



Department for Levelling Up,
Housing & Communities

Land Use in England and Land Use Change Statistics

Technical Notes



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Official Statistics Status

The Land Use Change statistics are designated as National Statistics, whereas the Land Use in England statistics are official statistics.

Data collection

Data are provided by Ordnance Survey (OS).

Data quality

Assessment of data quality

In 2015, the UK Statistics Authority (UKSA) published a [regulatory standard for the quality assurance of administrative data](#). To assess the quality of the data provided for this release, the department has followed that standard.

The standard is supported with an [Administrative Data Quality Assurance Toolkit](#) which provides useful guidance on the practices that can be adopted to assure the quality of the data they utilise.

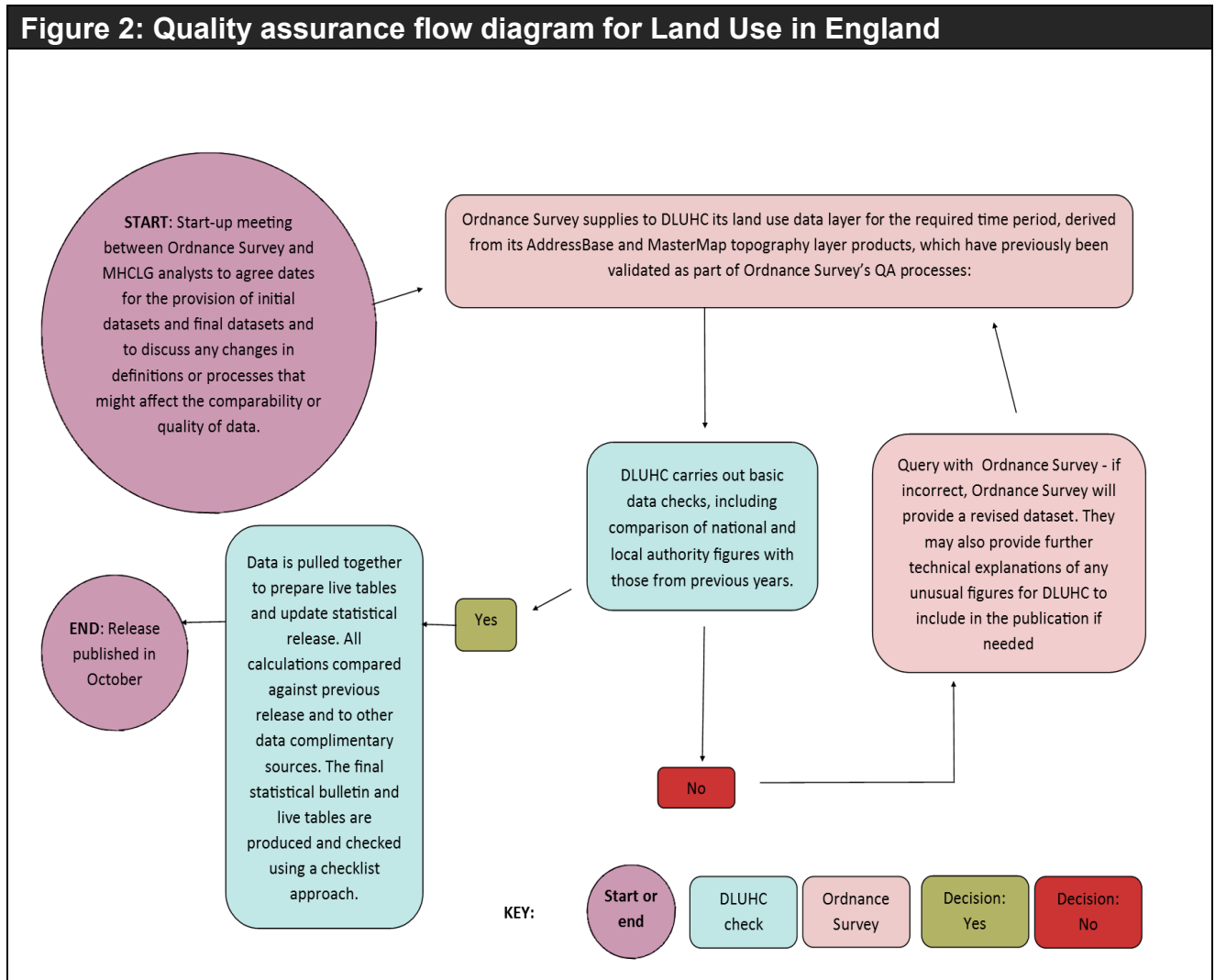
The Land Use in England and Land Use Change statistical releases are produced by DLUHC based on data provided under contract by Ordnance Survey. Assessments of the level of risk for both releases based on the Quality Assurance Toolkit are below. The assessment was initially carried out for the Land Use Change statistics publication and then extended to include Land Use in England, which uses some of the same underlying data.

