Department for Communities and Local Government

Land Use Change Statistics in England: 2015-16

Planning

Statistical Release

2 March 2017

This release is the planned update of the release published on 30 November 2016. It includes the omitted statistics relating to the areas of land changing use during 2015-16.

In 2015-16:

- The proportion of new residential addresses created, including conversions to residential use, on previously developed land was 61 per cent. This is an increase of three percentage points compared to 2014-15.

- The main previous land use categories on which a residential address was created were:
  - 'Other developed use' at 17 per cent of all addresses created.
  - Residential land at 14 per cent of all addresses created; and.
  - Agricultural land at 13 per cent of all addresses created.

- The average density of residential addresses surrounding a newly created residential address was 32 addresses per hectare. This is an increase on the recorded 31 addresses per hectare in 2014-15.

- Two per cent of new residential addresses created were within the Green Belt. This is a decrease from three per cent in 2014-15.

- Nine per cent of new residential addresses were created within areas of high flood risk. This is an increase on the eight per cent recorded in 2014-15.

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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). 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 2015-16. 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 third year for which land use change statistics have been published using a methodology based on changes in Ordnance Survey products, rather than from the physical observations that informed the previous series.

Underlying data sets

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 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 the data provided in live tables P350 onwards. The tables relating to this data set were omitted from the initial version of this release, published on 30 November 2016. They have been included in this version after further quality assurance work, carried out following an improvement to the source data.

This version of the release also includes:

i) some additions to the sections on ‘Changes to residential use’ (text and Figure 2 on page 7) and ‘Changes to the Green Belt’ (extra text on page 10); and

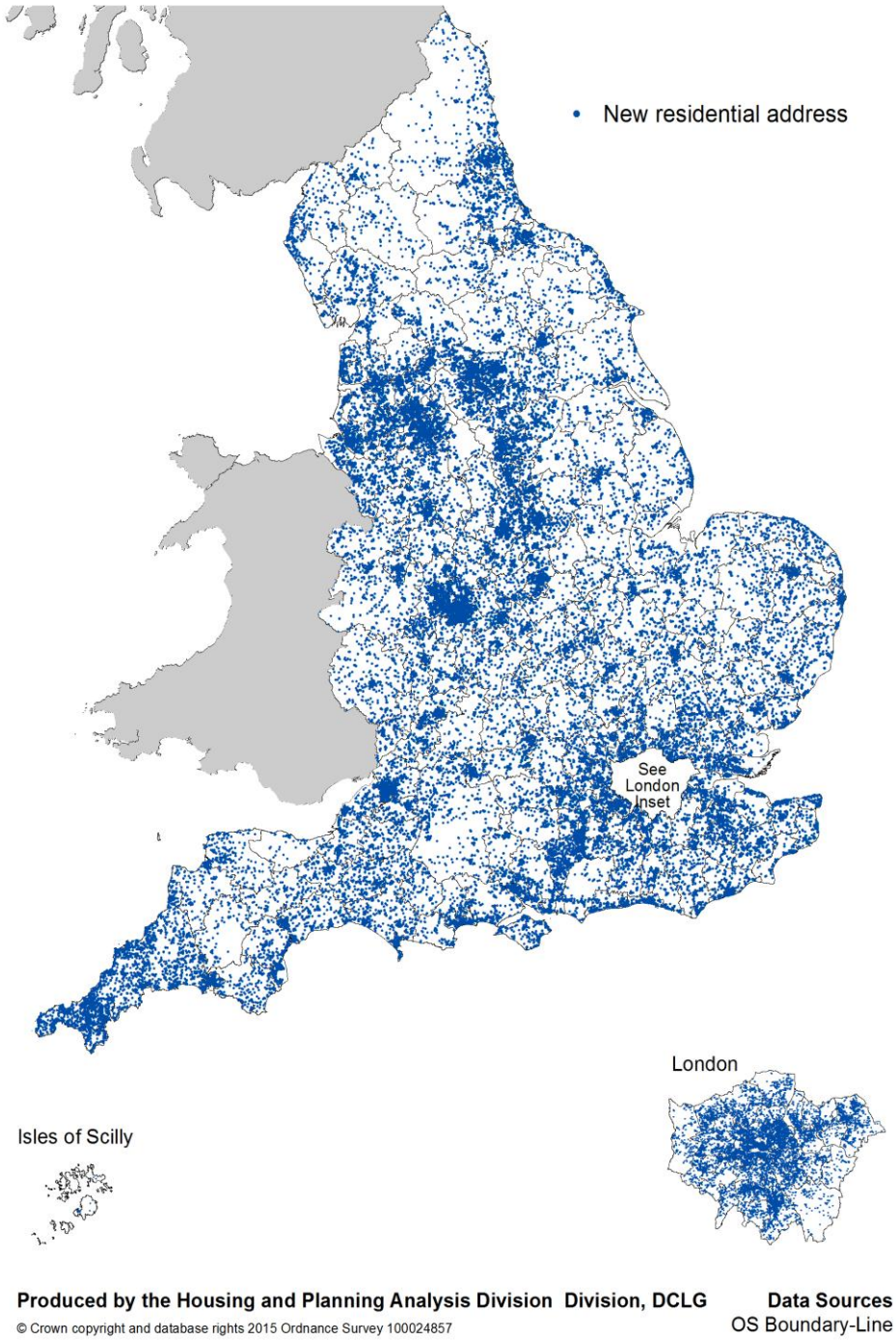
ii) the first publication for 2015-16 of the section on ‘Changes in land usage’ (text and Figure 3 on page 12).

