Department for Communities and Local Government

Land Use Change Statistics in England: 2014-15

Planning

Statistical Release

31 March 2016

This release shows changes in land usage and residential development in terms of the location and type of change.

In 2014-15:

- The proportion of new residential addresses created, including conversions to residential; on previously developed land was 58 per cent in 2014-15. This is a decrease of 2 percentage points compared to 2013-14
- The main previous land use categories on which a residential address was created were:
  - Residential land at 23 per cent of all addresses created.
  - Undeveloped land (In urban areas) at 17 per cent of all addresses created.
  - Other developed use at 15 per cent of all addresses created.
- The average density of residential addresses surrounding a newly created residential address was 31 addresses per hectare. This is a decrease on the recorded 32 addresses per hectare in 2013-14
- 3 per cent of new residential addresses created were within the Green Belt. This is the same level as recorded in 2013-14.
- 8 per cent of new residential addresses were created within areas of high flood risk. This is an increase on the recorded 7 per cent in 2013-14.

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Introduction

Land Use Change Statistics are a rich source of information which show how land use has changed in England. The information includes the nature of the changes, the areas of land affected and the locations of the changes. These changes are recorded to and from a set of 28 land use categories (see Table BN1 in the technical notes)[1]. This Statistical Release focuses on changes to a developed use, in particular to residential development. It presents National Statistics on these changes in land use in England recorded in 2014/15. Statistics on changes within the Green Belt and changes within areas of high flood risk are also presented.

Changes to the methodology

This is the second publication of the land use change statistics using a new methodology based on changes in Ordnance Survey products rather than from the physical observations that informed the previous series.

The statistics are produced from two underlying data sets:

- The address based data set provides statistics on the creation and deletion of residential addresses and changes in density. This data set provides all of the headline messages in the statistics and all the data in live tables P300 to P349.
- The land use based data set covers statistics on the physical area of land changing use and includes all of the data provide in live tables P350 onwards.

During the production of this second year of statistics several changes to improve the quality and accuracy of the land use based data were identified. Being able to fully compare two years' worth of data allowed for a more detailed understanding of the underlying data and improvements could be made to the methodology and presentation of the statistics.

Going forward it is not anticipated that there will be any further major changes to the methodology or revisions made to the data.

Users should be aware

- The methodology used to calculate areas of land use change has been revisited and improved significantly. Having made changes to the methodology to ensure comparability it was decided to fully rerun the previous land use analysis for 2013-14. The result of this is that the land use figures published for 2013-14 have been significantly revised and replaced by the revised values issued in this publication and live tables. This only affects data in live tables P350 onwards. Further details of these changes are provided in the technical notes.
- Users should be aware that the improved land use change methodology now identifies greater amounts of land area changing use than the previous estimates.
- The estimate of the number or residential address created was found to fluctuate between years at a local authority level. Therefore statistics at this level will be made available as a two year average.

Changes to residential use

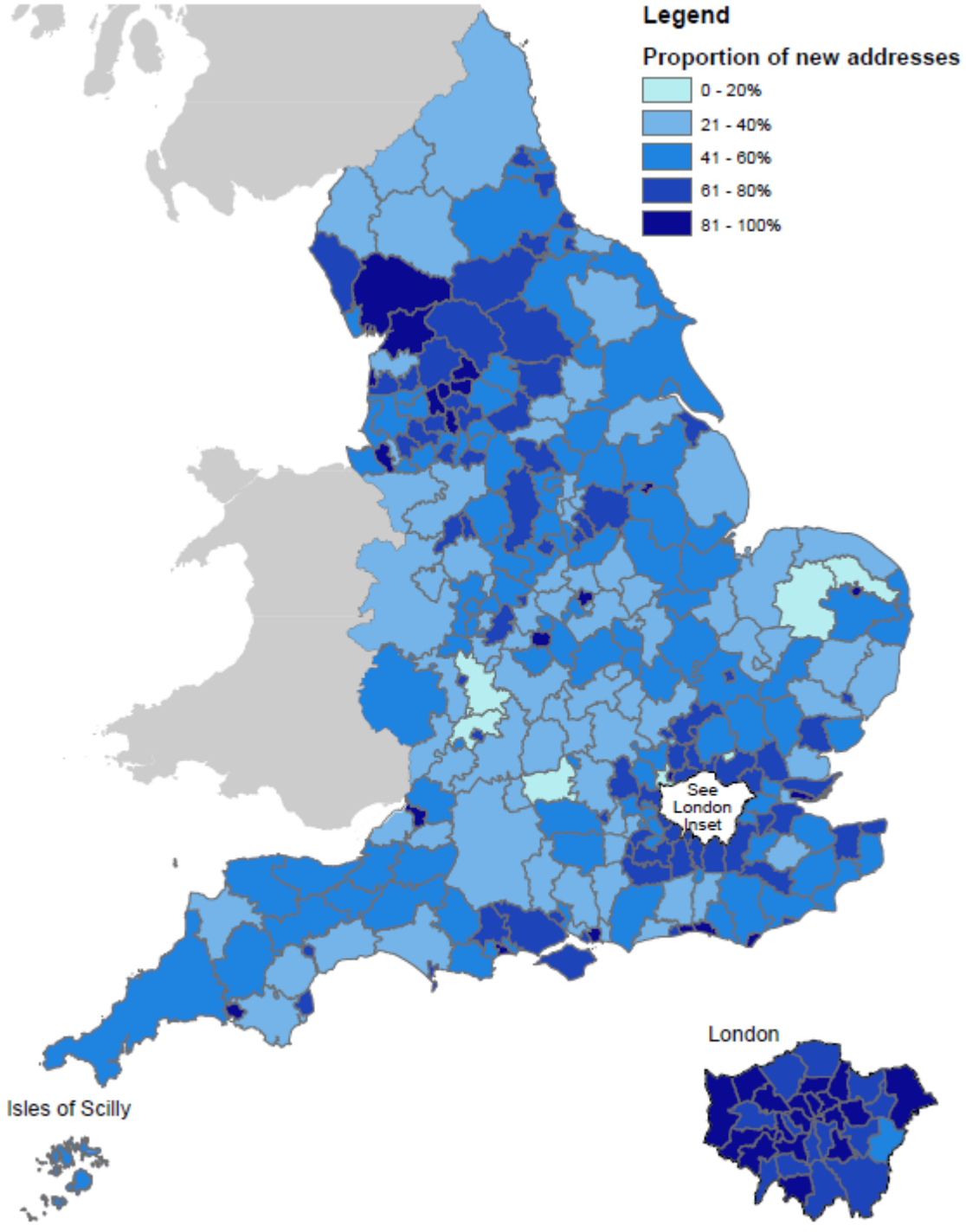
The latest national estimates for changes to residential use are for 2014-15. The statistics show how much residential development has taken place on previously-developed and previously undeveloped land.

