Department for Communities and Local Government

Land Use Change Statistics in England: 2013/14

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

In 2013-14:

- 60 per cent of new residential addresses, including conversions to residential use, were created on previously developed land
- The main previous land use categories on which a residential address was created were:
  - Residential land at 25 per cent of all addresses created.
  - Other developed use at 15 per cent of all addresses created. This includes buildings where no other category was suitable, hard standing areas such as car parks, paved areas and tarmac.
  - Undeveloped land (In urban areas) at 15 per cent of all addresses created.
- The average density of residential addresses surrounding a newly created residential address was 32 addresses per hectare. Average density was 37 addresses per hectare on previously developed land, and 26 addresses per hectare on non-previously developed land.
- 3 per cent of new residential addresses were created within the Green Belt and 8 per cent of land changing to residential use was within the designated Green Belt.
- 7 per cent of new residential addresses were created within areas of high flood risk.
- 43 per cent of land changing to a developed use was previously-developed.

National Statistics

Land Use

Statistical Release

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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). 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 2013/14. 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 first publication of the land use change statistics using a new methodology based on inferred or direct intelligence derived from changes in Ordnance Survey products rather than from physical observations. 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 changes are available in the Land Use Change Statistics: methodology changes guidance.

The key changes to the methodology which users should be aware of are

- Whilst land use change is now inferred, rather than observed, and this may give rise to the potential for misclassification, the new methodology's outputs deliver added benefits of detailed and site specific intelligence. Whereas the former methodology would consider only the principal land use, the new methodology assigns a use to the component parts that make up a site.
- Data for land use change is now available at a more detailed spatial level. This has a significant impact in reducing the proportions and areas of land changing use, specifically from previously developed and residential uses. Further details are provided in the data quality section of this publication on page 19.
- Estimating the number and location of new residential dwellings is now calculated using the numbers of new residential addresses created within the year. Previously numbers of new dwellings were calculated as a total number built on each site of identified land use change.
- Information on new residential addresses at local authority level is now timelier. This means that local authority level breakdowns of new addresses created can be published every year. Under the previous methodology this had to be done on a four year average.

- Density is now calculated by taking into account the square hectare surrounding a residential address creation. Previously density was calculated as the number of homes built only within the site and did not take into account the surrounding area. Some points are excluded from the density calculations details are provided on page 18.

- Residential address creation and land changing use now come from two separate and unsynchronised data sources. There is no direct relationship between the two. It is possible for the data sources for the land changing to a residential use to be published in a different time period to that of its address creation.

- Changes in the use of land forms part of Ordnance Survey's rolling capture program. This means that in specific years certain locations will have significantly more change captured within them. For this reason, land use change figures at a local authority level would not be reliable unless averaged over at least a four year period. Details are provided in the data coverage, robustness and timeliness section of this publication on page 16. This mean that Local Authority estimates of land use change will not be available until the new series is more established.

Any users of these statistics who would like to be provided with regular email updates on planning and Land Use Change statistics can join the planning statistics alert register by providing their details to the planning statistics mailbox planning.statistics@communities.gsi.gov.uk.

Land Use Change Statistics in England: 2013/14

Changes to residential use

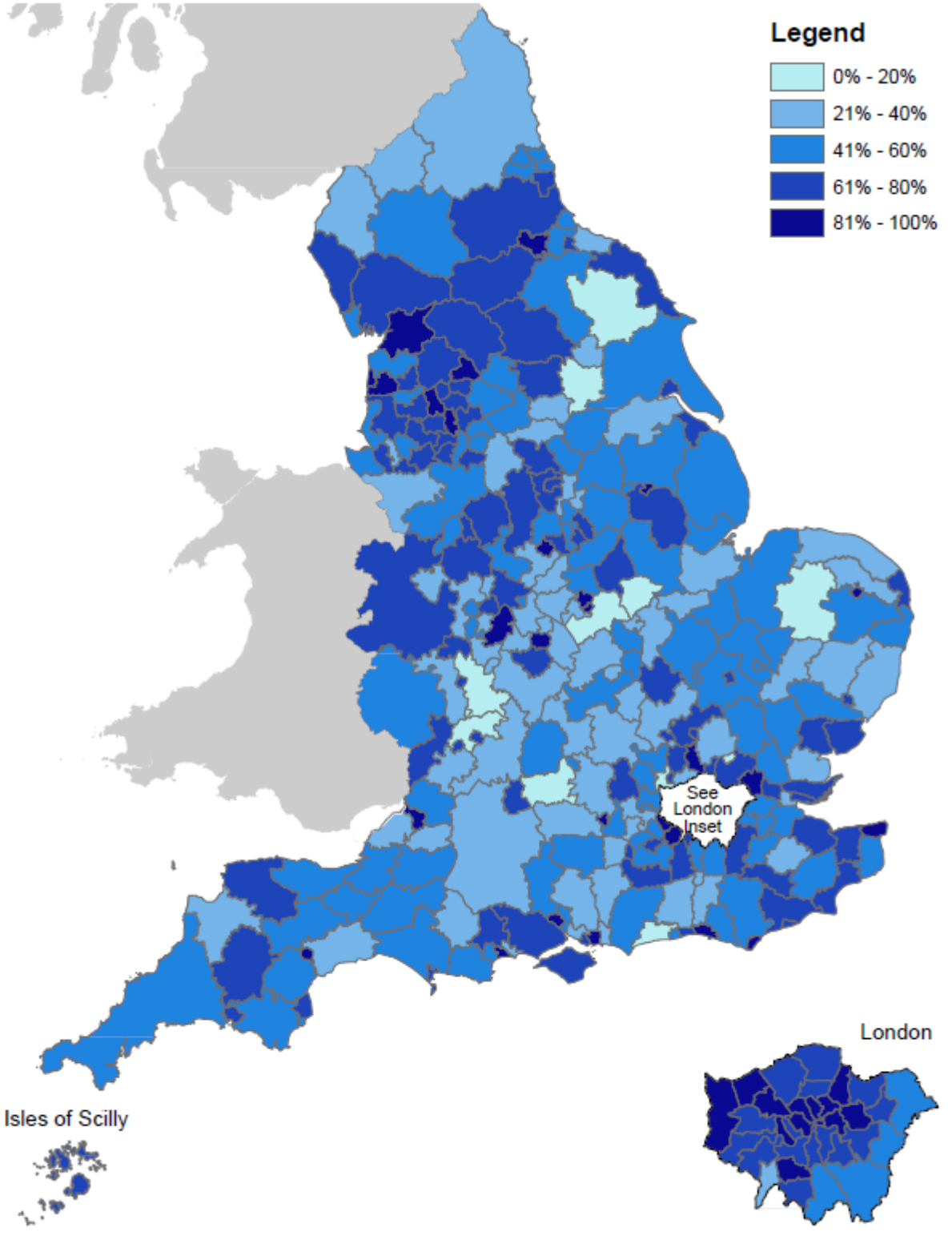
The latest national estimates for changes to residential use are for 2013-14. The statistics show how much residential development has taken place on previously-developed and previously undeveloped land.