Users should be aware that the estimate of the number or residential address created was found to fluctuate between years at a local authority level. Statistics at this level will therefore be made available as a three year average.

Changes to residential use

The latest national estimates for changes to residential use are for 2015-16. The statistics show how much residential development has taken place on previously-developed and previously undeveloped land. The distribution of new residential addresses recorded during 2015-16 is shown in **Map 1**, to put the rest of the findings into context.

Map 1: New residential addresses recorded, England 2015-16



Produced by the Housing and Planning Analysis Division Division, DCLG

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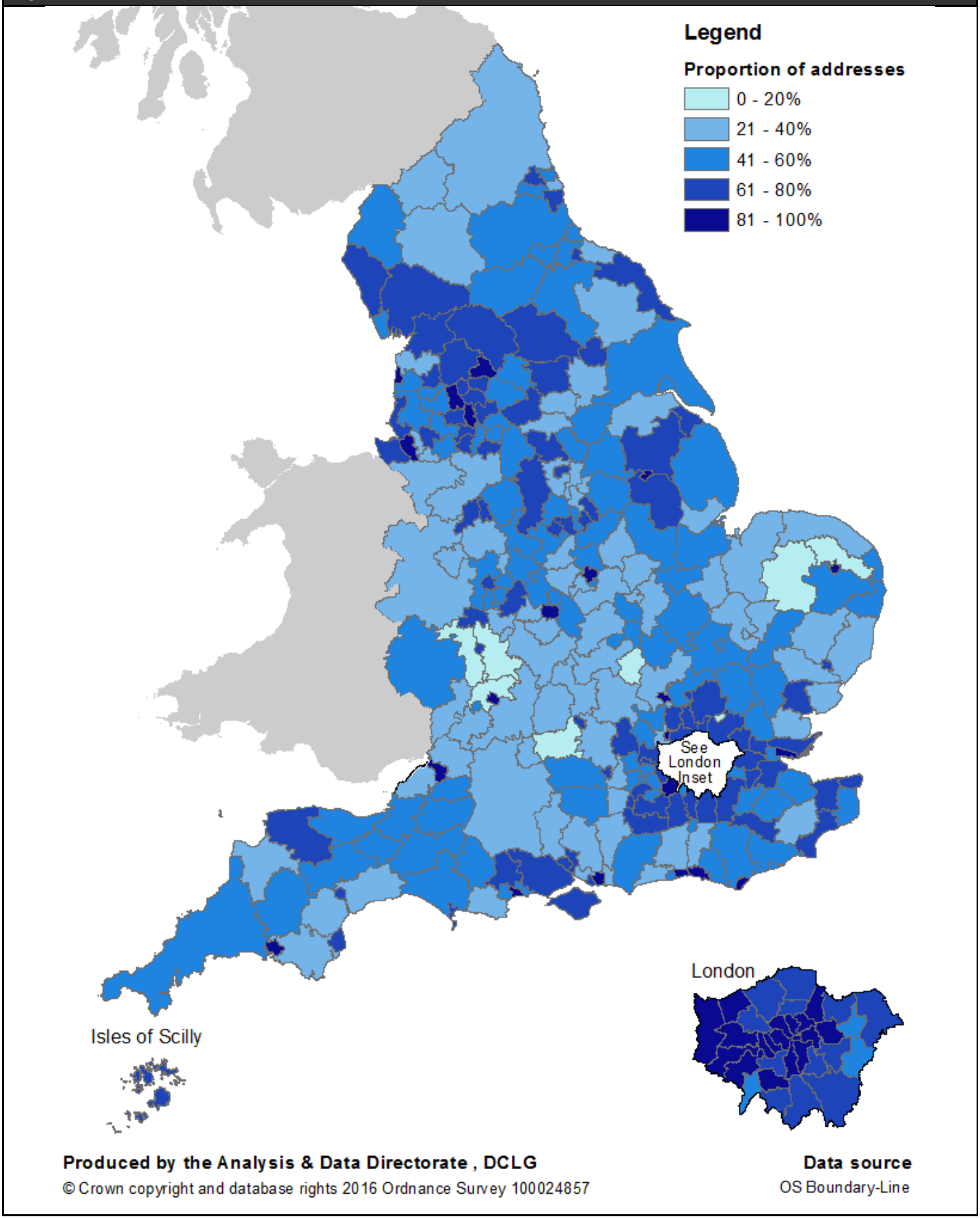
Data Sources
OS Boundary-Line

