About the Built Up Areas (BUAs)

Background

In 2018, the Central Statistics Office (CSO) carried out a review of the Census 2016 Settlement boundaries. The review highlighted some issues with the methodology used to produce Settlements. In particular, the risk of statistical disclosure between Settlements and Statistical small areas (SSA).

As part of the review, the CSO began formulating a methodology to objectively identify and delineate Settlements moving forward and align them to SSAs. It was decided to broaden the exercise to include stakeholders and redefine Settlements. A working group was formed between the CSO, the Department of Housing, Local Government and Heritage (DHLGH), and Ordnance Survey Ireland (OSi, now Tailte Éireann), and a formal methodology was developed and agreed.

What are Built Up Areas (BUAs)?

Built Up Areas (BUAs) are a new statistical Geography released as part of Census 2022, created by combining small areas to identify the footprint of urban centres across Ireland. They are generated using an objective algorithm run across the State that is used to group buildings together into BUAs.

How do they differ from the town boundaries in the 2016 Census?

The key difference between Settlements and BUAs are:

   1) The criteria used to define them
   2) How they are drawn

In terms of how they are drawn, Settlements were drawn manually by CSO staff following the census, whereas BUAs are drawn automatically by Tailte Éireann. The criteria are quite similar. Settlements used 50 occupied dwellings as a starting point, BUAs on the other hand use 100 buildings, not just dwellings.

Who decided on the methodology to define BUAs?

The methodology was agreed between CSO, OSi (now Tailte Éireann) and other Government Departments including DHLGH.

What is the difference between the methodology used for Settlements in 2016 and that used for Built Up Areas in 2022?

There are lots of ways to define 'urban areas', two of the most common are:

   1) Land cover definition (e.g. urban areas are demarcated by a certain % of artificial land cover)
   2) Population definition (e.g. urban areas are demarcated by a certain population density and/or total population)

Different definitions suit different users and purposes, BUAs represent a land cover definition, while Settlements ultimately represent a population definition, they are simply different measures of the same subject.

Can I get data from Census 2022 to compare with the Legal Towns defined in previous Censuses?

Legal Towns were abolished in 2014 following the passing of the Local Government Reform Act. In response to user needs, the CSO revised Settlements to ensure they aligned with Legal Towns in so far as possible. The CSO will make total population figures for 2022 available using the 2016 Settlement boundaries to facilitate comparisons for users, but the BUAs will be the primary basis on which the CSO reports town populations for Census 2022 and the urban geography the CSO will use to produce detailed attribute data.

How do Settlement and BUA boundaries differ?

The two definitions are quite similar, in general BUAs have less green space than Settlements around their fringes.

What impact will these changes have on town populations?

As they are defined differently, the population figures won't exactly match between Settlements and BUAs. Users can use the figure/definition that is most appropriate for their use case, but BUAs will be the primary way in which the CSO will report on urban data for Census 2022.

Why is what was previously a Settlement not a BUA/Town?

In Census 2016, there were 874 settlements. These are replaced in Census 2022 with 867 BUAs/Towns. There were a small number of settlements that were not possible to recreate given there is a requirement for Statistical Small Areas (SSAs) to respect the CSO Electoral Divisions (CSO EDs). Certain CSO EDs are built entirely off an SSA and, therefore, it was not possible to split or redraw these.

Why is a specific SA excluded from the BUA/ Town although it appears to have previously been included in the settlement?

Generally, this case arose because the BUA/Town is bisected by a CSO ED and the resulting parts are too small to be considered Statistical Small Areas (SSAs). The SSAs are the building block for the BUAs/Towns and they must respect the hierarchy of CSO EDs. An aim of the BUAs/Towns is to ensure statistical confidentiality and this is achieved by geographical nesting boundaries. In Census 2016, this was not the case for the relationship between Settlements and Electoral Division. Typically, an SSA was not included in the BUA because (1) did not meet the BUA criteria, (2) it was bisected by a CSO ED and/or (3) the SSA has changed when reviewed and is no longer in the BUA.

How will this new methodology impact on Census 2027?

BUAs are now an integral part of the CSO's statistical small areas product (SSA), as it is combinations of statistical small areas that define built up areas. After each census, statistical small areas are reviewed to ensure they fall within agreed limits. Reviewing the boundaries of BUAs (as they relate to the shape of statistical small areas) after each census cycle will be required moving forward.

Will there be more changes for the next Census?

All statistical boundaries are reviewed after each census to ensure they are within agreed tolerances in terms of the number of dwellings and/or the total population living there. Each cycle, changes are made and these are flagged to users.

Does this new methodology impact Electoral Divisions?

