Communities and Local Government

Generalised Land Use Database Statistics for England 2005

(Enhanced Basemap)

On 5th May 2006 the responsibilities of the Office of the Deputy Prime Minister (ODPM) transferred to the Department for Communities and Local Government

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Introduction

1. This paper provides an overview about the Generalised Land Use Database (GLUD). It explains the background and purpose of the GLUD statistics that are available from the ONS Neighbourhood Statistics website and the Communities and Local Government website. The paper explains how the figures have been calculated, gives examples of ways the statistics might be used, describes important differences between the GLUD 2005 (Enhanced Basemap) and GLUD 2001 statistics and also describes the associated detailed land parcel level maps. The paper is designed for all users of Generalised Land Use Database statistics and maps. It should be read in conjunction with the comprehensive metadata available separately from the ONS Neighbourhood Statistics website.

2. The Generalised Land Use Database (GLUD) provides new experimental statistics showing land type for all of England. The figures are as at January 2005 and are based on an enhanced base map. They have been produced by Communities and Local Government on behalf of the Office for National Statistics' Neighbourhood Statistics service.

3. This publication follows on from the pilot GLUD results for 2001 previously published. GLUD statistics for 2005 are significantly more accurate and more up-to-date than GLUD statistics for 2001. Users should note that owing to the improvements in the accuracy of the underlying base map the 2005 (Enhanced Basemap) figures are *not comparable* with those for 2001, and time series analysis is *not possible*.

4. An automated methodology has been developed which allocates all identifiable land features on Ordnance Survey's OS MasterMap® into nine simplified land categories and an additional 'unclassified' category. These are:

   - Domestic buildings
   - Domestic gardens
   - Non-domestic buildings
   - Roads
   - Paths
   - Rail
   - Greenspace
   - Water
   - Other land uses (largely hardstanding) and
   - Unclassified.

5. Generalised Land Use Database statistics show the area of different land types for Census Output Areas (OAs), Lower Layer Super Output Areas (LSOAs), Middle Layer Super Output Areas (MSOAs), Local Authorities (LAs), and Government Office Regions (GORs) in England. There are also England totals. All these statistics are available now from the ONS Neighbourhood Statistics (NeSS) website at www.neighbourhood.statistics.gov.uk. Comprehensive metadata about the data and describing how GLUD has been produced is also available on the NeSS website.

6. The GLUD 2005 (Enhanced Basemap) statistics are also available for Census (CAS) wards from the Communities and Local Government website at www.communities.gov.uk/statistics/gluc <http://www.communities.gov.uk/statistics/gluc>. The previously published GLUD 2001 statistics for Census wards are available on request from gis@communities.gsi.gov.uk. Related detailed GLUD maps at OS MasterMap® land parcel level are available to public sector users holding the appropriate licence for OS MasterMap®.

7. The statistics show the distribution of land use across the nine simplified categories plus 'unclassified', and provide a basis for comparing, for example, the availability of green space between similarly defined administrative areas. Since they are what ONS call experimental statistics and the methodology and quality are still being enhanced, any feedback on usability and relevance would be welcome.

Background

8. In support of its objective of creating community, opportunity and prosperity Communities and Local Government is interested in encouraging the sustainable use of land. To this end the Generalised Land Use Database statistics have been developed in support of three of the Department's key Public Service Agreements.

9. GLUD supports initiatives on neighbourhood renewal, in particular by helping to build an information base on 'liveability' in small areas to help inform and target renewal activities. GLUD also supports the Department's work to help balance housing supply and demand, in particular by supplying local level information on land type. GLUD also delivers green space data related to the Department's Public Service Agreement on Liveability. In this regard GLUD (especially in map form) is providing a foundational dataset for the emerging Cleaner Safer Greener Information Base which is delivering on the Government's commitment to improve the information available about green spaces and to collate these in a geographic information system (see *Living Spaces: Cleaner Safer Greener, 2002*). A key aim of this resource is to help inform decisions on and monitor the effects of government initiatives in support of publicly accessible green spaces.

10. The Generalised Land Use Database statistics represent a quick win solution to these demands for information. The results are available for nine simple land classes plus 'unclassified' and each class is populated with data. The GLUD classification is much less detailed than the definitive National Land Use Database version 4.4 classification that separately classifies land use and land cover. This classification is available from the Communities and Local Government website at www.communities.gov.uk/index.asp?id=1163845. There are however no plans at present to create a comprehensive database according to this NLUD v4.4 classification. At present, then, the Generalised Land Use Database offers the only national coverage of detailed small area data, based on a limited number of data sources and a streamlined methodology. The methodology for the calculation of these experimental statistics is based on a part of that developed for a 'county demonstrator' of the more detailed NLUD project, and was developed for Communities and Local Government by Infoterra Ltd drawing on their experience of NLUD, and adaptations to enable a national GLUD coverage have been provided by Amtec Consulting plc. A report on the National Land Use Database: County Demonstrator is available from www.communities.gov.uk/index.asp?id=1161713

Methodology of the Generalised Land Use Database

11. The Generalised Land Use Database categorises land parcels into the nine key themes plus 'unclassified' listed in the Introduction above.