| Table 1: Quality Assurance of Administrative Data risk matrix | | | | |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------|------------------------------|
| Risk/Profile Matrix Statistical Series | Administrative Sources | Data Quality Concern | Public Interest | Matrix Classification |
| Land Use statistics | The Ordnance Survey land use layer, produced using data from OS AddressBase, Open Greenspace, MasterMap Sites layer and MasterMap Topography layer | Low | Medium | Low Risk [A1] |
| Land Use Change statistics | Residential address-use changes from the Ordnance Survey AddressBase product and the Ordnance Survey MasterMap Topography layer Hectarage changes from the Ordnance Survey AddressBase product and the Ordnance Survey MasterMap topography and Sites layers. | Low | Medium | Low risk [A1] |

The publication of Land Use statistics can be considered as medium profile, as there is mainstream media interest, with moderate economic and/or political sensitivity.

The data quality concern is considered low, given that the data are obtained under contract from Ordnance Survey, who produce the data using some of their main mapping products. After receiving the datasets, departmental statisticians perform further detailed validation and checks, spotting, obtaining advice from Ordnance Survey and correcting any errors.

Overall, the Land Use in England and Land Use Change statistics have both been assessed as A1: Low Risk. A full outline of the statistical production process and quality assurance carried out is provided in the flow chart in Figure 2.



Note on Figure 2: the process for Land Use Change statistics is very similar to that shown for Land Use in England, but uses different data sources, as shown in Table 1, above.

i) Operational context and administrative data collection

For **Land Use in England**, the data provided under contract to the department by Ordnance Survey are taken from Ordnance Survey's land use layer, which is routinely updated using their administrative processes. In particular, it is derived from the AddressBase product, Open Greenspace and the MasterMap Topography and Sites layers. Topographical changes are recorded by an image analysis (c.80,000 km of aerial imagery is captured per year), field surveying and data enhancement/ cartography of boundaries or descriptive terms. Major developments and landscape changes are monitored every six months. Rural areas, urban improvement and minor changes are

monitored by aerial photography, with areas revisited for image capture on a three-year cycle.

For the Land Use Change statistics:

- Residential address-use changes are captured by OS's AddressBase product within six months of the change occurring at most, as local authorities routinely update an online land gazetteer from council tax, electoral registration and/or planning or building control records; and
- the hectare data component is produced by calculating the difference between the most recent year's snapshot of land use and that of the previous year. The land use snapshot is derived from AddressBase product, Open Greenspace and the MasterMap Topography and Sites layers. Topographical changes are recorded by a four-step process of remote sensing, field surveying, aerial image capture (c.80,000 km aerial imagery per year) and data enhancement/cartography of boundaries or descriptive terms. Major developments and landscape changes are monitored every six months. Rural areas, urban improvement and minor changes are monitored by aerial photography, with areas revisited for image capture on a three-year cycle.

After receiving the relevant datasets, 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 local authority areas and national trends.

ii) Communication with data supply partners

There is a binding contract in place between the Department and Ordnance Survey outlining the expectations of the data to be provided in terms of timing and quality. Close working links are maintained between Departmental statisticians and the relevant technical team within Ordnance Survey, both in advance of the scheduled annual publication of the statistics and through the year as queries arise in response to *ad hoc* data queries received. Special importance is attached to any changes between years to the definition of land use categories and to any technical changes, such as improvements in the speed or accuracy of collecting data on changes in land use. This helps to establish whether 'reverse engineering' or similar steps are needed to try to disentangle real-world changes in land use from the effects of the technical changes in respect of changes in other years.

iii) QA principles, standards and checks by data suppliers

The Ordnance Survey's data products that were used to derive the Land Use in England and Land Use Change data are subject to numerous quality assurance tests to meet the required quality criteria before their publication.