The proportion of new residential addresses created, including conversions to residential use, on previously developed land was 61 per cent in 2015-16. This is an increase of three percentage points compared to 2014-15.

Excluding conversions, the proportion of new residential addresses created on previously developed land was also 61 per cent in 2015-16. This is an increase of four percentage points compared to 2014-15.

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 three years, was 15 per cent (Vale of White Horse District and Wychavon District) of all new addresses created and the highest was 100 per cent (City of London). More details are shown in **Map 2**.

Map 2: Proportion of new addresses created on previously developed land, England 2013-16



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Data source

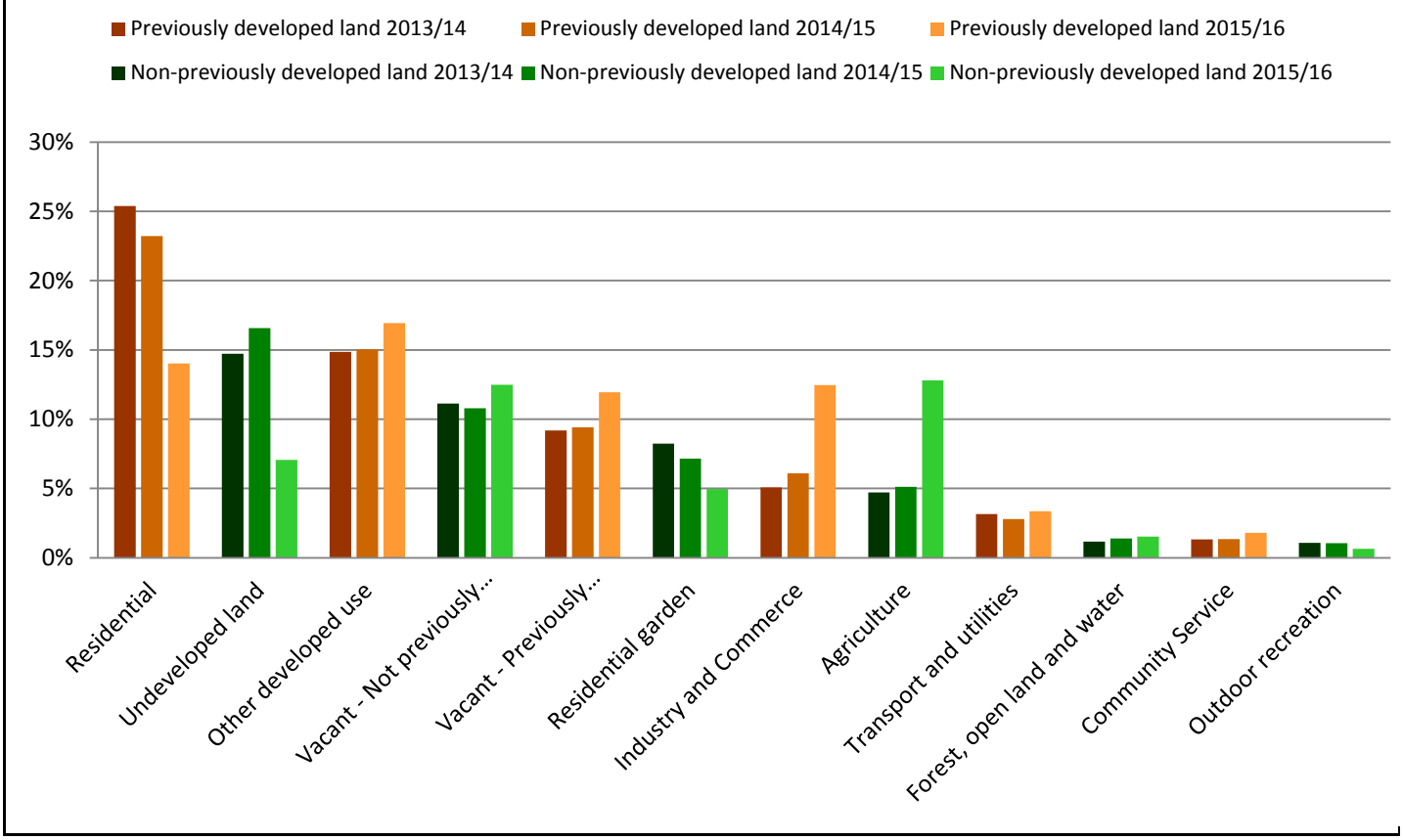
OS Boundary-Line

In 2015-16, the main previous land use categories on which a residential address was created were:

- 'Other developed use', at 17 per cent of all addresses created;
- Residential land, at 14 per cent of all addresses created; and
- Agricultural land, at 13 per cent of all addresses created.

More details are shown in **Figure 1**. The groups used are as listed in Table BN1 in the Notes section of this release.

Figure 1: Proportion of new addresses created on previously developed and non-previously developed land, England 2013-16