The proportion of new residential addresses created, including conversions to residential; on previously developed land was 58 per cent in 2014-15. This is a decrease of 2 percentage points compared to 2013-14.

Excluding conversion the proportion of new residential addresses created on previously developed land was 57 per cent in 2014-15. This is a decrease of 2 percentage points compared to 2013-14.

There was wide variation in the proportion of new residential addresses created on previously developed land between local authorities in England. The lowest proportion, averaged over two years, was 14 per cent (Harlow District) of all new addresses created and the highest was 100 per cent (City of London).

Map 1: Proportion of new addresses created on previously developed land, England 2013-15



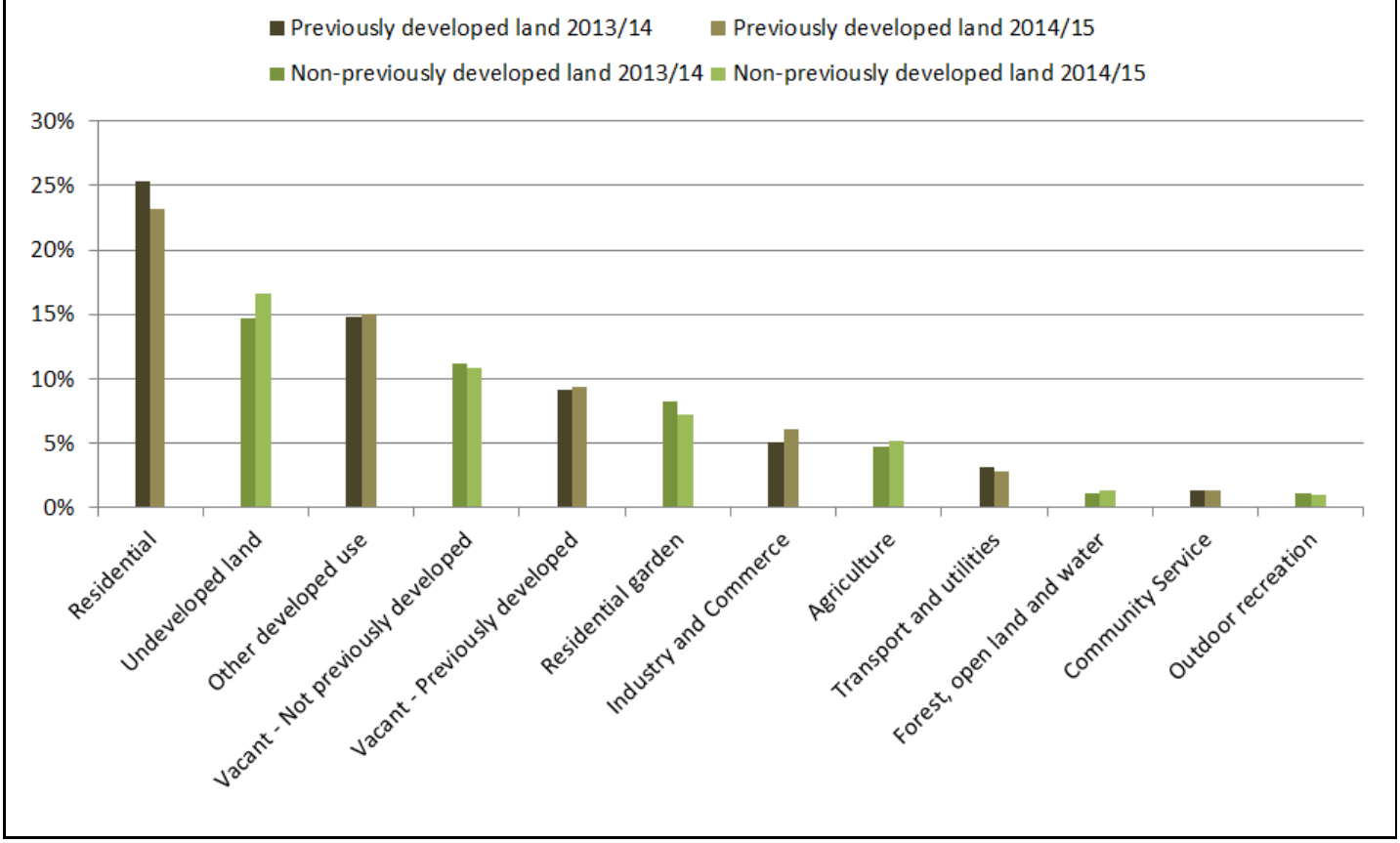
Produced by the Housing and Planning Analysis Division, DCLG