These products are then used in the Land Use in England and Land Use change Statistics methodologies, with the Ordnance Survey going through several stages to produce the final figures in each case.

Before the Department formally receives the Land Use in England and Land Use Change data, Ordnance Survey has also checked that they meet the required performance criteria and worked with the Department's statisticians to test, develop and improve the outputs' validity.

iv) Producers' QA investigations and documentation

The individual land use and residential address changes provided by Ordnance Survey are checked by Departmental statisticians 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.

Quality assurance:

The department has previously published a quality assurance statement alongside the publication of the Land Use in England and Land Use Change Statistics. The document is available at <https://www.gov.uk/government/publications/land-use-change-statistics-quality-assurance-assessment>. 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/>

Assessment by the Office for Statistics Regulation (OSR)

During 2020, the OSR carried out a review of the compliance of the Land Use Change Statistics against the Code of Practice for Statistics and concluded that they should continue to be designated as National Statistics. As part of this work, it also reviewed the Department's official statistics on Land Use in England and found several positive examples in the way that both sets of statistics are produced and presented.

Further details are given in Mark Pont's letter to Sandra Tudor of 18 December 2020:

<https://osr.statisticsauthority.gov.uk/correspondence/mark-pont-to-sandra-tudor-land-use-change-statistics-and-land-use-in-england/>

Definitions

The definitions below have been provided by Ordnance Survey. They relate to the 28 land use groups and categories listed in **Table A1**, as below and as also included in the Land Use and Land Use Change statistical releases.

| Developed land | | | Non-developed land | | |
|--------------------------------|---------------------------------------------|------|--------------------------------------|------------------------|-------------|
| Group | Category | Code | Group | Category | Code |
| Community services | Community buildings | C | Agriculture | Agricultural land | A |
| | Leisure (indoor) | L | | Agricultural buildings | B |
| Defence buildings | Defence buildings | D | Forestry, open land and water | Forestry and woodland | F |
| | | | | Rough grassland | G |
| Industry and commerce | Industry | I | | Natural land | N |
| | Offices | J | Water | W | |
| | Retail | K | Outdoor recreation | Outdoor recreation | O |
| | Storage and warehousing | S | | | |
| Minerals and landfill | Minerals and mining | M | Residential gardens | Residential gardens | RG |
| | Landfill and waste disposal | Y | | | |
| Other developed use | Unidentified building | ~B | Undeveloped land | Undeveloped land | X |
| | Unidentified general manmade surface | ~M | | | |
| | Unidentified structure | ~S | | | |
| | Unknown surface type with no classification | ~U | | | |
| Residential | Communal accommodation | Q | Vacant land | | |
| | Residential | R | Group | Category | Code |
| Transport and utilities | Highways and roads | H | Vacant land | Vacant land | V |
| | Transport (other) | T | | | |
| | Utilities | U | | | |

A) Previously Developed Land

Residential

Residential (R)

Houses, flats, sheltered accommodation where residences have separate front entrances and adjoining garages, gardens, estate roads and pathways.

Institutional and Communal Accommodation (Q)

Buildings that provide communal accommodation including residential institutions that are not classified as Community Buildings (C) or Leisure and Recreational Buildings (L). Included are hotels, hostels, old people's homes, children's homes, monasteries and convents, etc.

Transport and Utilities

Highways and Road Transport (H)

Roads as through routes, including distributor roads in housing estates, bus stations and public car parks. (Note – Roads in housing or industrial estates that are primarily a means of access to properties are classified as Residential (R) or Industry (I) as appropriate. Car parks not open to the public are classified with the buildings or activities they serve).

Transport (other) (T)

Non-highway transport routes and places, e.g. railways, airports and dockland, including all installations within the perimeter of the establishment, e.g. warehouses, dry docks, wharves, internal roads etc. (Note – Canals and rivers are classified as Water (W). Warehousing and industrial sites built on former dockland are classified as Storage and Warehousing (S) or Industry (I) as appropriate).