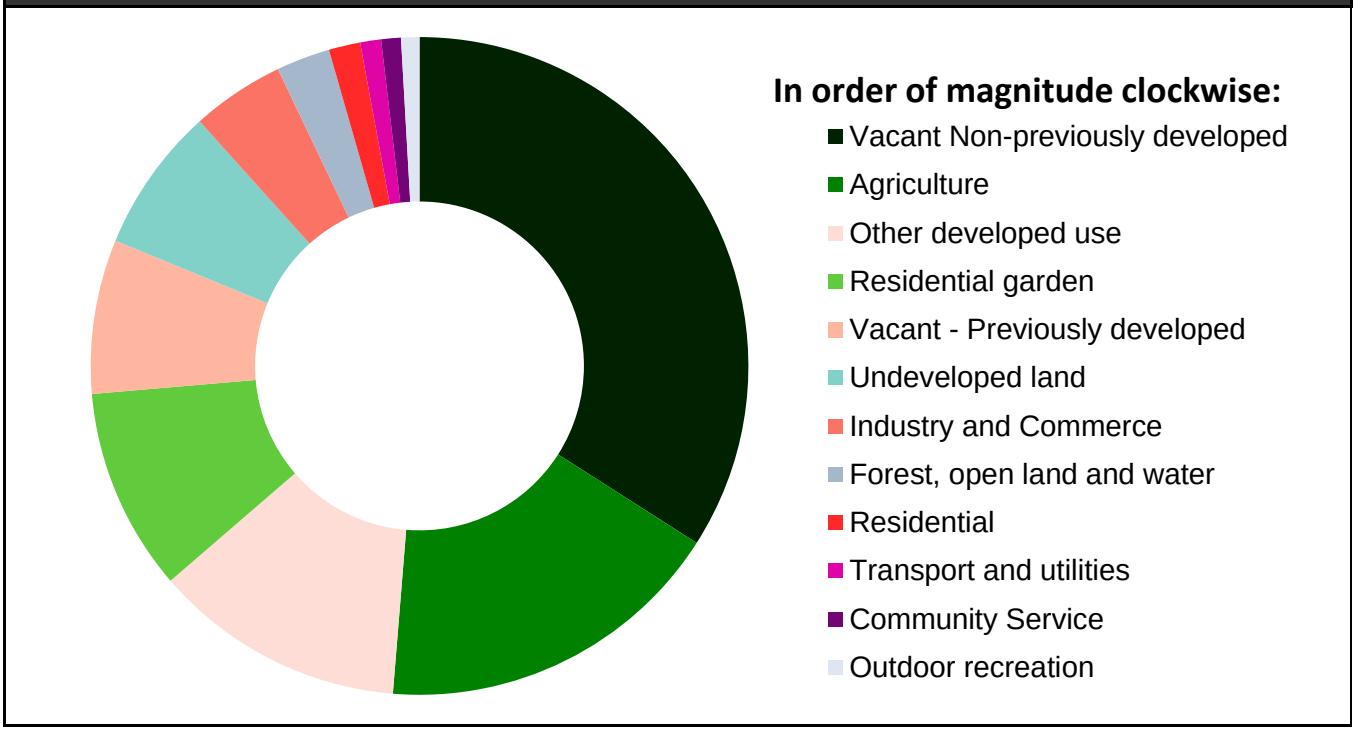


Detailed statistics on residential development on previously-developed land (including data at a local authority level) can be found in the Land Use Change Statistics Live Tables, numbers P300, P301 and P302.

There are 28 land use categories used in Land Use Change Statistics. For land area changing to residential use in 2015-16:

- 28 per cent of the area of land changing to residential use was previously developed land, down from an estimated 36 per cent in 2014-15.