Data Sources
OS Boundary-Line

In 2014-15 the main previous land use categories on which a residential address was created were:

- Residential land at 23 per cent of all addresses created.
- Undeveloped land (in urban areas) at 17 per cent of all addresses created.
- Other developed use at 15 per cent of all addresses created.

Figure 1: Proportion of new addresses created on previously developed and non-previously developed land, England 2013-15

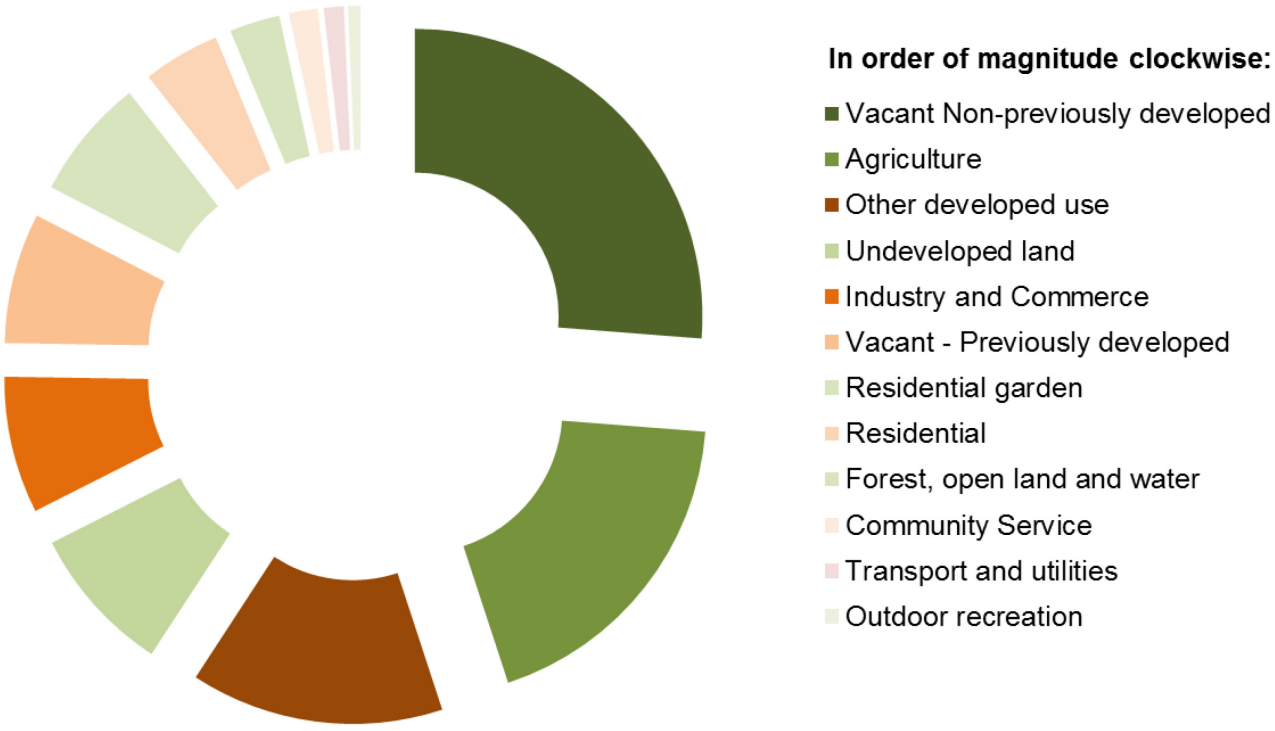


Detailed statistics on residential development on previously-developed land (including data at a local authority level) can be found in the Land Use Change Statistics Live Tables, numbers P300, P301 and P302.

There are 28 land use categories used in Land Use Change Statistics classification[1]. For land area changing to residential use in 2014/15:

- 36 per cent of land changing to residential use was previously developed land, down from an estimated 41 per cent In 2013/14.
- The main types of land changing to residential use were:
  - Vacant land non-previously developed: 26 per cent.
  - Agriculture: 19 per cent.
  - Other developed use: 14 per cent.

Figure 2: Proportion of land changing to residential use, England 2014-15



Detailed statistics on residential development on previously-developed land (including data at a local authority level) can be found in the Land Use Change Statistics Live Tables, numbers P300, P370 and P371.