Utilities (U)

Facilities for post and telecommunications, the production and distribution of gas and electricity, the treatment and disposal of sewage, and cemeteries and crematoria. It includes power stations, water works, gas works, refuse disposal places (except those in Landfill Waste Disposal (Y)), TV masts and electricity sub-stations etc.

Industry and Commerce

Industry (I)

Works, refineries, shipbuilding yards, mills and other industrial sites. (Note – Where these are part of a public utility, e.g. gas works or water works, they are classified as Utilities (U)).

Offices (J)

Local and central government offices, banks, building societies and other offices etc.

Retailing (K)

Shops, garages, public houses, restaurants, post offices etc.

Storage and Warehousing (S)

Depots, scrap and timber yards, warehousing etc.

Community Services

Community Buildings (C)

Health, educational, community and religious buildings and police stations, prisons, fire stations, etc.

Leisure and Recreational Buildings (L)

Buildings associated with leisure and recreation such as museums, cinemas, theatres, bowling alleys, sports halls, holiday camps, amusement arcades, etc and buildings associated with outdoor recreation.

Vacant Land ¹

Vacant Land previously developed (V)

Land that was previously developed and is now vacant which could be developed without further demolition or treatment. For example, cleared sites with no fixed structures or building foundations. Includes cleared sites used as temporary car parks or playgrounds, provided no work has been done to facilitate their temporary use and there are no permanent fixtures or structures.

¹ Although a Derelict Land (Z) category previously existed, it was dropped as part of the methodology changes that took effect from 2013-14 for the land use change statistics.

Minerals and Landfill

Minerals (M)

Areas of surface mineral working including spoil tips together with all buildings and installations for surface and underground mineral workings.

Landfill Waste Disposal (Y)

Rubbish tips and former mineral workings which are used for land being reclaimed by the tipping of domestic and industrial waste and land being reclaimed by infill.

(Note – Waste transfer stations, incinerators and household waste sites where these are used purely for transit or processing are classified as Utilities (U)).

Defence buildings

Defence buildings (D)

Defence establishment land, barracks, buildings, airfields and firing ranges which are shown as such on the OS map. (Note – Married quarters are classified as Residential (R)). Although this classification was simply called 'Defence' before the 2018 Land Use in England publication, only building features can be classified as in this way the land use data, such as barracks and administration offices. This is because a defence classification is mainly indicated by the address data used within the land use analysis. It is not indicated by the large-scale topographic data used. Large areas such as firing ranges and military airfields, cannot therefore be identified in practice by the current process.

Other developed use

Unidentified building (~B)

Buildings where no other classification is available

Unidentified general manmade surface (not roadside) (~M)

Hard standing; usually a car park, paved area, tarmac or other similar Construct

Unidentified structure (~S)

Manmade structures where no other classification is available

Unknown surface type with no classification (~U)

Applied to features where no other classification is available

B) Non-previously developed land

Agriculture

Agricultural Land (A)

Areas of crops, grassland, hop fields and fruit bushes etc, corresponding to “white” areas without symbol or annotations on the OS map. Orchards and nurseries shown by annotations on the OS map.

Agricultural Buildings (B)

Buildings and hard surface areas and farm roads found on farm holdings. (Note – farmhouses are classified as Residential (R) and farm shops are classified as Retailing (K)).

Forestry, Open Land and Water

Forestry/Woodland (F)

Areas marked with woodland annotations on the OS map including woodland on farm holdings and woodland used for recreation.

Rough Grassland and Bracken (G)

Areas of rough grassland and bracken shown by annotation or symbol on the OS map and areas of scrub, with no other woodland classification, occurring outside areas of forestry and woodland. This category includes such land used for recreation.

Natural and Semi-natural Land (N)

Land which is not being cultivated or grazed and which has never been used for development, including scree, cliff, dunes, marsh and beach and land reclaimed from the sea or estuaries which has not yet been grazed or developed. This category includes such land used for recreation.

Water (W)

Water features including lakes, canals, reservoirs etc whether man made or occurring naturally and including those used for recreation. (Note – Water filled gravel pits where extraction is still taking place are included in Minerals (M)).