- The main types of land changing to residential use, as measured by area, were:
  - Vacant land non-previously developed: 34 per cent.
  - Agriculture: 17 per cent.
  - Other developed use: 12 per cent.

Figure 2: Proportion of the area of land changing to residential use, England 2015-16



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

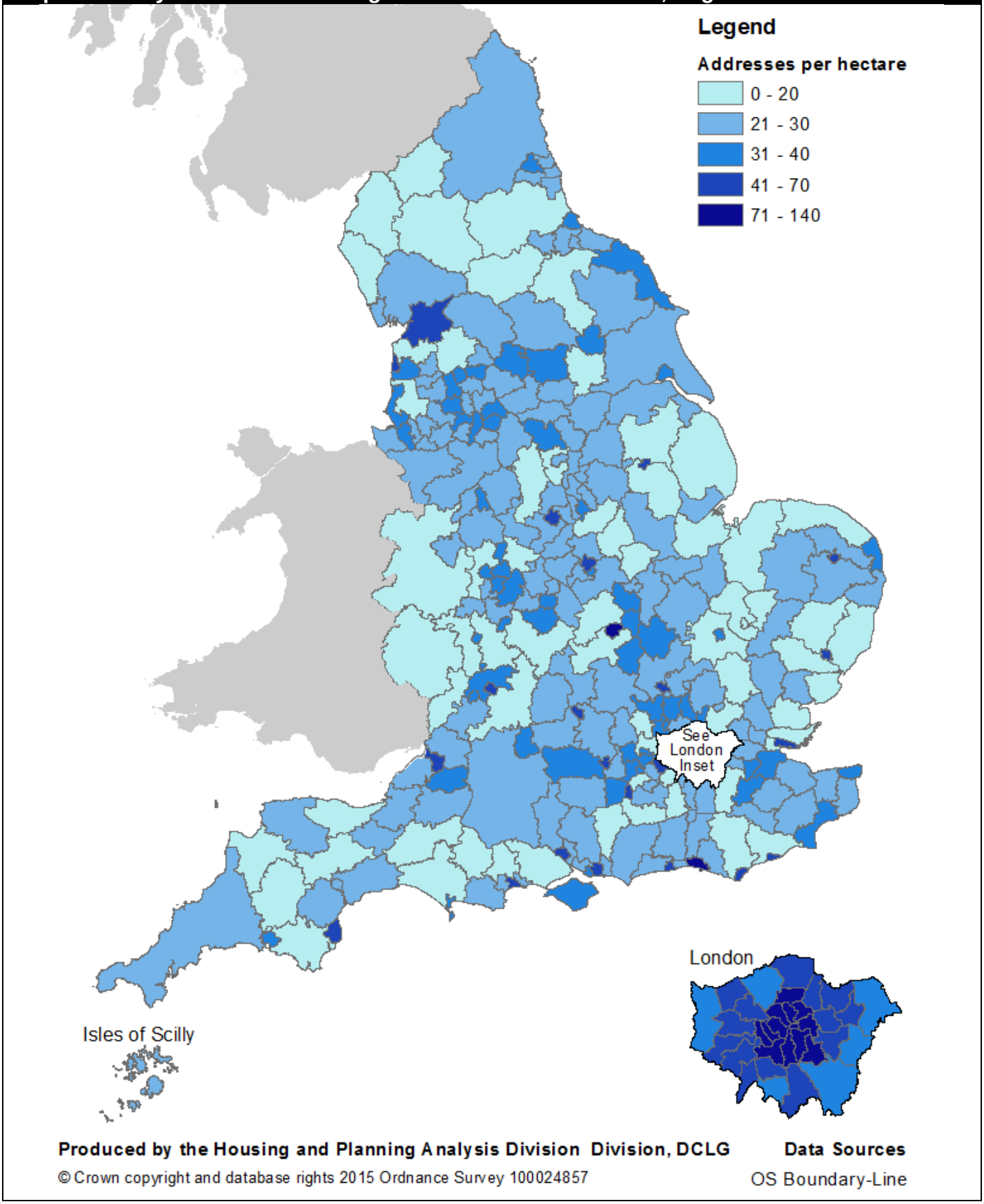
In 2015-16, the average density of residential addresses surrounding a newly created residential address was 32 addresses per hectare. This is an increase on the 31 addresses per hectare in 2014-15.