Density of new dwellings

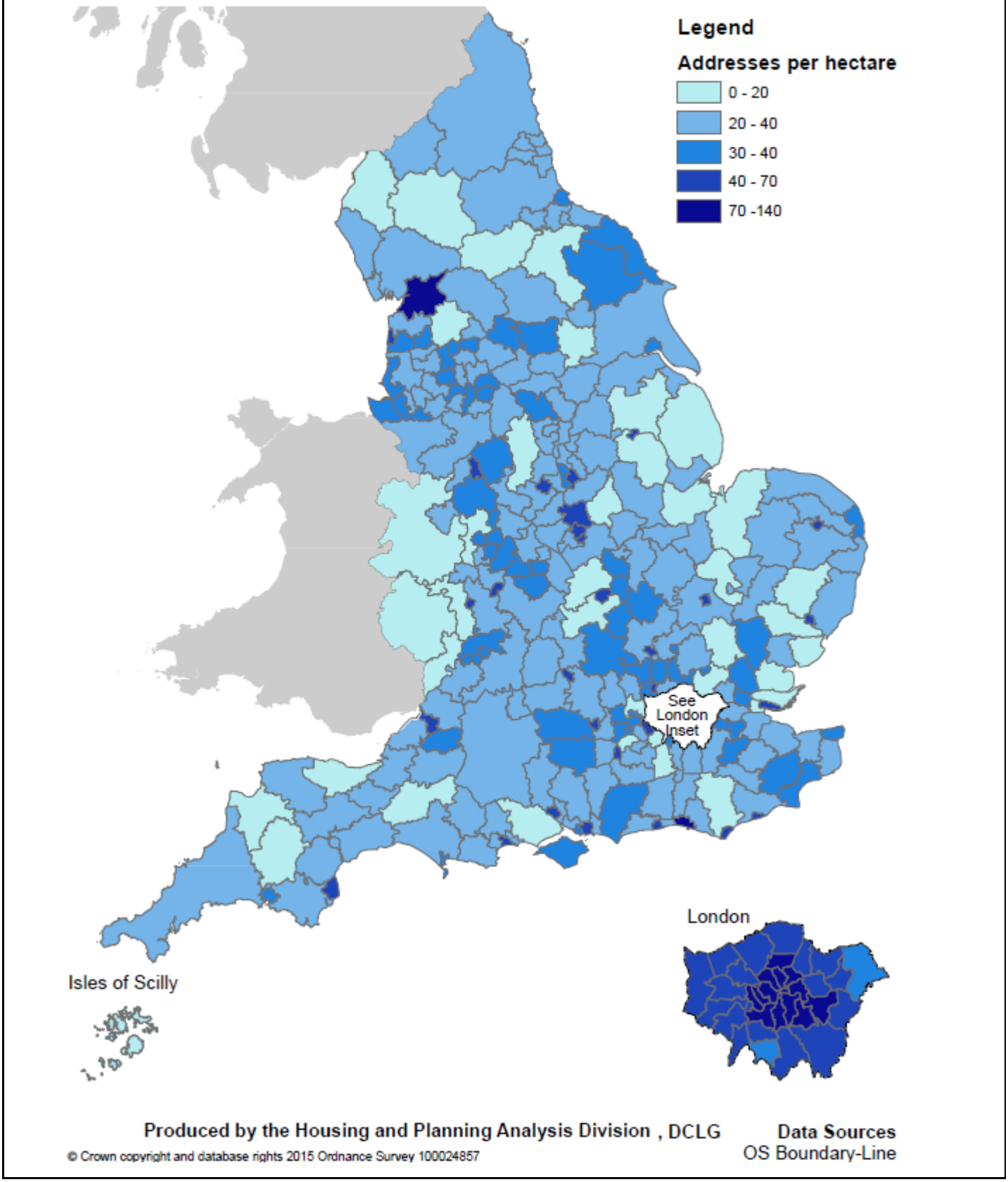
In 2014-15 the average density of residential addresses surrounding a newly created residential address was 31 addresses per hectare. This is a decrease on the 32 addresses per hectare in 2013-14.

For previously developed land the density was higher at 37 addresses per hectare, the same level as in 2013-14.

For non-previously developed land the density was lower at 27 addresses per hectare. This is an increase on the recorded 26 addresses per hectare in 2013-14.

Within the Green Belt the density was 16 addresses per hectare. This is a decrease on the recorded 18 address per hectare in 2013-14.

Map 2: Density of area surrounding new residential addresses, England 2013-15



Detailed statistics on the average density of new dwellings (including data at a local authority level) can be found in the Land Use Change Statistics Live Tables, numbers P330 and P331.

Changes within the Green Belt

- In 2014-15, 3 per cent of new residential addresses created were within the Green Belt.[2] This is the same level as recorded in 2013-14.