The proportion of new residential addresses created on previously developed land was 59 per cent in 2013-14.

The proportion of new residential addresses created, including conversions to residential, on previously-developed land was 60 per cent in 2013-14.

There was wide variation in the amount of new residential addresses created on previously developed land between local authorities in England. The lowest amount was 13 per cent (Three Rivers District) of all new addresses created and the highest was 100 per cent (City of London).

Figure 1: Proportion of new addresses created on previously developed land, England 2013-14



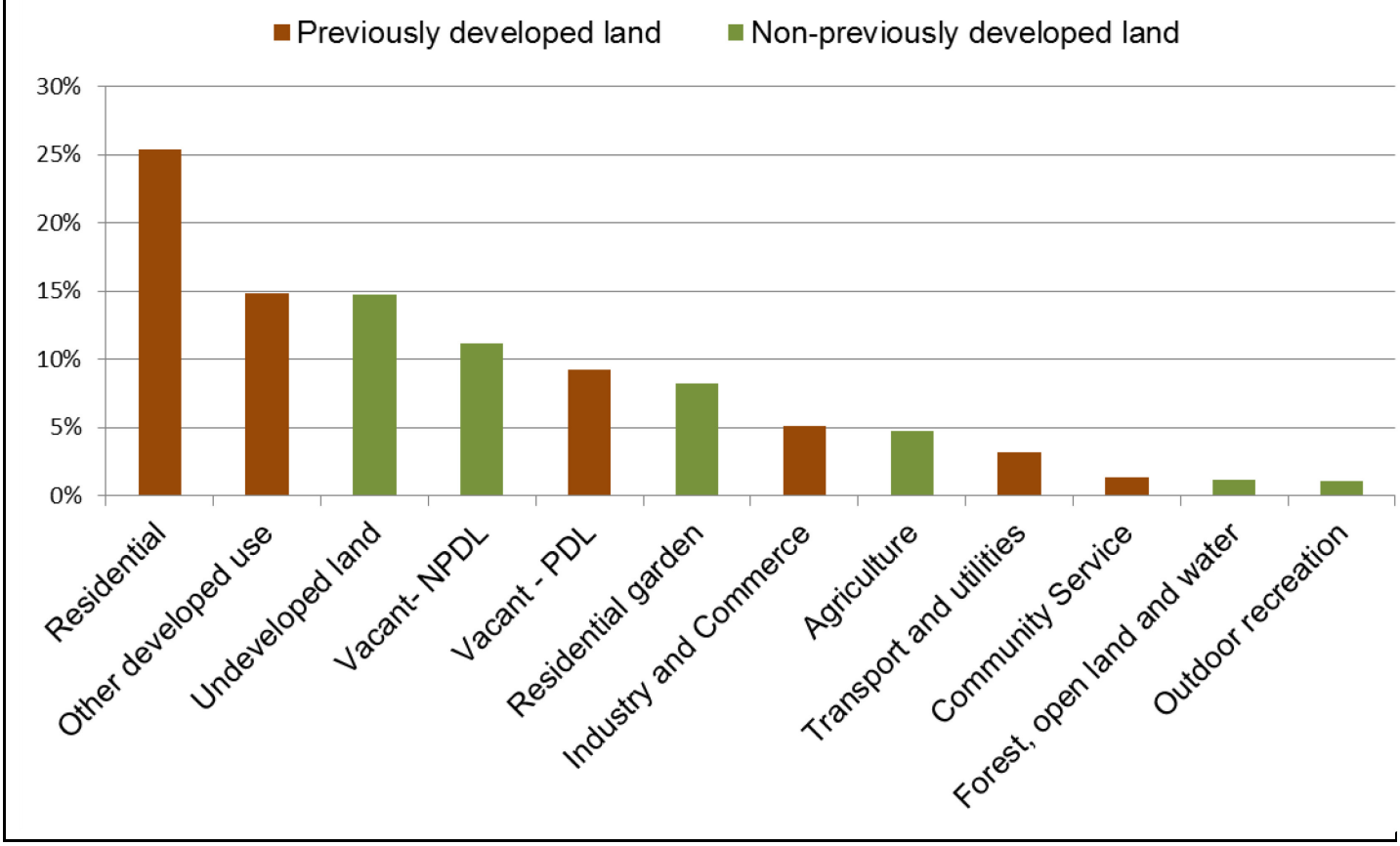
Produced by the Department for Communities and Local Government