12. The methodology for GLUD 2005 draws on data derived from two data sources, namely OS MasterMap® (January 2005) and the OS MasterMap® Address Layer of the same date. OS MasterMap® is Ordnance Survey's most detailed large scale digital topographic database in which real world objects such as fields or buildings have attributes associated with them which provide information about land cover type and provide a basis for generating a land type database. More information on OS MasterMap® is available from www.ordnancesurvey.gov.uk/oswebsite/products/osmastermap/

13. Further information about building types are derived by applying a combination of contextual spatial analysis, using a relevant rule base, and the OS MasterMap® Address Layer to determine whether the building use is likely to be domestic or non-domestic. Not all of the land parcels in OS MasterMap® could be classified by the methodology. These parcels have been labelled 'unclassified'.

14. This methodology for generating GLUD land type data can not equate exactly to all other classifications, and is not as robust as had been proposed for the fuller NLUD v4.4 approach. Users should note in particular that the automated methodology does not always make a correct distinction between domestic and non-domestic buildings. However since there are no plans to populate NLUD, within its more limited parameters the GLUD approach produces useful and acceptable statistics at local authority and ward levels.

Differences between GLUD 2001 and GLUD 2005 (Enhanced Basemap)

15. The methodology used to produce GLUD 2001 statistics was slightly different to that used to produce GLUD 2005 (Enhanced Basemap). GLUD 2001 was calculated using the original OS MasterMap® as at November 2001 and it drew on address data from OS Address-Point™. The two datasets were linked using the National Buildings DataSet (NBDS).

16. By comparison GLUD 2005 (Enhanced Basemap) statistics have been calculated using OS MasterMap® as at January 2005 and they drew on address data from the OS MasterMap® Address Layer. This introduced a significant methodological change because the January 2005 version of OS MasterMap® incorporated a number of improvements to the quality of the database compared to OS MasterMap® for November 2001. There were improvements to the attributes that are used to produce the GLUD classification and improved coverage of foreshore areas. As a result GLUD 2005 (Enhanced Basemap) statistics provide improved figures for the extent of Domestic Gardens in rural areas, of Greenspace, Roads and Paths more generally, and of Water in coastal areas. The 2005 data also incorporated Ordnance Survey's Positional Accuracy Improvement (PAI) in certain areas.

17. It is as a result of these improvements that GLUD 2005 (Enhanced Basemap) statistics are more accurate than the GLUD 2001 statistics. Users should note however that owing to the improvements in the accuracy of the underlying base map the 2005 (Enhanced Basemap) figures are *not comparable* with those for 2001, and time series analysis is *not possible*.

18. There is further information about the methodology used to create GLUD, and the differences between GLUD 2001 and GLUD 2005 (Enhanced Basemap) in comprehensive metadata available from the ONS NeSS website www.neighbourhood.statistics.gov.uk.

Applications for the Statistics

19. The main driver for the production of the Generalised Land Use Database statistics is to support the development and delivery of the sustainable communities policy agenda at Communities and Local Government. The statistics may be used to determine the extent, distribution and spatial variation in, for example, green space, within and between different geographical areas, enabling assessments to be made of the availability and accessibility of urban green space. This supports the Cleaner, Safer, Greener agenda. In addition the GLUD figures provide input to assessments of land that is developed.