Outdoor Recreation

Outdoor Recreation (O)

Outdoor recreation areas such as playing fields and sports grounds, including those in schools and industrial sites, football pitches, golf courses, country parks and allotment gardens. (Note – Buildings, such as stables, clubhouses and pavilions, associated with Outdoor Recreation are classified as Leisure and Recreational Buildings (L). If an area is designated as a nature reserve, the land use grouping is unaffected – any changes within these areas are classified in the normal way).

Residential gardens

Residential gardens (RG)

Residential gardens of any type, regardless of surface.

Undeveloped land

Urban Land not previously developed (X)

Land in built-up areas which has not been developed previously and which is not currently used for agriculture which is shown on the OS map as a 'white' area without annotation. In practice, this often includes flowerbeds and other types of bare earth or grass. (Note – If it was not in a built-up area (or if it was being used for agriculture), such land would be classified as Agricultural Land (A)).

Notes

1. These **land use** statistics are estimates.
2. Land use is not a snapshot on a single day because the data are derived from a range of products, each having its own publication date. These dates are spread out over a number of weeks, but chosen to centre around April 2021.
3. Vacant land is identified by Ordnance Survey as unclassified land, bounded by hoardings etc., around the perimeter. It is also yet to be attributed to an address. It is not possible within the summary statistics presented here (such as in Tables P400 to P405) to define whether the vacant land is of a developed or non-developed land use type.
4. Residential land area is limited to the on the ground footprint.

5. The method used to overlay the land use data with other spatial data files has been improved since statistics were published previously, for 2018. Where two geometric areas intersect each other, only that part of a parcel of land that is included within both areas is included within the relevant breakdown. Previously, the whole area of any such parcel of land was included within the relevant breakdown.

6. The Green Belt analysis is based on annually updated data sets of digitised boundaries provided to DLUHC by local authorities. Land can only be removed from the Green Belt through the local planning process.

7. **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 the same set of 28 as used for the Land Use in England statistics. Two different elements of land use change statistics are usually published: i) residential address change; and ii) change in hectareage (amounts of land). Statistics for the first of these, for changes in 2018 to 2019; 2019 to 2020; 2020 to 2021; and 2021 to 2022, were published on 27 October 2022, on a consistent basis with those published for previous years. On ii), the most recent published hectareage statistics as at October 2022 are for 2017 to 2018, with the method for calculating and publishing more recent changes being under review, and statistics up to 2022 are due to be published in the coming months.

8. Details of officials who receive pre-release access to Land Use in England and Land Use Change Statistics up to 24 hours before release can be found at:

<https://www.gov.uk/government/organisations/department-for-levelling-up-housing-and-communities/about/statistics>

Revisions policy

This policy has been developed in accordance with the UK Statistics Authority's Code of Practice for Statistics. It is the revisions policy of the Department for Levelling Up, Housing and Communities (formerly Ministry of Housing, Communities and Local Government). It can be found at <https://www.gov.uk/government/publications/statistical-notice-dclg-revisions-policy>).

It defines two types of revision that the policy covers, as follow:

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

The Land Use in England and Land Use Change Statistics publications are produced from static versions of Ordnance Survey products and as such are not subject to any scheduled revisions.

Other information

Uses of the data

Land Use in England data are used to monitor the amount of land falling within each of 28 land use categories.

Land Use Change – residential address change data are used to monitor the location and density of new residential dwellings and the previous land use on which these dwellings were created.

Land Use Change – hectarage data provide information on the amount of land changing use from previous use to its new use. These changes are recorded to and from the set of 28 land use categories. Land Use Change – hectarage data for years up to 2022 are due to be published in the coming months.

Related Statistics

The Department for Levelling Up, Housing and Communities is part of a cross-government working group, including devolved administrations and the Office of National Statistics, working to improve the trustworthiness quality and value of housing and planning statistics across the UK. This working group has published action plan to make the planned improvements on house building statistics clear and transparent to users.

Details of this work and how you can provide feedback are available via the Government Statistical Service website: <https://gss.civilservice.gov.uk/guidances/working-with-users-2/housing-and-planning-statistics/>

Related statistics are detailed in Table 2. Further information can be found in the separate statistical release for each source.

