Office of the
Deputy Prime Minister

Creating sustainable communities

Land Use Change Statistics (LUCS) Guidance

The Office of the Deputy Prime Minister
Eland House
Bressenden Place
London SW1E 5DU
Telephone: 020 7944 4400
Web site: www.odpm.gov.uk

Further copies of this publication are available from:

ODPM Publications
PO Box 236
Wetherby
West Yorkshire
LS23 7NB
Tel: 0870 1226 236
Fax: 0870 1226 237
Textphone: 0870 1207 405
E-mail: odpm@twoten.press.net

October 2004

Product code:

Contents

1 Introduction

These notes provide guidance and background to Land Use Change Statistics (LUCS). LUCS are recorded for England only. Updated Statistical Releases are published every six months.

2 Policy Context

Land is a finite resource. While some land can only be used for a limited range of purposes, other land can accommodate many potentially competing uses. The amounts of land used for each purpose are constantly changing and the nature and extent of these changes are of crucial importance for those developing, implementing or monitoring planning policies. Issues that are currently of particular interest include:

- the proportion of new housing that is on previously developed land;
- the transfer of agricultural land to housing or other development;
- the development of vacant land in urban areas; and
- the density of new developments.

LUCS have been used in formulating and monitoring a national target for the percentage of housing that should be built on reused sites. The current target, set in February 1998, is to raise the national proportion of additional housing provided on previously developed land and through conversion of existing buildings to 60 per cent by 2008. LUCS have also been used in projecting urban growth up to 2016.

3 Understanding Land Use Change Statistics

3.1 Data Collection

Land use change data have been obtained from Ordnance Survey (OS) since 1985. They are now analysed by the Office of the Deputy Prime Minister (ODPM).

A land use change is recorded as part of OS's map revision process, when the current land use category of a parcel of land differs from that depicted on the existing OS map. A change is also recorded where there is no change in the appropriate land use category, but new features are added, such as a house being demolished and one or more built in its place, or an additional house being built within the grounds of an existing house.

Change is not recorded, however, if it does not affect the OS map, generally where there is no physical change. This would include in particular, conversions within existing buildings. The data recorded by OS in any one year depend on OS resources and how these are deployed on different types of map revision survey.

When OS surveys a site of land use change, the information about the site recorded for the Department includes:

- the date of survey;
- the grid reference;
- the ODPM code for the local authority area;
- the approximate area;
- the new and previous use of the site;
- the year change in use occurred;
- the estimated number of dwelling units demolished and built; and
- the map revision programme (see below).

The main consequence of OS map revision policy is that 'built up' development (for example, new houses or industrial buildings) tends to be recorded relatively sooner than changes between other uses (for example, between agriculture and forestry), some of which may not be recorded for several years. Hence LUCS provide more timely information on changes to urban uses and on the recycling of land already in urban uses than rural land use changes.

The assignment of a parcel of land to a land use category does not, in general, depend on its location. Thus urban use categories can occur in the countryside, e.g. a farmhouse (residential); and examples of rural use categories can be found in urban settlements, e.g. playing fields (outdoor recreation). The exception to this is vacant urban land not previously developed (category X), which can occur only within built-up areas. This is a 'parcel-based' approach to classifying land use. The concept of parcels of land in urban uses should not be confused with that of urban areas.

3.2 Data Timeliness

There is an inevitable lag between a land use change occurring and it being recorded. The majority of changes are recorded within 5 years of the change occurring. However, changes involving physical development (e.g. new houses or industrial buildings) tend to be recorded more quickly than changes between other uses (e.g. between agriculture and forestry).

Analysis of the land use change data, and research on the impact of a new survey strategy by OS has shown that changes to urban uses judged to have occurred in 1995 were recorded, on average, 12 months after the year of change, compared with 18 months for 1990 change. By contrast, changes to rural uses were recorded, on average, 2 years after the year of change.

In more recent years OS have intensified their surveying. This has significantly reduced the lag associated with the LUCS data and changes, particularly to developed uses, are being recorded more quickly. Increased revision will improve the robustness of the data and allow earlier publication of national results. For example, an estimate of the percentage of dwellings built on previously developed land can now be provided after just one year.

There is likely to be variation between the amount of aerial surveying that is undertaken for different time periods. For example, there was more intensive surveying carried out in the late 1990's than for other data years in the series. For this reason, it is more accurate to use a larger time period of around ten years when comparing changes to or from rural land uses.