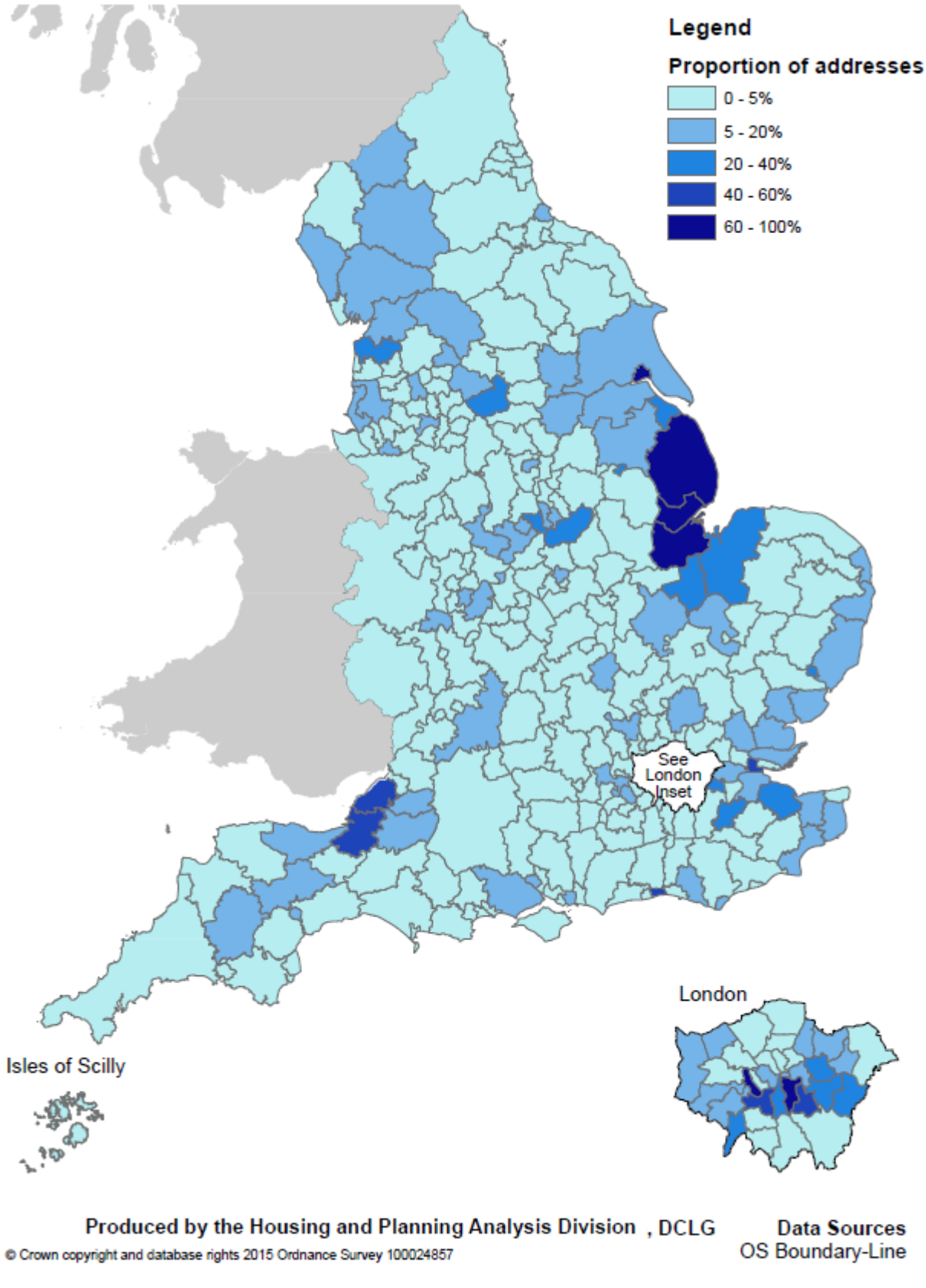
- In 2014-15, 56 per cent of new residential addresses created within the Green Belt were built on previously-developed land. This is a decrease on the 62 per cent recorded in 2013-14.
- Of all land changing to residential use in 2014-15, 7 per cent was within designated Green Belt a decrease from the 8 per cent recorded in 2013-14

Detailed statistics on changes within the Green Belt can be found in the Land Use Change Statistics Live Tables, numbers P310 to P311 and P380 to P383.

Changes within areas of high flood risk

- In 2014-15, 8 per cent of new residential addresses were created within areas of high flood risk[3]. This is an increase on the recoded 7 per cent in 2013-14.

Map 3: Proportion of new address created in National flood zone 3 , England 2013-15