Table 2: Land Use in England and Land Use Change Statistics and related statistics

| Release | What do statistics show? | Frequency | Where does the data come from? | What are these figures most appropriate for? |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land Use in England statistics | The amount of land in each of the 28 land use categories | Annual – but subject to consultation | The Ordnance Survey land use layer, produced using data from OS AddressBase, Open Greenspace and MasterMap Topography and Sites layers | Monitoring land use. |
| Land Use Change Statistics | 'New residential addresses': The location and previous land use those addresses were created on in England. 'Hectarage': The amounts and location of land changing use in England | Annual, but hectarage is due to become three-yearly | Two underlying data sets from Ordnance Survey: i) residential address-based change; and ii) land use-based change | Monitoring development such as changes to residential use. They also provide information on the percentage of new dwellings built on previously developed land and non-previously developed land, the percentage of housing development in flood risk areas, on agricultural land and in the Green Belt and the density (dwellings per hectare) of new housing. |
| DLUHC: Local Authority Green Belt, in England | Amount and location of land designated as Green Belt in England. Other relevant designations are also combined and presented here as well. | Annually (Sep/Oct) | Data is collected from local authorities via DELTA. Local authorities provide spatial data where there have been changes or revisions made to land designated as Green Belt within their local authority. | Provides an accurate assessment of land designated as Green Belt in England. Provides an accurate assessment of land covered by other relevant designations such as National Parks and areas at high risk of flooding. https://www.gov.uk/government/collections/green-belt-statistics |
| DLUHC Housing supply: net additional dwellings | Total housing supply that comprises all new build, conversions, change of use, other gains/losses and demolitions | Annual (November) | Comes from local authorities outside London (Housing Flows Reconciliation Return) and for London boroughs is provided by Greater London Authority (London Development Database) | Provides an accurate assessment of annual change in all housing stock and is the most comprehensive estimate of supply. https://www.gov.uk/government/collections/net-supply-of-housing |
| DLUHC Housing supply: Indicators of new supply | Estimates of new build starts and completions and statistics of other indicators. | Quarterly (Mar, Jun, Sep, Dec) | Building control officers at: <ul style="list-style-type: none"> • National House Building Council • Local Authorities • Approved Inspectors | This is a 'leading indicator' of house building, available soon (< 2 months) after quarter end. https://www.gov.uk/government/collections/house-building-statistics |
| DLUHC: Traveller Caravan Count | Counts of traveller caravans, sites and pitches | Twice-yearly | Data is collected from local authorities on the Traveller Caravan Count return via DELTA. | Monitoring numbers of caravans, sites and pitches. Includes location and size of sites (Table 2): https://www.gov.uk/government/statistics/traveller-caravan-count-january-2022/count-of-traveller-caravans-january-2022-england |

| | | | | |
|------------------------------------------------------------|----------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DLUHC: local authority registers of brownfield land | Brownfield sites available for housing | Updated by local authorities on an ongoing basis | Local authority brownfield registers: | Identifying land potentially available for housing 2018 data, beta version - https://digital-land.github.io/map/?layer=brownfield-land#51.82646,-2.37767,6.373007872713485z |
| DEFRA: Agriculture in the UK | Agricultural land use | Annual | Primarily from the June Surveys of Agriculture carried out in the four UK countries each year. | https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2021/chapter-2-structure-of-industry - Table 2.1 in Chapter 2 (Structure of industry) is a breakdown of agricultural land use in the UK. |

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>.

On 31 May 2019, the Department published a consultation paper on proposed changes to its land use change statistics:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/805420/Land_Use_Change_Consultation.pdf

Following the closing date for responses on 31 July 2019, the Department analysed the responses received and published its response on 16 July 2020:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/901105/Land_Use_Change_Consultation_-_Response_-_July_2020.pdf

In summary, the Department announced its intention to implement the main proposals to continue to publish statistics on land use annually, in addition to maintaining annual updates on the number of addresses changing from and to a residential use, but decreasing the frequency of publication of hectare change estimates to three-yearly intervals.

In the light of further engagement with our data suppliers, Ordnance Survey, on data collection and methodology, **the Department is considering whether it is better to publish statistics on land use every three years, rather than annually.** The Department would welcome users' views on this, and any other aspect of the statistics. Users can comment by emailing planning.statistics@levellingup.gov.uk, preferably by 31 January 2023.