3.3 The Rounding Effect

Where OS records a change after several years have elapsed, the surveyor inevitably has difficulty judging the year of change accurately. In some cases the surveyor may inadvertently round the year of change to the nearest 5 years. For example, if a surveyor believes that a change occurred some time around the late 1980s or early 1990s he or she may be more likely to record it as occurring in 1990 than, say, 1989 or 1991.

For data collected between 1989 and 1992 this type of rounding was a deliberate policy, in recognition of the difficulty of estimating the year of change precisely. The policy changed in 1993 to provide all subsequent data by single year of change. Otherwise a 1988 change (a peak year for house building activity) recorded in 1993 would have had the year of change rounded and the data recorded as 1990 change.

From 1985 to 1988, and from 1993 onwards it was intended that years of change should be recorded to the nearest year. However, analysis of results shows that rounding the year of change to the nearest multiple of 5 years still occurs owing to the difficulty surveyors have in estimating an accurate year of change after a long time lag.

LUCS was introduced in 1985 and there are peaks in the records in this year and 1990 that clearly illustrate the effect of rounding. The peaks for 1995 and 2000 are not so obvious as changes around these years are still relatively recent and probably easier to record accurately than changes in 1990.

3.4 1999 Figures

In 1999 a complete set of data could not be provided. The implications are that total figures are understated and percentages are subject to some uncertainty. However, investigations have indicated that should the data have been recorded they would have been spread across regions and previous uses. Therefore percentages are thought to be reasonably reliable. Further support to this is given by the fact that the percentage figures are in line with other years.

3.5 Conversions

The Government's target is for 60 per cent of all new dwellings, including conversions, to be built on previously-developed land. Most new dwellings resulting from the conversion of existing buildings are thought *not* to be included in LUC records. Therefore an estimation for England is required that uses Housing Flow Returns to ODPM.

Housing Flow Returns provide Local Authority estimates for the total number of conversions. These can be added to the estimated number of new dwellings built on previously-developed land from LUCS. The number of percentage points that conversions add to the recycling rate is calculated in this way.

This figure was around three percentage points using data available up to and including 2002. From 2003 a more elaborate calculation of the percentage points that are added (to one decimal place) has been adopted. The latest calculation uses more complete conversion data from Housing Flow Returns and a longer time series to increase data quality. An estimation of the amount of LUC data that includes conversions has also been included. An additional LUC data field indicating whether or not each change is from the conversion of an existing building was introduced in October 2003 and will be incorporated in future analysis.

Regional or local authority estimations for the number of conversions are not currently possible. Although data quality has improved, there are doubts about the reliability of Housing Flow Return data and some Local Authorities do not submit a return. Furthermore, until there is sufficient data from the additional LUC field for analysis, there is no method of monitoring the amount of conversions detected in LUC records.

3.6 Changes to residential land

The land use categorisation of LUCS includes two categories for residential use (see 4.2 below). From 2004 onwards, published tables referring to land changing to residential use only apply to category "R" ("*Residential*" use). Tables in previous publications additionally included category "Q" ("*Institutional and Communal Accommodation*"). Statistics for dwellings built are only included when built on land classified as "R". It therefore follows that changes to residential land should only be for the same land category.

Exceptions to this are tables published in the autumn that include summaries of changes between each land use category, where categories are grouped together. In this instance "*Institutional and Communal Accommodation*" will be included in the "*Residential*" use.

Furthermore, through improvements in data quality, it was found that some data referred to residential boundary changes and not actual changes to land. Data for changes between residential uses is therefore only included when it involves the construction or demolition of a new dwelling and/or conversion. Previous data not falling into this definition has been removed.

4 Land Use Categories

4.1 Definitions

The previous and new uses of a parcel of land are each recorded as one of 24 land use categories. Sites are subdivided if necessary to achieve this. For the purposes of analysis the land use categories can be combined into ten land use groups. In publications, land use changes are presented at this level, with the 'vacant' group split between previously developed (categories V and Z), and not previously developed (category X).

The definitions of the 24 land use categories are listed in Sections 4.2 and 4.3, split by 'previously developed land' and 'non-previously developed land'.

Previously developed land, as defined in Planning Policy Guidance Note 3 (PPG3), includes all LUCS urban uses (except vacant land within urban areas not previously developed (category X)), plus the rural uses 'minerals and landfill', and 'defence'. These are noted in ***Table 1***, 'Land use categories, groups and divisions'.