Data Sources
OS Boundary-Line

In 2013-14 the main previous land use categories on which a residential address was created were:

- Residential land at 25 per cent of all addresses created.
- Other developed use at 15 per cent of all addresses created.
- Undeveloped land (In urban areas) at 15 per cent of all addresses created.

Figure 2: Proportion of new addresses created by previous land use, England 2013-14



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 and P301.

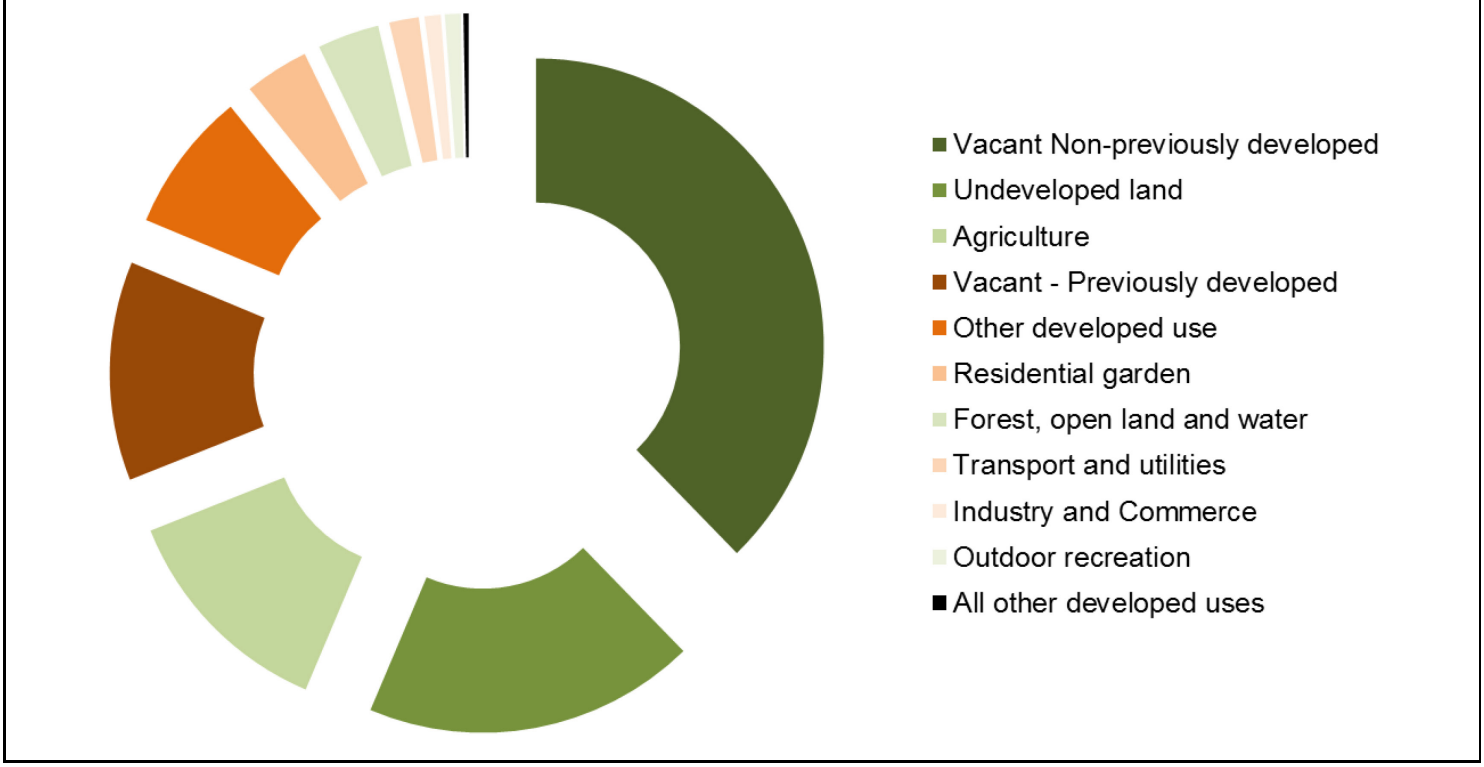
There are 28 land use categories used in Land Use Change Statistics[1]. For land changing to

residential use In 2013/14:

- 23 per cent of land changing to residential use was previously developed land.
- The main types of land changing to residential use were:
  - Vacant land non-previously developed 38 per cent.
  - Undeveloped land 19 per cent.
  - Agriculture 13 per cent.
  - Vacant previously developed 12 per cent.

The amounts of land changing to both developed and residential use from a previously developed usage now form a significantly smaller proportion than was noted under the previous Land use change statistics series. This is due to changes in the data collection methodology further details are available in the data quality section of this publication. Any time series comparison with the previous LUCS data series is invalid.