For previously developed land, the density was higher at 37 addresses per hectare, the same level as in 2014-15. For non-previously developed land, the density was lower at 26 addresses per hectare. This is a decrease on the 27 addresses per hectare recorded in 2014-15.

Within the Green Belt, the density was 14 addresses per hectare. This is a decrease on the 16 addresses per hectare recorded in 2014-15.

More details are shown in **Map 3**.

Map 3: Density of area surrounding new residential addresses, England 2013-16



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 2015-16, two per cent of new residential addresses created were within the Green Belt. This is a decrease from the three per cent recorded in 2014-15.

- In 2015-16, 57 per cent of new residential addresses created within the Green Belt were built on previously-developed land. This is an increase on the 56 per cent recorded in 2014-15.

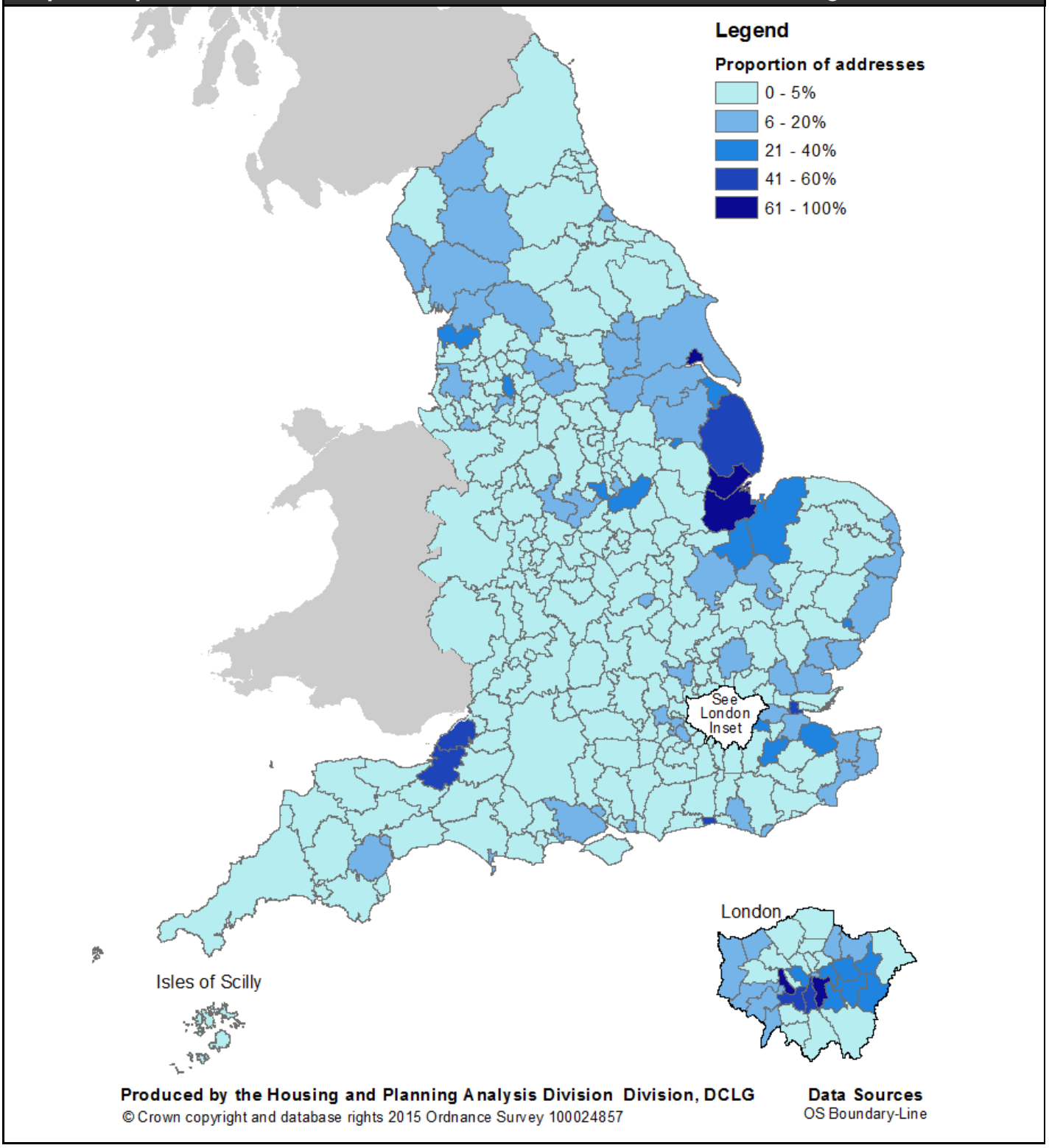
- Of the area of all land changing to residential use in 2015-16, eight per cent was within designated Green Belt, an increase from the seven per cent recorded in 2014-15.

