

# Standard Area Measurement for 2011 output areas Guidance Notes

**December 2011**

Edition No.: **V 0.2**

**ONS Geography**  
**Office for National Statistics**

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## Guidance Note

This guidance note provides information on Standard Area Measurements for output areas, lower layer super output areas and middle layer super output areas in England and Wales.

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## Introduction

There is a need for a consistent approach to the production of definitive surface area measurements for use in UK statistical outputs and to meet the European Commission's requirements for standardised area measurements (SAM) from member states.

At the time of this publication, measurements are only available for 2011 output areas (OA), lower layer super output areas (LSOA) and middle layer super output areas (MSOA) in England and Wales. Measurements for Scotland and Northern Ireland will be published when they become available.

These measurements were created by ONS using a different method than the [2011 SAM for administrative areas](#), which were based on the annual Ordnance Survey Boundary-Line™ product. For this reason it is important to note that the two sets of measurements are not comparable.

The 2011 OA SAM as referred to in this document, are to be used as the building blocks for the creation of National Statistics.

## Type of measurements

Four types of measurements are provided. These are all 'flat' measurements as represented on a map; they do not take into account variations in relief e.g. mountains and valleys. Measurements are given in hectares (10,000 square metres). The four types of measurements are:

- total extent
- area to mean high water (coastline)
- area of inland water
- area to mean high water excluding area of inland water (land area)

## Definitions of Measurements

### Total extent

Areas bounded by coastal water are measured to the 'Extent of the Realm' boundary of the electoral or administrative area, typically co-incident with Mean Low Water. 'Total extent' measurements include all tracts of inland water, including estuaries and can include piers and jetties (some no longer existing) and sea areas bounding off-shore islands.

## Area to mean high water

This is the total area of an electoral or administrative area and includes all tracts of inland water. For all inland (i.e. non-coastal) areas, the measurements respect the statutory boundaries and so the area measurements are the same as those available for the 'Total extent'.

Where areas are bounded by tidal water, measurements are limited to the mean high water mark. 'Area to Mean High Water' measurements include all tracts of inland water, but exclude tidal estuaries. The approach taken by Ordnance Survey to separate 'inland water' from 'tidal estuaries' is to 'draw' a nominal line across the mouth of each estuary. Such lines are not placed deep within estuaries but are usually positioned at the estuary mouths as though they were a continuation of the 'Extent of the Realm'

## Inland water

Inland water measurements have been calculated using a frozen 2002 extract of the Ordnance Survey MasterMap® topographic layer's hydrology theme. In producing SAM figures, inland water is constrained to 'bounded'<sup>1</sup> areas of water such as lakes, lochs, reservoirs etc and does not include 'open tracts'<sup>2</sup> of water such as rivers, canals, streams etc. Only those tracts of inland water with a surface area measurement of 1km<sup>2</sup> or more have been included; the 1km<sup>2</sup> constraint refers to each single instance of inland water in total rather than to a part of an area of inland water that falls in any given area.

1 'Bounded' areas are permanent areas of inland water that exclude subterranean water.

2 'Open tracts' are typically flowing water (ie. not permanent or stored as defined by Ordnance Survey).

## Area to mean high water excluding inland water (land area)

This area measurement is the difference between the 'Area to Mean High Water' and 'Area of inland water' where such a measurement is available. This area may be loosely defined as the 'Land area'.

## Guidance on the use of area measurements for statistical purposes

The choice of area measurements to be used in a particular situation will depend on the data being presented and a definition of the chosen measurements should be included in the relevant publication or dataset.

## Compiling population density figures

The recommended approach preferred by Eurostat is to use the 'land area' measurement (area to mean high water excluding area of inland water) to compile population density figures..

## Measurements to describe the extent of an area

If a measurement is required to describe the extent of an area then the 'total extent' measurements should be used for contextual purposes.

## Measurements to describe the extent of the land mass

If a measurement is required to describe the extent of the land mass (i.e. in a 'land use' context) then the 'area to mean high water' measurements should be used.

### Specific measurements

Some area measurements will appear to be excessive compared with expectations. The reasons are varied and can include instances where the extent of the realm measurement includes bounding sea areas and bays, islands and piers. Area to mean high water measurements can also include tracts of rivers and towpaths.

## Notes on data methodology and accuracy

### England and Wales

Measurements for higher geographies should be built up from aggregations of the OA SAM base on a best-fit basis, in line with best practice guidelines set out in the Geography Policy for National Statistics. The policy states that 'stable geographies' i.e. OA for England and Wales, should be used as the building blocks for the creation of National Statistics. Further information regarding the ONS Geography Policy can be found on the [ONS Website](#).

No attempt will be made to modify the SAM figures for geographies created from aggregated OA measurements to align with SAM figures derived from the national mapping agencies' boundary products.

### Comparability

It is not possible to compare 2001 and 2011 SAM figures because of two key reasons;

- i. The 2011 OA measurements may differ slightly to the OA SAM figures previously released by ONS as part of their 2001 Census outputs. This is because ONS adjusted the 2001 OA SAM figures for Census output purposes so they aggregated exactly to the electoral ward and local authority district SAM figures derived from Boundary-Line™ product.
- ii. OA and SOA in England and Wales have been maintained as part of the 2011 Census OA maintenance. The 2011 measurements were produced in the ONS' Output Area Maintenance Production System (OAMPS). Further information about changes between the 2001 and 2011 OAs can be found on the [ONS website](#).

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