Figure 3: Proportion of land changing to residential use, England 2013-14



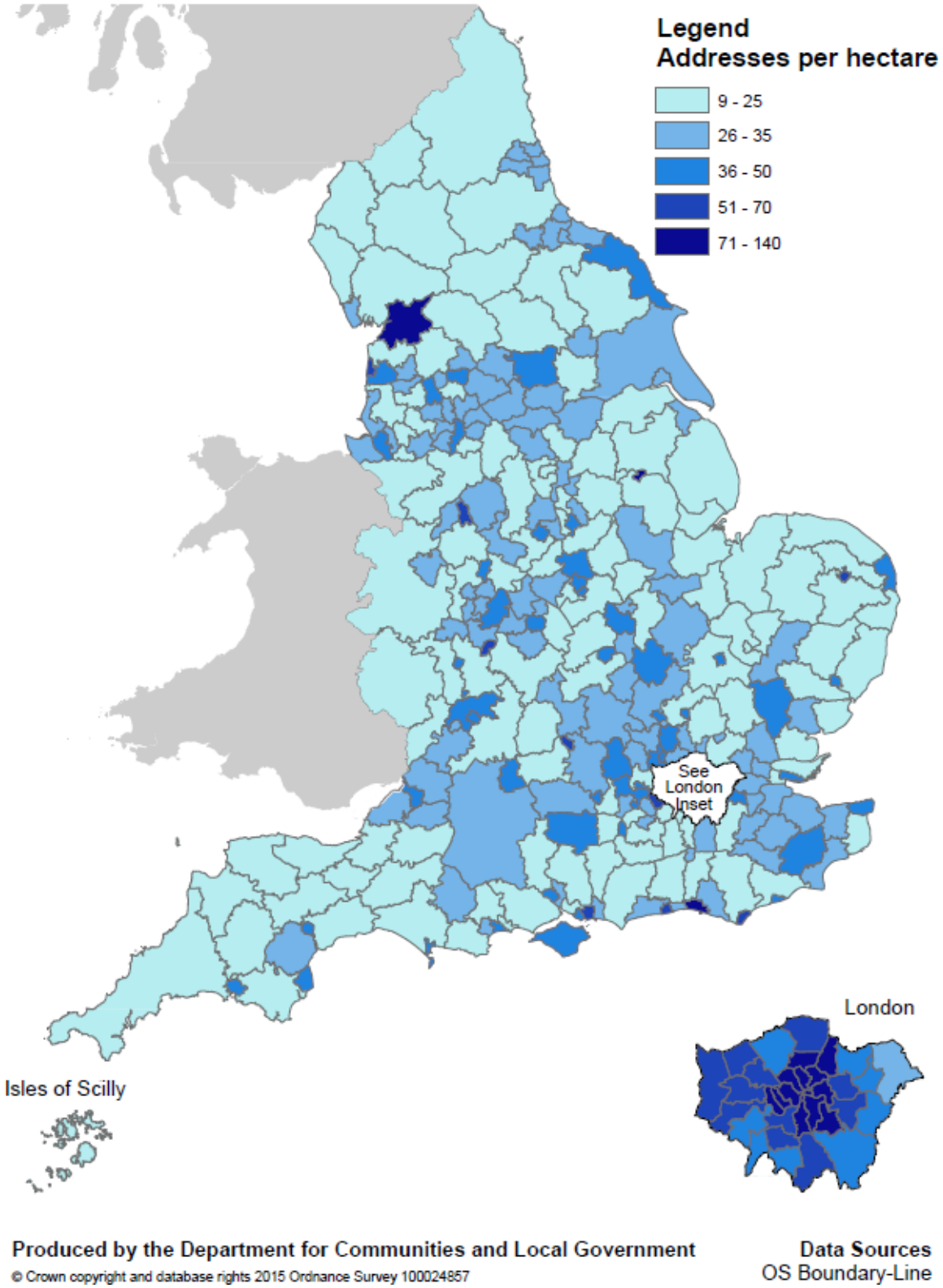
Detailed statistics on land changing to residential use can be found in the Land Use Change Statistics Live Tables, numbers P370 to P371.

Density of new dwellings

For 2013-14 data the measure of density has changed significantly. To calculate the new density measure a one hectare square is drawn around each new residential address created and all addresses falling within this square are counted to give an estimate of the density of address per hectare. Further details of this method are available in the Land use change statistics methodology changes guidance.

- In 2013-14 the average density of residential addresses surrounding a newly created residential address was 32 addresses per hectare.
- For previously developed land the density was higher than average at 37 addresses per hectare.
- For non-previously developed land the density was lower than average at 26 addresses per hectare.
- Within the Green Belt the density was lower than average at 18 addresses per hectare.

Figure 4: Density of new residential addresses by Local Authority District , England 2013-14



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[2]

- In 2013-14, 3 per cent of new residential addresses created were within the Green Belt.
- In 2013-14, 62 per cent of new residential addresses created within the Green Belt were built on previously-developed land.
- From land changing to residential use in 2013-14, 8 per cent was within designated Green Belt.