Table 1: Land use categories, groups and divisions

Previously developed land			Non-previously developed land		
Group	**Category (codes)**		**Group**	**Category (codes)**	
Residential	• Residential	(R)	**Agriculture**	• Agricultural land	(A)
	• Institutional and communal accommodation	(Q)		• Agricultural buildings	(B)
Transport and utilities	• Highways and road transport	(H)	**Forestry, open land and water**	• Forestry and woodland	(F)
	• Transport (other)	(T)		• Rough grassland and bracken	(G)
	• Utilities	(U)		• Natural and semi-natural land	(N)
Industry and commerce	• Industry	(I)		• Water	(W)
	• Offices	(J)			
	• Retailing	(K)	**Outdoor recreation**	• Outdoor recreation	(O)
	• Storage and warehousing	(S)			
Community services	• Community buildings	(C)	**Vacant**	• Urban land not previously developed[2]	(X)
	• Leisure and recreational Buildings	(L)			
Vacant	• Vacant land previously Developed	(V)			
	• Derelict land	(Z)			
Minerals and landfill[2]	• Minerals[1]	(M)			
	• Landfill waste disposal[1]	(Y)			
Defence	• Defence[1]	(D)	**Key**	[1] Classified as 'rural' land use	
				[2] Classified as 'urban' land use	

Notes:

1. Unless otherwise stated, 'previously developed land' corresponds with 'urban land use' and 'non-previously developed land' with 'rural land use'.
2. Some mineral and landfill sites may be classed as non-previously developed land (see 4.4).

4.2 Previously Developed Land

Residential

(a) Residential (R)

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

(b) 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

(a) 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).

(b) 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).

(c) 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

(a) 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)).

(b) Offices (J)

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

(c) Retailing (K)

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

(d) Storage and Warehousing (S)

Depots, scrap and timber yards, warehousing etc.

Community Services

(a) Community Buildings (C)

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

(b) 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

(a) 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.

(b) Derelict Land (Z)

Land previously developed but currently unused which requires some demolition work or other treatment before it could be developed. For example, a derelict site that needs to be cleared, levelled or have foundations removed.

Minerals and Landfill (see 4.4)

(a) Minerals (M)

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

(b) 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

(a) Defence (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)).

4.3 Non-previously developed land

Agriculture

(a) 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.

(b) 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

(a) Forestry/Woodland (F)

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

(b) 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.

(c) 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.

(d) 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

(a) 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).

Vacant Land

(a) 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. (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)).

4.4 Categorising Mineral and Landfill Sites

The definition of previously-developed land provided in Annex C of Planning Policy Guidance Note 3: Housing includes land used for mineral extraction and waste disposal where provision for restoration has not been made through development control procedures. This relates to minerals and waste sites that are to remain unrestored after use because the planning permission allowing them did not include a restoration condition. All other such sites will be restored to 'greenfield' status, by virtue of the planning condition.

Mineral and landfill sites redeveloped for housing are categorised as previously-developed land in LUCS publications because the Ordnance Survey does not have access to the terms of the planning permission for the original mineral extraction or waste disposal (where such permission was given). The cost of more detailed investigation would be prohibitive. In England, no more than one per cent of all dwellings are provided from land that was previously used for minerals and landfill, although there are regional variations.

5 Regions

Regional figures are presented for Government Office regions (GORs). The composition and land areas of the GORs are given in ***Table 2*** and mapped in ***Figure 1***. Figures for the standard statistical regions are available on request.

Figure 1: Government Office Regions and Counties in England

Table 2: Total Land Area of Government Office Regions and Counties			
Government Office Region	**Hectares (thousands)**	**County**	**Hectares (thousands)**
East Midlands	1,563	Derbyshire	263
		Leicestershire	255
		Lincolnshire	592
		Northamptonshire	237
		Nottinghamshire	216
East of England	1,912	Bedfordshire	124
		Cambridgeshire	340
		Essex	367
		Hertfordshire	164
		Norfolk	537
		Suffolk	380
London	158	Greater London	158
North East	859	Cleveland (former county of)	60
		Durham	243
		Northumberland	503
		Tyne and Wear	54
North West	1,417	Cheshire	233
		Cumbria	682
		Greater Manchester	129
		Lancashire	307
		Merseyside	66
South East	1,910	Berkshire (former county of)	127
		Buckinghamshire	187
		East Sussex	180
		Hampshire	378
		Isle Of Wight	38
		Kent	373
		Oxfordshire	261
		Surrey	167
		West Sussex	199
South West	2,381	Avon (former county of)	133
		Cornwall	354
		Devon	670
		Dorset	265
		Gloucestershire	265
		Somerset	345
		Wiltshire	348
West Midlands	1,300	Hereford & Worcester (former county of)	392
		Shropshire	349
		Staffordshire	272
		Warwickshire	198
		West Midlands	90
Yorkshire and the Humber	1,541	Humberside (former county of)	351
		North Yorkshire	831
		South Yorkshire	156
		West Yorkshire	203
England	**13,041**		**13,041**
Some tables feature the following compositions for the Regional Planning Guidance:			
East Anglia	1,257	Cambridgeshire	340
		Norfolk	537
		Suffolk	380
Rest of the South East	2,565	South East	1,910
		Bedfordshire	124
		Essex	367
		Hertfordshire	164

