it will always be the Royal Mail's habitable dwelling list that is used when calculating the number of dwellings per hectare (one of the criteria for being a high density postcode). This has already been written into Geography's system and will not change.
- It may be an interesting exercise to compare the dwellings from the Assessors' portal with those found in the Royal Mail. Any large scale differences can then be examined to see which source is likely to produce a better estimate of occupied dwellings.

Small Area Household Estimates (SAHE)

- The HEP branch has a collection from September each year which contains details of the number of households in a data zone that are empty properties or 2nd homes. Unfortunately, as this is produced/available at data zone level, it has little scope to be used to improve the postcode results directly. There may however be scope to use it to help quality assure our postcode estimates. For example, when looking at a data zone's population per dwelling ratio, a large number of 2nd homes or empty properties may help to explain this.

Much of the development work outlined here on the methodology will be subject to the availability of resource to take forward over the next year or so.

5. Content of future publications

- The following are some ideas for the next publication
 - **Maps**
Maps would be a useful addition to the publication. It is expected that it would especially be useful to members of the public and enhance the usability of the data.
 - **Shape files / postcode index files**
LAs have a desire to get a hold of shape files in order to compare their own in-house methods with GROS's populations. Currently, they are not given out as standard, but are available to anyone that requests them.
 - **News Release**
For the past few publications, no news release has been issued. This has possibly been a mistake with good media opportunities lost. It is likely that attention for the publication would mainly come from local papers - a news release would help their attention to it.

6. Locality and Settlement boundaries for the 2011 Census

6.1 2011 Boundaries

There is an opportunity with the 2011 Census to consult local authorities on the boundaries for localities. The benefit would be to get local knowledge on the boundaries - however, the way the new geography system works is that most of it is carried out automatically. If local authorities come back with a large number of changes, then the speed of being able to produce these estimates diminishes, as more manual intervention will be needed. Another option is to ask local authorities to comment on those areas that are flagged up as part of the quality assurance process undertaken by GROS (see 3.1 above for the examples from the review of the 2008 based estimates). So GROS would produce the 2011 Census Day settlement and locality

estimates then for those areas that are flagged up as part of the quality assurance process ask those local authorities for comments based on their local knowledge to help decide what action should be taken.

PAMS members are invited to comment on whether a full scale consultation should be carried out on the boundaries, or whether only those areas which are flagged up in the GROS quality assurance process are sent to the relevant local authorities for their views.

6.2 Outputs

The spring 2010 consultation about statistical outputs from the 2011 Census identified a continuing user requirement for settlements and localities as intermediate geographies for standard census outputs. This requirement is therefore being factored into the development of detailed plans for the set of 2011 Census output products. No decision has been taken yet as to whether or not to publish an update of the “Key Statistics for Settlements and Localities Scotland” report which was produced following the 2001 Census.

Locality boundaries are one of the design constraints in the process being developed to create the census output area building blocks for the 2011 Census outputs. The business rules for creating these involve grouping postcodes to nest as well as possible into the following areas: local authority, locality and 2001 Census output area. These areas are listed in order of preference, which has to be applied when postcodes don't fit into a single combination of these. All output areas must fit within a local authority, and it is desirable that they also fit within the other two areas. The locality boundaries to be referenced by the output area creation system will be the most currently available ones at the time the output areas are due to be created (provisionally August 2012).

GROS: Population & Migration Statistics Branch

30 September 2010

Annex - History of Definition of 'Urban' Areas at the General Register Office for Scotland

(from '[Scottish Settlements – Urban and Rural Areas in Scotland](#)', published February 2001)

Terminology and definitions

1. The Census Offices and Census users have used various words for the concept of an 'urban area'. The present definition used at the General Register Office for Scotland is that a settlement consists of one or more neighbouring localities and is entirely bounded by land designated as rural - or by water. Thus Saltcoats, Stevenston and Ardrossan are three localities on the Ayrshire coast and comprise a single settlement because each has a common boundary with one or more of the other two. Similarly the four localities of Kilwinning, Dreghorn, Irvine and Springside form a settlement.
2. For some purposes, a settlement is defined as comprising localities with less than a given distance between any pair of them, so the seven localities above could, in these cases, form a settlement. For the purposes of this paper, the definition of a settlement in the previous paragraph is used.
3. A locality within a settlement has no cast-iron definition. The process that created localities for previous Census included an element of subjectivity. For instance, where does Saltcoats end and Stevenston begin? Settlements are less subjective in that they are defined only by the distinction between 'urban' and 'rural' and not by the division of an urban area into smaller urban areas.

Why define localities or settlements at all?

4. When the former regions and districts came into being in May 1975, we lost the small local authorities known as large and small burghs. However, Census users still stated - and continue to state - a need to know the population (and characteristics of the population) of such areas. For example, an 'urban and rural' division is used in the calculation of Grant Aided Expenditure for local authorities. Village shops are now exempt from business rates if they are in settlements of less than 3,000 population. Furthermore, land reform legislation being drafted by the Scottish Executive will apply only to rural areas of Scotland, defined as those parts of Scotland which are not settlements, as well as any settlements which fall below a minimum threshold number of residents.

The 1981 Census

5. By examining maps, GROS defined localities as 'continuously built-up areas that had approximately 500 or more population at the time of the 1971 Census'. In many cases, built up areas were split into localities based on the former burghs. Also some 21 localities were identified that had not been burghs. Each locality could be expressed in terms of one or more Enumeration Districts (ED), the basic output area for the 1981 Census. In all, some 540 localities were defined. These were grouped into settlements (as then defined) and an urban-rural code allocated to each settlement according to its population. This code for the settlement (1 to 5) was also assigned to each constituent locality, ED and postcode.