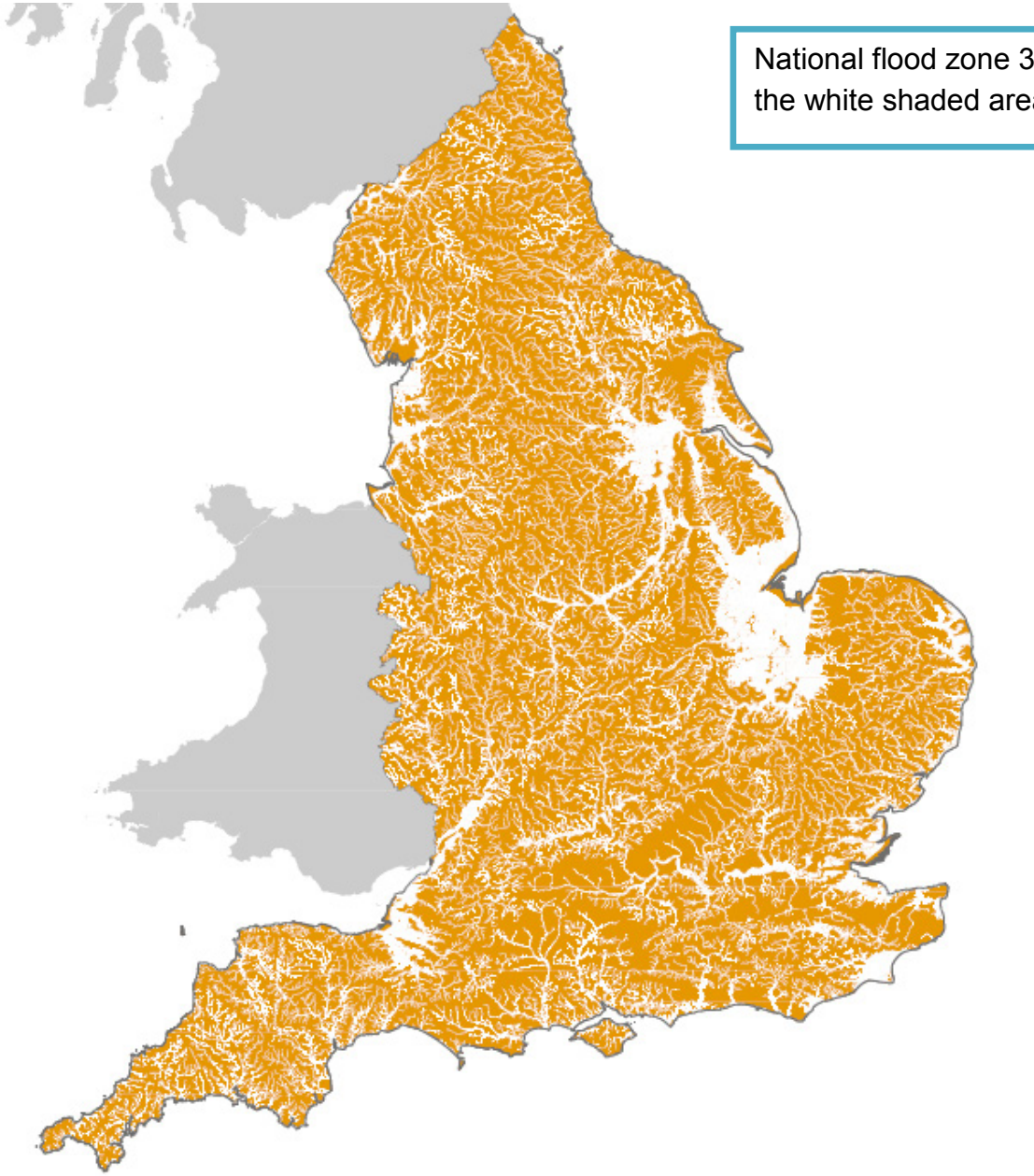
Detailed statistics on changes within the Green Belt can be found in the Land Use Change Statistics Live Tables, numbers P310 to P311 and P380 – P383.

Changes within areas of high flood risk[3]

- In 2013-14, 7 per cent of new residential addresses were created within areas of high flood risk[3].

- In 2013-14, 5 per cent of land changing to residential use was within areas of high flood risk[3].