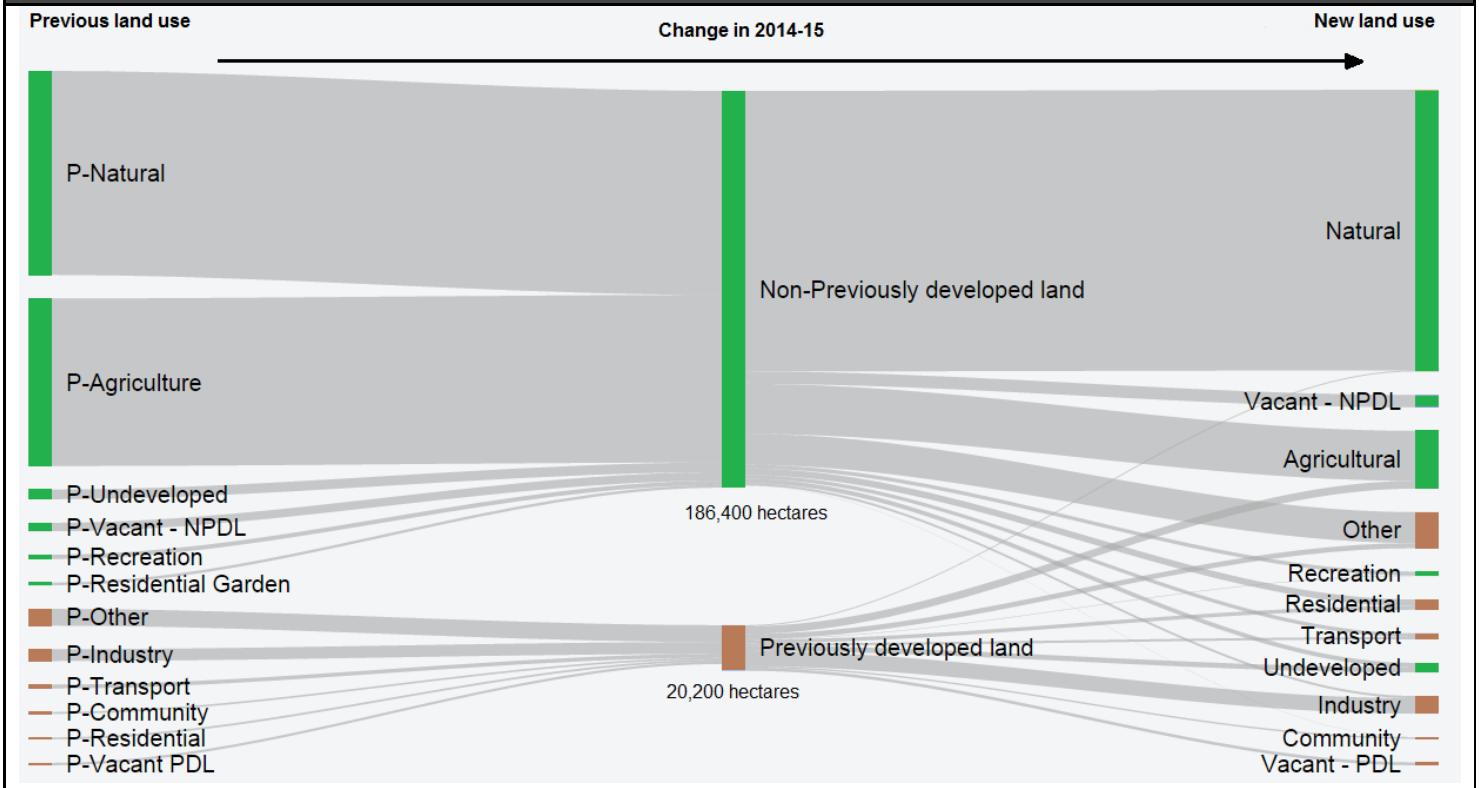


Changes in land usage

In 2014-15, 41 per cent of land area changing to a developed use was previously-developed.

- In 2014-15 the main new uses of land changing to a developed use were:
  - Other developed use at 47 per cent
  - Industry and commerce at 23 per cent
  - Residential at 13 per cent
- 80 per cent of land use change captured is between different non-developed uses. This represents ongoing changes in the natural environment.

Figure 6: Flows of land changing use, England 2014-15



*Natural represents Forest, Open Land and Water group of land uses. Due to the small amount of change noted Defence, Mineral and landfill categories are not shown

Detailed statistics on changes to developed uses can be found in the Land Use Change Statistics Live Tables, numbers P350, P351, and P360 - P361.

Accompanying tables

Accompanying Live Tables are available to download alongside this release. These tables can be accessed at:

https://www.gov.uk/government/collections/land-use-change-statistics

P300 Address Change: Proportion of new residential addresses created by previous developed usage
P301 Address Change: Proportion of new residential addresses created by previous land usage category
P302 Address Change: District authorities - Proportion of new residential addresses created by previous land usage category
P310 Address Change: Proportion of new residential addresses created in the Green Belt by previous developed usage
P311 Address Change: District authorities - Proportion of new residential addresses in the Green Belt
P320 Address Change: Proportion of new residential addresses created in National Flood Zone 3 by previous developed usage
P321 Address Change: District authorities - Proportion of new residential addresses created in National Flood Zone 3
P330 Address Change: Average density of residential addresses surrounding newly created residential addresses
P331 Address Change: District authorities - Average density of residential addresses surrounding newly created residential addresses by previous land usage
P350 Land Use Change: Land changing to developed use by previous use.
P351 Land Use Change: Land changing to developed use by new use.
P360 Land Use Change: All Land changing use
P361 Land Use Change: Land changing use by all previous uses
P370 Land Use Change: Land changing to residential use
P371 Land Use Change: Land changing to residential use by previous use.
P380 Land Use Change: Land changing to developed use within the Green Belt that was previously developed
P381 Land Use Change: Proportion of land changing to developed use within the Green Belt.
P382 Land Use Change: Land changing to residential use within the Green Belt, by previous use.
P383 Land Use Change: Land area changing to residential use in the Green Belt
P390 Land Use Change: Proportion of land changing to residential use in National Flood Zone 3

Previous DCLG statistical releases are available under the archived publications section

Technical notes

Land Use Context

England has a land area of just over 13 million hectares. Of this area only about 11% is developed[1]. Around 13% of England is Green Belt encircling 14 urban areas and about 30 million people. The aim of Green Belt Policy is to prevent urban sprawl by keeping land permanently open. Other environmentally protected designations such as National Parks, Areas of Outstanding Natural Beauty and Sites of Special Scientific Interest total another 29% of the total area of England. Together, allowing for overlaps, around 40% (5.3m hectares) of the total land area of England is protected against development by these designations.