The 1991 Census

6. For the following Census, the General Register Office for Scotland had digitised the boundaries of postcodes. It was decided to use this information in creating localities, as we would have the population density for each postcode. So firstly postcodes were classed as urban or rural. A postcode was urban if either it had been assigned to a locality in 1981 or it had 5 or more persons per hectare. Then, groups of neighbouring postcodes were identified and, if the population of the group was 500 or more, the group was designated a locality.
7. Because this method would not identify non-residential areas that had come into existence since 1981, we decided to ask local authorities to scrutinise these localities and, where appropriate, suggest amendments. Following the acceptance of most of these amendments, we had the final allocation of postcodes to localities. Several additional localities, typically in crofting areas where many dwellings in villages had several hectares of land attached, were created at this stage. In these 'crofting' localities, all or most of the constituent postcodes were not 'urban' as defined above.

These localities were accepted as such because, despite their low population density, they were considered to be villages acting as centres of local activity in a similar way as higher density localities elsewhere in Scotland. Finally, as for 1981, localities were grouped into settlements and an urban-rural code assigned.

8. For confidentiality reasons, the statistics for any 'higher area' such as locality were aggregated from the best-fitting set of output areas. Output areas had already been created and therefore did not nest within localities. For the smaller localities, the best fit was not all that good. We had presentational problems in explaining the difference between a locality defined in terms of postcodes and the area for which we had produced statistics (one or more output areas).
9. Even when defined in terms of postcodes, some localities included large tracts of rural land outside the built up area because these tracts had been (arbitrarily) included within the boundary of some of the locality's postcodes.

Since 1991

10. We have maintained the 1991 locality and the urban-rural code on our postcode index. Any new postcode is assigned (by point-in-polygon) to the 1991 locality into which its centroid falls.
11. We have also been tidying up the boundaries of postcodes on the edge of a 1991 locality. The aim is to redraw the boundary of any postcode that includes both a built up area and a large tract of unpopulated land so as to exclude the latter. This will help in enumeration district planning for 2001, as it helps ensure that an urban enumeration district can be mapped more simply than if the enumeration district included both urban and rural territory. In terms of differentiating between urban and rural parts of Scotland, it also provides a far more robust solution.

For 2000

12. We have created a new set of settlements by the following two-stage process. First, we identify 'urban' postcodes. A postcode is 'urban' if at least one of the following applies:
 - it has more than 2.1 residential addresses per hectare; or
 - it has more than 0.1 non-residential addresses per hectare (Note that any large user postcode which falls into a small user postcode counts as 2 non-residential addresses).
 These density thresholds are revised downwards for some Council Areas (generally those with communities) in order to ensure that at least 95 per cent of postcodes in 1991 localities are selected as 'urban'. This downward revision is largely to achieve some level of continuity with the low density localities added in 1991.
13. GROS determines the number of 'non-residential' addresses in a postcode by examining the text recorded by Royal Mail for each address. This method has been tested in Census tests where Census enumerators have to check addresses on the ground. As for 'large user postcodes', these are postcodes each containing one address that receives a large number of items per day. Royal Mail make special arrangements for delivery. GROS do not attempt to map these postcodes. Instead we link each one to a small user postcode by locating the address of the large user on our map and assigning it to the small user postcode within whose boundary it falls.
14. Having identified urban postcodes we will then identify any clump of neighbouring urban postcodes containing more than 210 residential addresses. A clump is made to include any 'holes' i.e. non-urban postcodes entirely surrounded by urban ones.
15. We ran this process on the 2000/1 version of the postcode index and boundaries available last January. The allocation of postcodes to settlements and assignment of urban-rural codes was complete in March when we issued a postcode index to supplement the 2000/1 index. Users can combine the two indexes and, with the 2000/1 boundary set, create settlement boundaries with population estimates. We also issued a settlement index giving the name, code and number of residential addresses of each settlement.
16. Compared with that for 1991 localities, this method: uses addresses to create population estimates, which ensures the exercise can be repeated outside Census years; uses two densities rather than one; adding a density for non-residential development helps ensure that unpopulated urban areas are picked up and classified appropriately; and provides continuity with the previous

exercise by, for some council areas, adjusting standard density thresholds rather than automatically including urban postcodes from the previous exercise.

17. We now aim to refine our methodology further and will be interested in the views of users.

2001 Census

18. We plan to freeze our postcode index and boundaries for the 2001 Census on 24 January 2001. We intend to use this frozen version of the products in place of one of the regular releases of index and boundary, either the 2001/1 release (that would have been issued in January 2001) or the 2001/2 release (July 2001). It seems best at the moment to issue 2001/1 as normal, and the frozen Census products as 2001/2.
19. The process for 2000/1 described above (amended in the light of user comment and further research) will be repeated for the frozen index and boundary. A supplementary postcode index and settlement index will be released.
20. At some point during Census processing when we consider that the number of households and residents in each postcode has stabilised, output areas will be created using, among other things, the allocation of (frozen) postcodes to settlements. The resulting products are a supplementary postcode index linking postcode to output areas, and an index linking output areas to 'higher areas' including 2001 settlements. Boundaries of output areas and settlements may also be released but users will be able to generate these products from the indexes and postcode boundaries.
21. For the 2001 set of settlements at least, users may want a division into constituent localities. If so we will have to find a way of dividing the settlements into localities. The boundaries of the 1991 localities should be a useful starting point for such an exercise. However, there will have to be an interactive (i.e. subjective) element in the process of making a set of 1991 localities fit the area of a settlement. For example, where the 2001 settlement is larger than the equivalent group of 1991 localities, then each 1991 locality would have to be 'extended' so that all of the 2001 settlement is apportioned.
22. Note that the 2001 settlement will have been created without using Census data. However, a simple estimate of population has been made consistent with the mid-1999 estimates for council areas.