Figure 5: National flood zone 3, England 2013-14



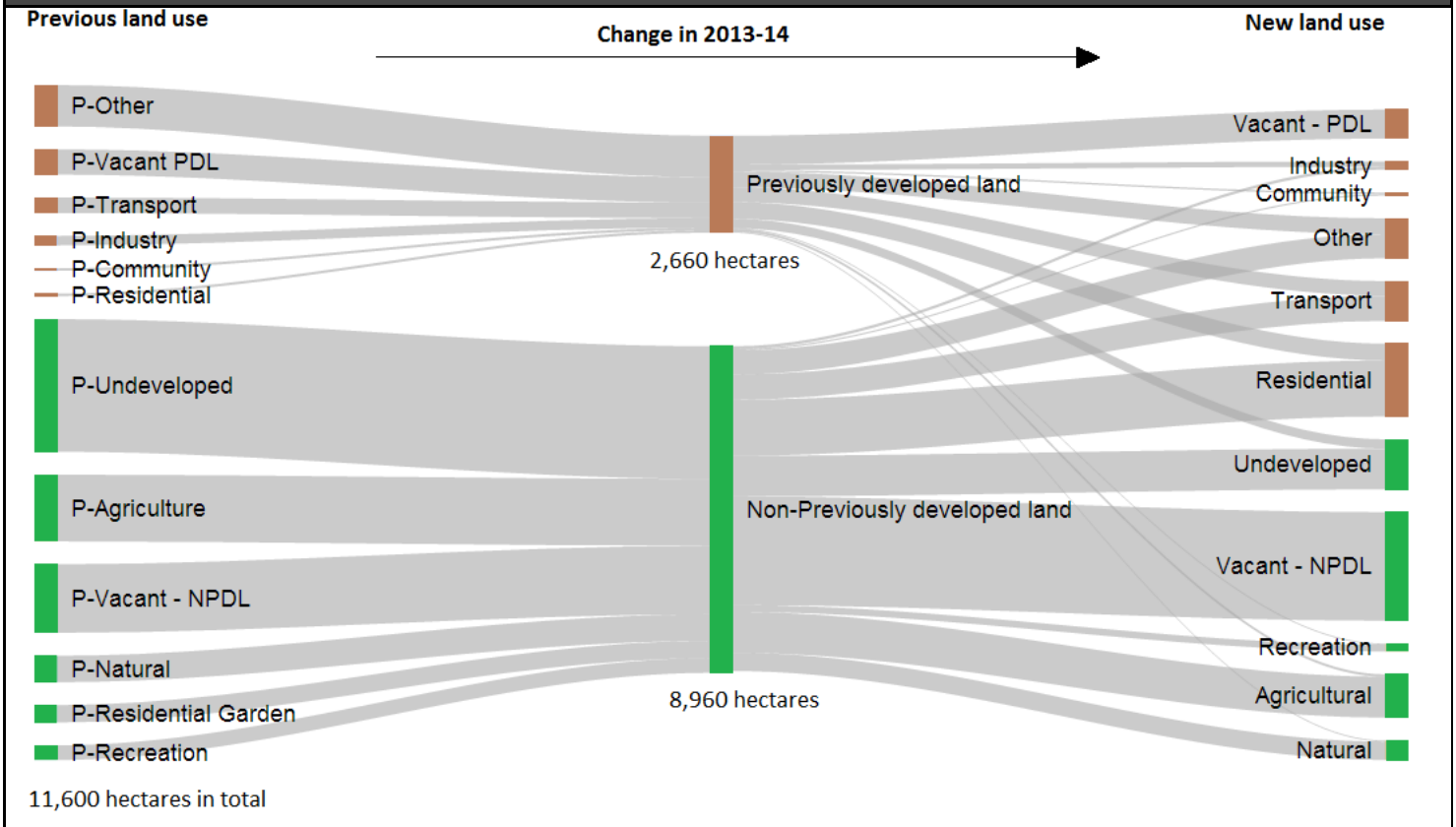
Detailed statistics on changes within areas of high flood risk can be found on the Land Use Change Statistics Live Tables, number P320 and P390.

Changes in land usage

In 2013-14, 43 per cent of land area changing to a developed use was previously-developed.

- In 2013-14 the main new uses of land changing to a developed use were:
  - Residential at 37 per cent
  - Other developed use at 21 per cent
  - Transport and utilities at 20 per cent
- Over half of the land use change captured is between different non-developed uses (51 per cent)

Figure 6: Flows of land changing use, England 2013-14



*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 - P362.

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: District authorities - Proportion of new residential addresses created by previous land usage
P310 Address Change: Proportion of new residential addresses created in the Green Belt by previous land use
P311 Address Change: District authorities - Proportion of new residential addresses in the Green Belt
P320 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: All Land changing to developed use
P362 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% is developed[1]. Around 13% of England is Green Belt encircling 14 urban areas and about 30million people. The fundamental 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.

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 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 sets 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 square meters)
- the inferred new and previous uses of the site

[1] Source: ONS Built up Areas 2011

When Ordnance Survey records a new residential address, the accompanying data provided to the Department includes:

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

Data coverage, timeliness and robustness

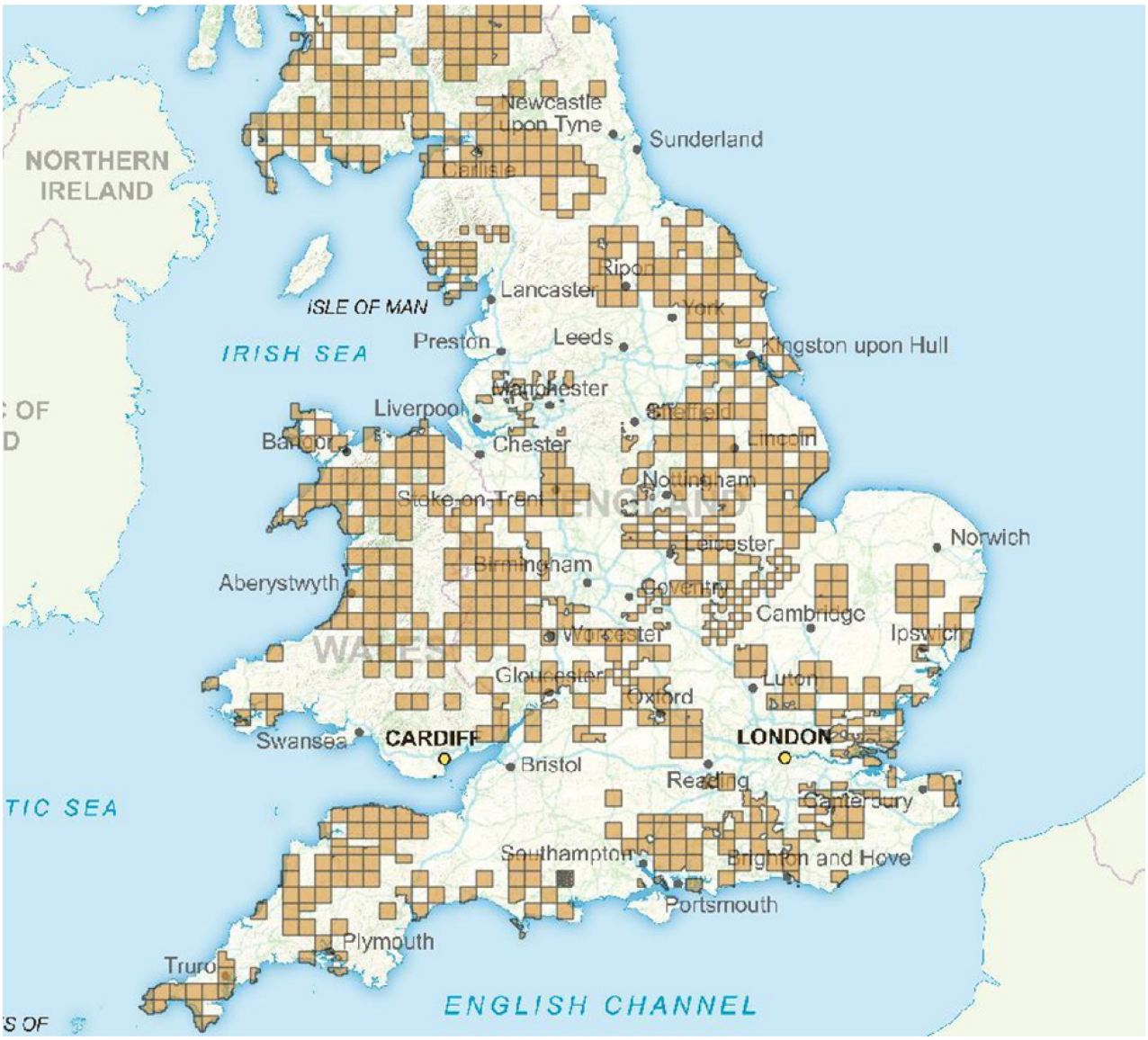
There is an inevitable time lag between a land use change occurring and it being recorded and featuring within the Ordnance Surveys' data products. The size of this lag varies, depending on Ordnance Survey's priorities and survey practices. Generally longer lags will be encountered in rural and remote locations.

At any one time, Ordnance Survey has several data capture programmes running in parallel to update and improve the core database used to create the mapping and data products, particularly the Ordnance Survey MasterMap® product suite, which is a key product used to produce these statistics.

Currently, all of England, including the rural landscape, is updated on a two to five year cycle, as part of the Integrated Data Capture Programme. Consequently, just as under the previous bespoke field-based capture of Land Use Change Statistics intelligence, the extent of actual land use change derived for each supply of land use change data will have an explicit and direct relationship with the areas that have been updated and improved by the Ordnance Survey data capture programmes. All users' attention is drawn to this relationship.

As the Land Use Change Statistics data are inferred intelligence, there will be instances where the inferred land use will be identifiable as being different to the known real world use. To check for variations of this kind would require the Land Use Change data to be verified by on-site inspection which would be prohibitively expensive. These variations may arise for one or more reasons but are likely to be the result of modelling assumptions, temporal differences, or variation in the synchronisation and update cycles of Ordnance Survey products.

Figure A-1: Areas surveyed as part of Ordnance Survey's rural data capture programme from April 1st 2013 to March 31st 2014



Areas flown as part of Ordnance Survey's rural data capture programme from April 1st 2013 to March 31st 2014

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 have checked it meets the required performance criteria and worked with the Departments' statisticians to test and 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 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 made an initial assessment of the Land Use Change Statistics against the UK Statistics authorities' guidance on using administrative data

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

This assessment showed that a comprehensive quality assurance framework is in place. This assessment is published online alongside this statistical release

Corrections for high density addresses

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

To identify erroneous points 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 2013/14 this resulted in the exclusion of 959 points from the following local authorities

- Castle Point (38 points)
- Cheshire West and Chester (697 points)
- Hart District (224 points)

Land changing to developed use

The new methodology increases the amount of land changing to developed uses from non-previously developed uses.

The new methodology realises a more granular assessment of polygonal land use change and now determines Previously Developed Land (PDL) or Non-previously Developed Land (NPDL) status based on the land cover type of each newly changed polygon feature.

Whereas the old methodology would assign all the polygonal features that made up certain types of site, say hospital, to just one class, the new methodology now identifies all the polygonal component elements forming the entirety of such sites and assigns each component polygon its own use class.

Figure A-2 shows an example of how the new methodology would interpret land changing use from a vacant site. As it is much more detailed it would pick up details on each individual change to a new usage and whether or not it was on previously developed vacant land.