Data collection

Land use change statistics are derived from data produced for the department by Ordnance Survey Ltd.

The Land Use Change Statistics that were produced from 1985 -2011 came from bespoke capture processes provided by Ordnance Survey. Following an open, competitive tender process in 2012 a contract to produce Land Use Change Statistics using a new methodology was awarded to Ordnance Survey.

The methodology has been developed by Ordnance Survey in collaboration with the department. It is designed to deliver more detailed Land Use Change Statistics at significantly reduced costs.

This new data series differs in many important respects to that supplied in the previous series. Due to the changes in methodology and land use classification, comparison and interpretation between the two series is not recommended.

Further details of the methodology and the differences between the old and new data series are available in the Land use change statistics methodology changes guidance.

When Ordnance Survey derives a land use change, the accompanying data provided to the department includes:

- the grid reference
- the local authority in which the site is located
- the area of the site (in hectares)
- the inferred new and previous uses of the site

[1] Source: ONS Built up Areas 2011

When a new residential address is recorded in Ordnance Survey's AddressBase product, the subsequent data it provides to the department includes:

- the grid reference
- the local authority in which the address is located
- the inferred previous uses of the address site
- the number of residential addresses created
- the number of residential addresses deleted
- the number of addresses converting to or from residential use
- the density of all residential addresses in the hectare surrounding a new residential address

Data quality

Information is published at several geographical levels such as nationally and by local authority. Statistics are also calculated on other geographies, such as the Green Belt or areas of high flood risk.

Data at Local Authority level on residential addresses is available annually however data on land use change will only be made available as an average over several years. This is because annual data at this spatial scale is highly volatile and not robust. However, annual estimates at national level are considered robust.

The Ordnance Survey's data products that were used to derive the land use change data are subjected to numerous quality assurance tests to meet the required quality criteria before their publication and subsequent use in the Land Use Change Statistics methodology. Prior to the department formally taking receipt of the land use change data, Ordnance Survey has checked it meets the required performance criteria and worked with the departments' statisticians to test, develop and improve the outputs' validity.

The individual land use and residential address changes provided by Ordnance Survey are checked for records displaying potential anomalies, such as unusually high or low densities, or identified sites of residential changes with homes not yet built. Such anomalous entries are then queried with Ordnance Survey and if necessary amended. The records which have passed this stage are then reconfigured within the department's database.

The department aggregates the data to local authority and national level and performs analysis against boundary files of the Green Belt and areas of high flood risk. The department's statisticians compare the aggregated data against previous and current data for comparable LA areas and national trends.

The department has published a quality assurance statement alongside this publication of the Land Use Change Statistics. This document gives a full overview of the quality assurance procedures in place. It has been produced in conjunction with the UK Statistics Authority's guidance on using administrative data.

http://www.statisticsauthority.gov.uk/assessment/monitoring/administrative-data-and-official-statistics

Corrections for high density addresses

There are a small number of instances when a local authority, for whatever reason, has populated the data fields governing the positional accuracy of an address' coordinates incorrectly. These can generate multiple addresses clustering in imprecise locations and in turn this can result in distorted density calculations.

To identify errors of this nature the department analyses local authorities with a high standard deviation in density (over 100), have all points with a density of over 100 addresses per hectare investigated to see if they correlate with real world evidence. Those points which do not appear to match to real world change are excluded from the final analysis.

For 2014/15 this resulted in the exclusion of 31 points from the following local authority

- Castle Point

The estimate of the number or residential address created was found to fluctuate between years at a local authority level. Therefore statistics at this level will be made available as a two year average.

Residential address creation at local authority level

Ordnance Survey AddressBase® is the key product for identifying the residential address change data in the land use change statistics.

The information for AddressBase® comes predominantly from local authorities, who work with various sources in their organisation; council tax, electoral registration, planning and building control (amongst others) to identify and verify the existence and location of properties and their official address.

The timeliness of the data updates from local authorities feeding into address base can be variable resulting in fluctuating numbers of residential address created. This causes variations in the estimates al local authority level. Therefore statistics at this level will still be made available but as a two year average.

Changes to the land use methodology

The methodology used by Ordnance Survey to calculate areas of land use change has been revisited and significantly improved. The areas of land changing use are now much greater in number. All of the 2013-14 data on land use change has been revised and is consistent with the 2014-15 statistics.

The changes made to the methodology are outlined as follows:-

Re-written code

The underlying SQL code has been re-written for clarity, manageability, performance and accuracy. The code is now structured in a more logical manner and large SQL statements have, in many cases, been split into smaller operations. Some implementations of the underlying logic have been changed. These improvements enable clearer readability of the code and make for easier quality assurance of the process with clear control checks at each step in the process.

Additional pre-processing

Before the input product data enters the methodology additional processing is applied to check for and remove any errors or inconsistencies. This includes the removal of irrelevant, duplicate and overlapping records.

Land use categorisation

The logic rules for allocating the land use codes has been improved by a clearer and more thorough set of rules for their application. These rules deal with sense-checking combinations of attributes, and handling cases where an area of land has been categorised with mixed uses (for example a flat on top of a shop, or an area of grassland with trees). In many categories, these improved rules have widened the inclusion criteria, resulting in an increase (rather than a decrease) in coverage.