6 Green Belts and Flood Risk Boundaries

6.1 Designated Green Belts

Green Belts are designated areas of land that aim to restrict urban sprawl of built-up areas and to preserve the character of historic towns. They have been an essential part of planning policy for some 5 decades, helping to ensure that development occurs in locations allocated in development plans. More information on Green Belt policy can be found in Planning Policy Guidance Note 2 (PPG2).

Green Belts in England covered around 1.67 million hectares, or 13 per cent, of the country in 2003 (for map see Annex 2 of Local planning authority Green Belt statistics: England 2003). Prior to this, the latest available boundaries were for 1997. It is the intention that Green Belt areas will be updated annually in the future.

Green Belt land is a mix of previously developed and non-previously developed land. It can cover small villages comprising a mixture of residential, retail, industrial and recreational land, as well as fields and forests. In this context, it may be helpful to make a distinction between land *use* and *designation*. Land *use* describes the main activity taking place on an area of land, for example residential or agriculture, whereas the land *designation* describes an area of land (with perhaps many land uses) with a special characteristic such as National Parks, Urban Areas, Areas of Outstanding Natural Beauty and Green Belt.

Although there is a presumption that *inappropriate* development in Green Belts is prohibited, some development does occur.

6.2 Flood Risk Boundaries

The flood risk analysis is based on a data set of digitised boundaries provided annually by the Environment Agency. They do not take into account any flood defences. They reflect the river and coastal floodplains and provide indicative flood risk areas. The river floodplains are the areas known to face at least a one in one hundred chance of flooding each year and the coastal floodplains are the areas known to face at least a one in two hundred chance of flooding.

Indicative Flood Risk areas cover about 12 per cent of the total area of England. A Regional or National map of Indicative Floodplains (Fluvial and Tidal) can be viewed via the Static Maps page of Multi-Agency Geographic Information for the Countryside (MAGIC) at www.magic.gov.uk.

6.3 Determining changes within green belt and flood risk areas

It can take up to five years for mapping changes to be detected by Ordnance Survey. Surveyors then estimate which year the land use change took place. When data are received from Ordnance Survey they are matched against the latest available Green Belt and Flood Risk digitised boundaries (see above). This method is used as it is not always possible to match when a land use change occurred to when a boundary change took place.

7 National Land Use Coverage

Comprehensive information about the total amount of land devoted to different uses is not currently available. A simplified land use classification, with nine categories, has been applied on an experimental basis to London, the South East Region and parts of Eastern Region. It will be applied to the whole of England at the end of 2004 – see Generalised Land Use Classification Statistics (GLUC). ODPM is working with Ordnance Survey and other partners on ways of creating a more detailed classification.

8 Symbols and Conventions in LUCS Publications

Unless otherwise stated, published tables and figures relate to England.

Hectares are rounded to the nearest 5 units and dwellings and percentages to the nearest final digit. However to ensure accuracy all calculations are based on unrounded figures. Therefore there may be apparent slight discrepancies between the sum of the constituent figures and the totals shown.

Figures in tables which show the "percentage of land changing use" area calculated from the area of land changing use, and not the number of parcels of land.

Figures in italics represent percentages.

The following symbols are used in LUCS publications:

–	negligible (i.e. less than 2.5 hectares or 0.5 per cent)
0	nil
p	provisional estimate
n/a	not available

8.1 How big is a hectare?

1 hectare = 100 metres by 100 metres = 10,000 square metres (= 2.47 acres)
1 square kilometre = 100 hectares (= 0.39 square miles)
A typical football pitch would be around three-quarters of a hectare
The Isle of Wight covers around 38 thousand hectares
The Greater London Authority covers around 158 thousand hectares
England is around 13 million hectares

9 Contact Points

Technical queries and feedback should be addressed to the Planning and Land Use Statistics Division (Tel: 020 7944 5534; Fax: 020 7944 5525).