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 2015-16, nine per cent of new residential addresses were created within areas of high flood risk, defined as National flood zone 3. This is an increase on eight per cent recorded in 2014-15. More details are given in the Notes section of this release and **Map 4**.

Map 4: Proportion of new addresses created in National flood zone 3, England 2013-16



Detailed statistics on changes within the National Flood Zone 3 can be found in the Land Use Change Statistics Live Tables, numbers P320 to P321 and P390.

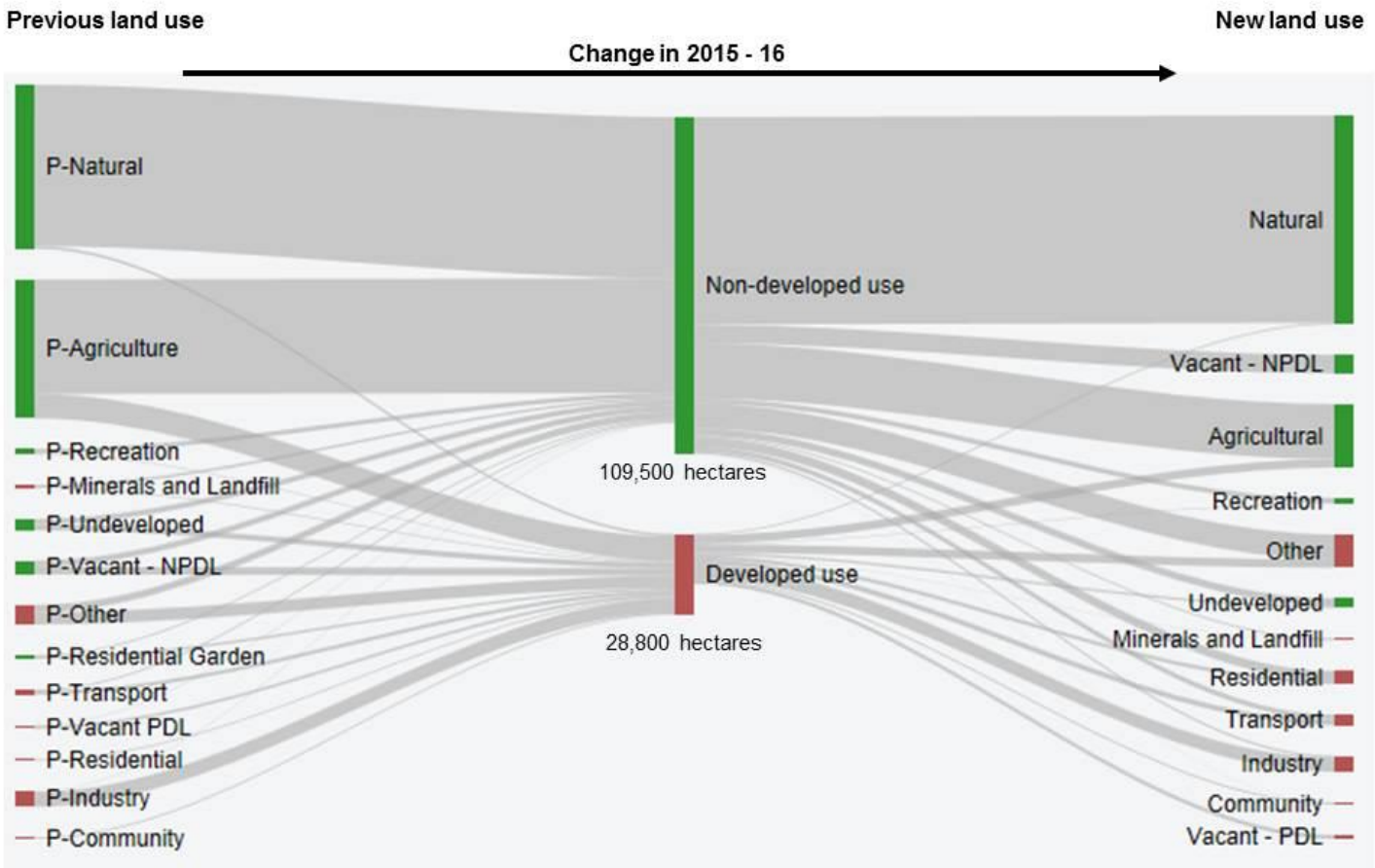
Changes in land usage

In 2015-16, 47 per cent of land area changing to a developed use was previously-developed, up from 41 per cent in 2014-15.

- In 2015-16 the main new uses of land changing to a developed use were:
  - Other developed use: 41 per cent
  - Industry and commerce: 20 per cent
  - Residential: 16 per cent
- 76 per cent of the land use change recorded was between different non-developed uses. This represents ongoing changes in the natural environment.

More details are set out in the Sankey chart at **Figure 3**.

Figure 3: Flows of land changing use, England 2015-16



*Natural represents Forest, Open Land and Water groups of land uses. Due to the small amount of change noted, Defence 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: Percentage of land changing to developed use that was within designated 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 per cent is developed[1]. Around 13 per cent of England is Green Belt, encircling 14 urban areas and about 30 million people[2]. 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 about another 30 per cent of the total area of England[3]. Together, allowing for overlaps, around 40 per cent (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.

Historical Land Use Change Statistics were produced from 1985 -2011. 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 was 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 current 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 sets are available in the Land use change statistics methodology changes guidance.

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

- 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

[1] Derived from Office for National Statistics Built up Areas 2011
[2] Derived from data published by the department and Natural England
[3] Derived from data published by the department and Natural England

- the density of all residential addresses in the hectare surrounding a new residential address.

When the 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.

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 are available annually, but data on land use change will be made available only as an average over several years. This is because annual data at this spatial scale are 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 department's 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, available at:
https://www.statisticsauthority.gov.uk/monitoring-and-assessment/monitoring/administrative-data-and-official-statistics/

Corrections for high density addresses

There are a few 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) and 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 2015-16, this resulted in the exclusion of 34 points from the following local authorities:

- Castle Point (33 points)
- Northampton (one point)

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

Revisions made to Maps 2, 3 and 4 since the 30 November 2016 release

The versions of Maps 2, 3 and 4 in this release replace the ones included in the 30 November release, which inadvertently displayed the areas of seven local authorities in north eastern England as a single area, and showed incorrectly-shaded categories for several other local authorities.

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 at local authority level. Therefore statistics at this level will still be made available, but as a two year average.

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). The policy covers two types of revision:

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 is not usually 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 BN 1: 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 - PDL)
Minerals and landfill	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 not previously developed	(V - NPDL)
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 be removed from the Green Belt only 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 Code of Practice for Official Statistics.

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

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