Figure A-2: Land changing use under the new methodology

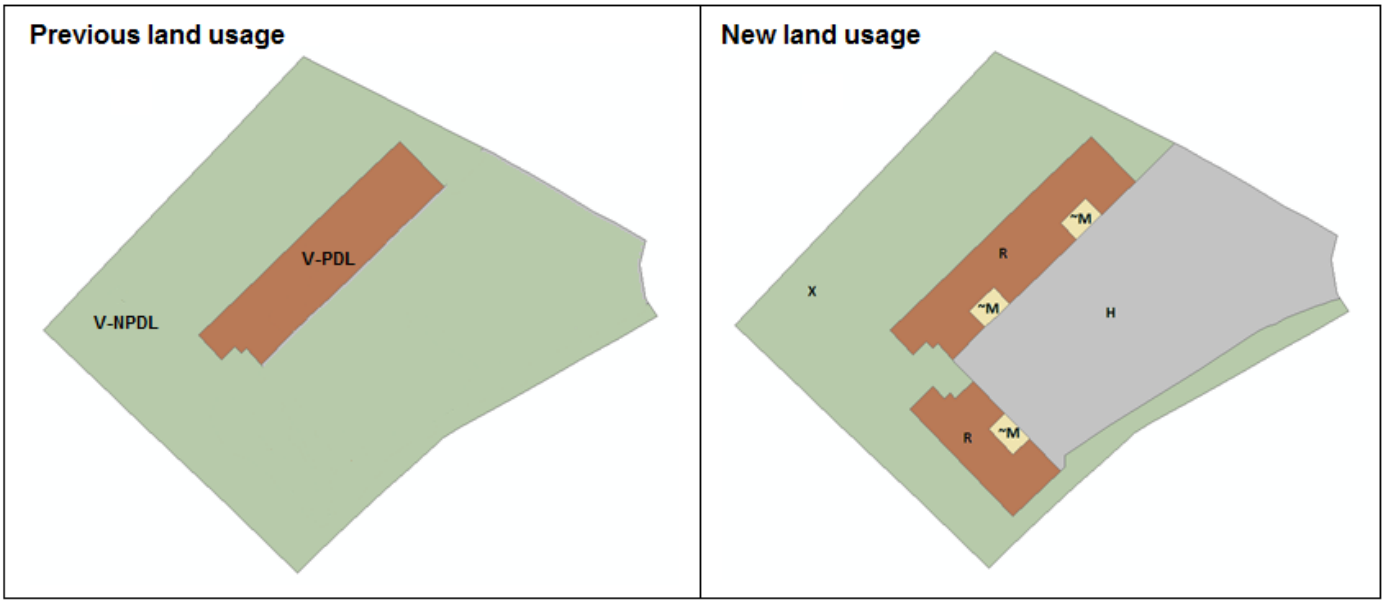
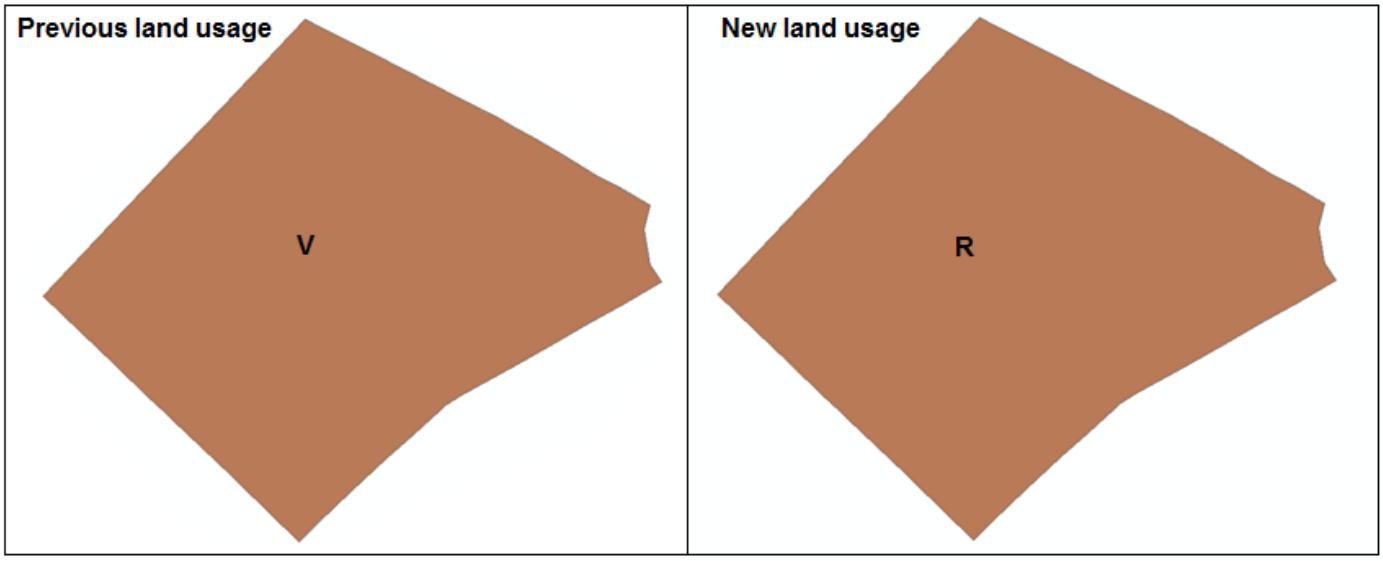


Figure A-3 shows how the same site would have been analysed under the old methodology. Previously all vacant land was categorised as developed and a breakdown of its prior use was not available. Also the entire site would be categorised under the main new usage, in this example residential.

Figure A-3: Land changing use under the previous methodology



Land changing from a previously residential use to residential use

Land changing from residential use to residential is no longer calculated by the new land use change methodology. This would include estate regeneration or cases where housing was demolished and replaced by new housing. Cases of this type are now likely to be picked up as unknown building or vacant previously developed land changing to residential.

Under the old methodology land changing from residential use to residential use represented around 30% of all land changing to residential use. As residential land was classed as previously developed the removal of this will also significantly reduce the proportion of land changing to a developed use from previously developed usage.

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:
http://www.statisticsauthority.gov.uk/

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

Date of next publication
To be announced in due course.

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

If you have any enquiries regarding this document/publication, complete the form at http://forms.communities.gov.uk/ or write to us at:

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