No. The creation of CSO Electoral Divisions (EDs) is an independent exercise designed to ensure the set of EDs mirrors the legally defined set as closely as possible while ensuring they meet minimum population totals and are suitable for the dissemination of statistics. Small Areas (and by extension, Built Up Areas) nest to CSO EDs, not the other way around.

How will this affect investment in rural towns and villages?

The definition of BUAs was agreed in consultation with partners including the DHLGH. The methodology is primarily designed for monitoring urban development into the future and to protect against statistical disclosure. To understand how census boundary reviews may impact on policies and decisions, users should consult with DHLGH.

How does new methodology improve Census products for users?

As previously outlined, this methodology has been agreed between the CSO, the DHLGH and Tailte Éireann. It leverages modern technology to objectively define boundaries based on a land cover definition. The CSO is confident that this methodology provides an effective solution to managing boundary reviews for the future. Importantly, it also eliminates the risk of statistical disclosure.

This page provides an extract from the Tailte Éireann (formerly Ordnance Survey Ireland) document, *Urban Settlements BUA- Methodology/Rulebase v1.0.*

The Detailed Methodology / Rulebase as outlined in the document is reproduced below with the kind permision of Tailte Éireann.

The term "*BUA*" is defined as "*Built Up Area*".

Bua Hull Criteria

A ruleset requires building of a BUA based on groupings of 100 buildings at least within at least 65m distance. This was broadened from residential initially to include Business Parks/Industrial Estates/Retail Parks.

Prime 2 features included in the building of the BUA Hull and criteria are listed below

The features are identified for inclusion based on the criteria listed and a concave hull is drawn around the features to form the BUA Hull for the settlement

Prime 2 Features and Criteria

Prime 2 Feature	Definition	Criteria	Example
Building Polygon	All buildings excluding Outbuildings	Buildings need to be within 65 meters of another building Within a group of 100 buildings or more Building groups of 100 buildings or more need to be within 500m of each other.	
Vegetation Polygon	Pitch GAA Pitch Rugby Pitch Soccer Pitch Hockey Tennis Court Athletic Track Race Track Pitch and Putt Sports Ground Sports Ground Multiple Use Show Ground Polo Ground	All features within the original Settlement Boundary	
Artificial Polygon	Pitch GAA Pitch Rugby Pitch Soccer Pitch Hockey Tennis Court Athletic Track Horse Racing Track Pitch and Putt Sports Ground Sports Ground Multiple Use Show Ground Polo Ground Dog Racing Track Basketball Court Sports Arena Sports Surface Sports Surface Multiple Use Playgrounds	All features within the original Settlement Boundary	

| Prime 2 Feature	Definition	Criteria	Example
Water Polygon	River River Tidal Canal	All features within the original Settlement Boundary	
Site Polygon	Business Park Retail Park Shopping Complex College Caravan; Park Hospital Complex School Industrial Estate	All features within the original Settlement Boundary	

Exceptions

Overlapping Settlements	Example
Using this distance based ruleset outlined above buildings can fall within more than one settlement boundary and considered as part of multiple settlements (This is evidenced in towns that are in close proximity to each other).	

Overlapping Settlements	Example
In the scenario where a building is defined as belonging to 2 or more separate settlements the distance is calculated from the building to the centroid of the surrounding settlements. The building is assigned to its closest settlement group to keep settlements distinct from each other.	

Nested Small Area Criteria

Nested Small Areas	Criteria
Small Areas that Intersect with the Hull Boundary are selected and the % of the Small area that falls within the BUA Hull is calculated	60% of the Small area needs to be contained within the BUA Hull
	If 60% or more of the Small area falls within the BUA Hull that full Small Area is selected for inclusion in the final settlement
	Small areas that meet the criteria above are then dissolved to create one area boundary for the settlement. This can be made up of a single or multi part polygon
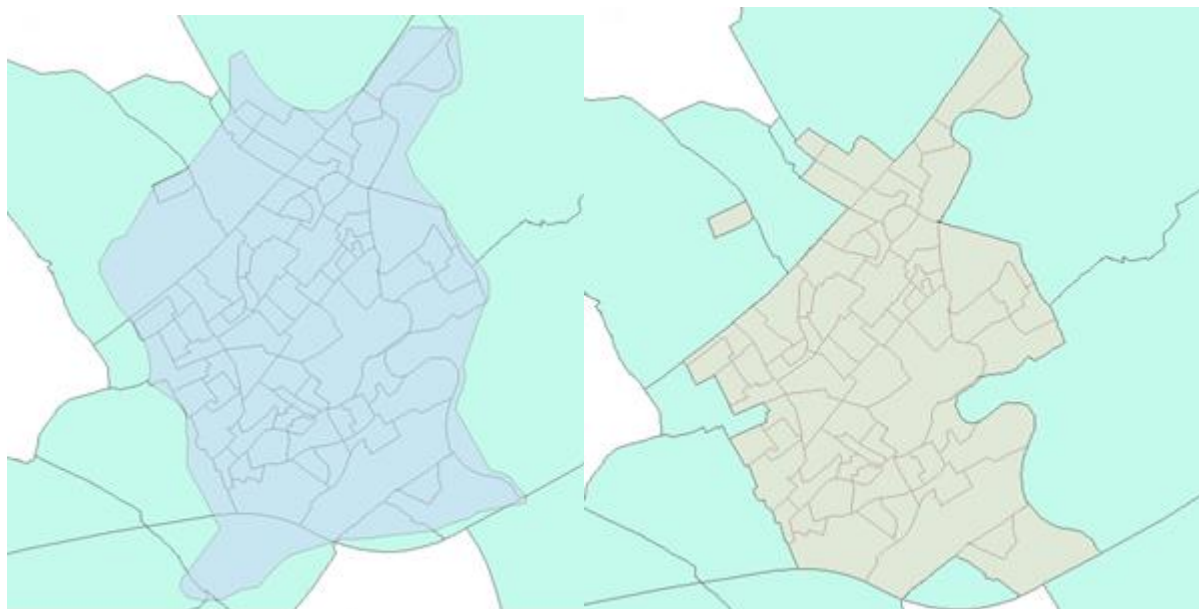
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Introduction