Non-footprint changes now included

These are changes where the apparent physical extent of land area has not changed but the inferred use has, for example when a building changes from an office to residential use. This type of change was previously excluded but it has been decided that this type of change does represent a change in land usage, despite no physical change occurring to the real world feature. This change has most effect in increasing the amount of land changing between developed uses.

Changes to the end filtering rules

Changes have been made to the final filtering rules. The purpose of these filters is to remove any land area changing use that is not believed to be actual in year real world change.

Ordnance Survey is continually running a number of data improvement programs which can involve resurveying areas in greater detail and capturing consequent newly observed change. Changes such as small residential extensions and outbuildings, which could have been built several years prior to being captured, can be integral to these data improvement programs. Where

such changes are believed to have occurred outside the reporting period they are excluded from the final dataset.

The application of filters to explicitly suppress changes in land use between certain categories, especially between types of natural land usage, has been removed. The records previously suppressed by this step are now passed through a number of additional checks before being either retained or discarded within the final dataset.

The result of these changes is that a greater amount of land use change, especially between natural usage categories, is now identified.

Revisions policy

This policy has been developed in accordance with the UK Statistics Authority Code of Practice for Official Statistics and the Department for Communities and Local Government Revisions Policy (found at https://www.gov.uk/government/publications/statistical-notice-dclg-revisions-policy). There are two types of revisions that the policy covers:

Non-Scheduled Revisions

Where a substantial error has occurred as a result of the compilation, imputation or dissemination process, the statistical release, live tables and other accompanying releases will be updated with a correction notice as soon as is practical.

Scheduled Revisions

Each annual version of the Land Use Change Statistics publication is produced from static versions of Ordnance Survey products and as such will not be subject to any scheduled revisions.

User engagement

Users are encouraged to provide feedback on how these statistics are used and how well they meet user needs. Comments on any issues relating to this statistical release are welcomed and encouraged. Responses should be addressed to the "Public enquiries" contact given in the "Enquiries" section below.

The department's engagement strategy to meet the needs of statistics users is published here: https://www.gov.uk/government/publications/engagement-strategy-to-meet-the-needs-of-statistics-users

Notes

1. The land use categories used in compiling LUCS data are shown below in Table BN1. For full details on what are included in these groups and categories please refer to the Land use change statistics methodology changes guidance.

Table BN1: Land use categories, groups and divisions.

Previously developed land

Group	Category (codes)	
Residential	☐ Residential	(R)
	☐ Institutional and communal accommodation	(Q)
Transport and Utilities	☐ Highways and road transport	(H)
	☐ Transport (other)	(T)
	☐ Utilities	(U)
Industry and Commerce	☐ Industry	(I)
	☐ Offices	(J)
	☐ Retailing	(K)
	☐ Storage and warehousing	(S)
Community Services	☐ Community buildings	(C)
	☐ Leisure and recreational buildings	(L)
Vacant	☐ Vacant land previously developed	(V -NPDL)
Minerals and landfill[1]	☐ Minerals	(M)
	☐ Landfill waste disposal	(Y)
Defence	☐ Defence	(D)
Other developed use	☐ Unidentified building	(~B)
	☐ Unidentified general manmade surface	(~M)
	☐ Unidentified structure	(~S)

Non-previously developed land

Group	Category (codes)	
Agriculture	☐ Agricultural land	(A)
	☐ Agricultural buildings	(B)
Forestry, open land and water	☐ Forestry and woodland	(F)
	☐ Rough grassland and Bracken	(G)
	☐ Natural and semi-natural Land	(N)
	☐ Water	(W)
Outdoor recreation	☐ Outdoor recreation	(O)
Vacant	☐ Vacant land previously developed	(V - PDL)
Residential Gardens	☐ Residential Gardens	(RG)
Undeveloped land	☐ Undeveloped land in urban areas	(X)

2. Change of land use in the designated Green Belt, including to a developed use, does not mean the removal of the land from the Green Belt. Land can only be removed from the Green Belt through the local planning process.

3. The flood risk analysis in LUCS is based on annually updated data sets of digitised boundaries provided by the Environment Agency. The areas of high flood risk used cover approximately ten per cent of England. They reflect the river and coastal floodplains and provide indicative flood risk areas. They are areas estimated to be at risk of at least a one in one hundred chance of flooding each year from river areas or at least a one in two hundred chance of flooding from the sea. These are approximate boundaries and do not take into account any flood defences.

4. National Statistics are produced to high professional standards set out in the National Statistics Code of Practice. They undergo regular quality assurance reviews to ensure they meet customer

needs.

5. Details of officials who receive pre-release access to LUCS up to 24 hours before release can be found at: https://www.gov.uk/government/organisations/department-for-communities-and-local-government/about/statistics#pre-release-access-to-official-statistics

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Information on Official Statistics is available via the UK Statistics Authority website:
https://www.gov.uk/government/statistics/announcements

Information about statistics at DCLG is available via the department's website:
www.gov.uk/government/organisations/department-for-communities-and-local-government/about/statistics

This document/publication is also available on our website at www.gov.uk/dclg

If you have any enquiries regarding this document/publication, email contactus@communities.gov.uk or write to us at:

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