A review of the geographical boundaries is undertaken by the Central Statistics Office (CSO) after each Census, i.e. every five years. As part of the most recent review which took place after Census 2016, it was decided to broaden the examination of urban boundaries to include key stakeholders and a working group was formed in 2019 between the CSO, the Department of Housing, Local Government and Heritage (DHLGH), and Ordnance Survey Ireland (OSi, now Tailte Éireann). The three organisations agreed to examine urban boundaries in Ireland, and a formal methodology was developed and agreed.

The outcome of this working group was the creation of a new urban geography called Built Up Areas (BUAs) which has been used to produce Census 2022 data for urban areas. The BUAs were developed from clusters of urban development and their boundaries reflect land use for urban purposes. In order to remove the risk of statistical disclosure, the BUAs are comprised in their entirety of whole Statistical Small Areas, which were subject to a separate review following the last census. The identification of BUAs and the extent of their boundaries were generated using an objective algorithm run across the State based on building clustering and urban land use.

As BUAs have been defined differently to the Settlements used in Census 2016, it is not possible to compare them directly. BUAs and Census 2016 Settlements differ primarily in that BUAs are based upon a land-use definition whereas Settlements were based more on population concentration. This entails that there was more green space in Settlement footprints than is the case for BUAs. The BUAs will be the primary urban geography for the Census 2022 dissemination programme and will be used in the thematic publications and other statistical products. Total population from Census 2022 for the 2016 Settlements is available as part of Profile 1, but this is provided for comparison purposes only. No attribute data will be published for the Settlements as this would create disclosure risk.

Background

Across the history of censuses in Ireland, towns have been defined in different ways. For the censuses of 1926 to 1951, a census town was defined simply as a cluster of 20 or more houses and the boundaries of towns were left to the discretion of the individual enumerator concerned. As part of the general review of towns for the 1956 census, the boundaries for the census towns were drawn up in consultation with the various Local Authorities applying uniform principles in all areas of the country. Following this, the definition of a census town was changed at the 1956 census, from 20 houses to 20 occupied houses; this definition was also applied at the 1961 and 1966 censuses.

From 1971 to 2006, Census towns were defined as a cluster of 50 or more occupied dwellings where, within a radius of 800 metres, there was a nucleus of 30 occupied dwellings (on both sides of a road, or 20 on one side of a road), along with a clearly defined urban centre (e.g. a shop, a school, a place of

worship or a community centre). Census town boundaries were extended over time where there was an occupied dwelling within 200 metres of the existing boundary.

To avoid the agglomeration of adjacent towns caused by the inclusion of low-density one-off dwellings on the approach routes to towns, the 2011 criteria were tightened, in line with UN criteria.

In Census 2016, a new Census town or Settlement was defined as a minimum of 50 occupied dwellings, with a maximum distance between any dwelling and the building closest to it of 100 metres, accompanied by evidence of an urban centre (shop, school etc). The proximity criteria for extending existing 2006 census town boundaries was also amended to include all occupied dwellings within 100 metres of an existing building. Other information based on OSi mapping and orthogonal photography was also taken into account when extending boundaries. Boundary extensions were generally made to include the land parcel on which a dwelling was built or using other physical features such as roads, paths etc.

The CSO also previously published census data for legal town boundaries. The 80 legal towns were abolished as part of the Local Government Reform Act 2014.