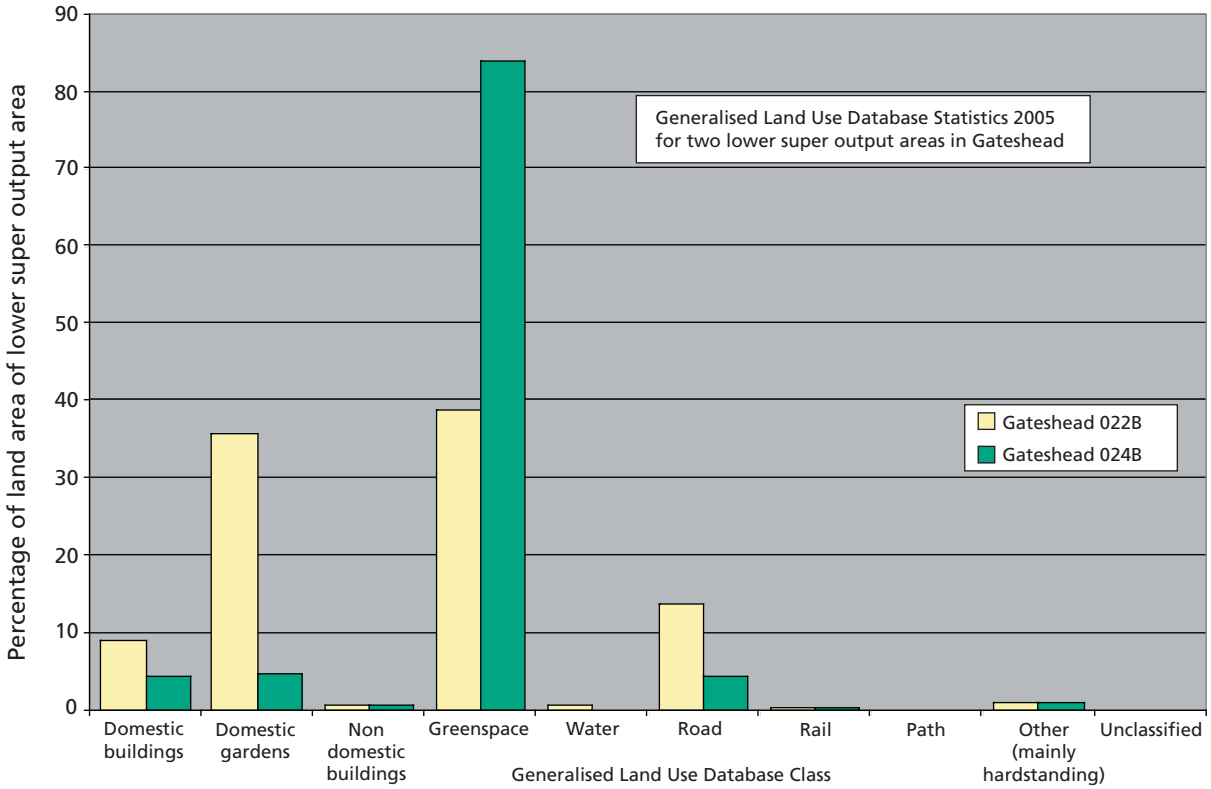
20. The format of the dataset is straightforward. The spreadsheet provides figures for land type in each of the nine classes plus 'unclassified' in thousands of square metres (m2 000s) for each named and referenced administrative area. Users wishing to work in hectares should divide the figures provided by ten. Figure 1 shows a sample of the data.

Figure 1: Generalised Land Use Database Statistics 2005 (Enhanced Basemap): sample of the data at lower super output area (LSOA) level.

Generalised Land Use Database 2005 (Enhanced Basemap)	Square metres (m2)(thousands)	Area of **Domestic Buildings**; (Enhanced Basemap)	Area of **Domestic Gardens**; (Enhanced Basemap)	Area of **Non Domestic Buildings**; (Enhanced Basemap)	Area of **Greenspace**; (Enhanced Basemap)	Area of **Water**; (Enhanced Basemap)	Area of **Road**; (Enhanced Basemap)	Area of **Path**; (Enhanced Basemap)	Area of **Rail**; (Enhanced Basemap)	Area of **Other Land Uses**; (Enhanced Basemap)
Area Code	Area Name									
E01008162	Gateshead 006A	40.64	72.22	15.4	114	0	84.26	16.14	33.59	97.01
E01008163	Gateshead 006B	42.94	42.64	10.12	80.2	0	92.3	3.71	0	15.97
E01008164	Gateshead 006C	36.56	33.03	5.32	73.95	0	52.22	3.02	0	8.51
E01008165	Gateshead 011A	28.73	93.78	2.13	151.5	0	45.26	10.73	0	5.01
E01008166	Gateshead 006D	33.78	12.74	237.33	503.29	71.41	264.71	15.9	93.32	351.1
E01008167	Gateshead 008A	36.73	44.73	6.26	16.88	0	51.74	5.97	0	49.66
E01008168	Gateshead 006E	32.12	28.54	41.7	221.91	66.51	137.83	17.34	0.69	118.14
E01008169	Gateshead 008B	28.95	30.47	9.37	6.33	0	35.49	0.76	0	3.59
E01008170	Gateshead 008C	37.7	59.64	11.78	81	0	89.32	5.18	9.41	23.95
E01008171	Gateshead 008D	28.02	23.34	5.49	14.11	0	38	0.21	0	12.55
E01008172	Gateshead 026A	54.89	158.35	8.2	150.14	0	121.21	8.07	0	31.47
E01008173	Gateshead 026B	36.18	108.85	33.43	72.69	0.49	58.55	4.19	0	53.5
E01008174	Gateshead 026C	54.2	120.28	149.95	822.98	1.93	173.84	14.45	43.63	158.57
E01008175	Gateshead 026D	48.29	59.73	124.44	160.35	0.1	102.07	6.66	2.25	180.82
E01008176	Gateshead 026E	45.36	102.85	52.87	196.65	0	100.2	14.31	0	115.57
E01008177	Gateshead 005A	41.12	78.91	23.82	219.13	3.56	85.09	7.88	0	40.15
E01008178	Gateshead 004A	26.63	64.21	2.3	140.15	0	40.32	12.67	0	6.89
E01008179	Gateshead 005B	32.63	65.7	7.24	172.14	1.84	37.91	5.11	0	8.86
E01008180	Gateshead 004B	32.63	116.86	0.7	37.42	0	48.62	6.44	0	2.84

21. The following provide examples of how the GLUD can be exploited to analyse and portray land use for geographical areas.

Figure 2: Charts enabling a comparison of land type between two lower super output areas



Figures 3, 4 & 5: Thematic statistical maps showing the percentage of land classified by different land theme by geographical area

Figure 3

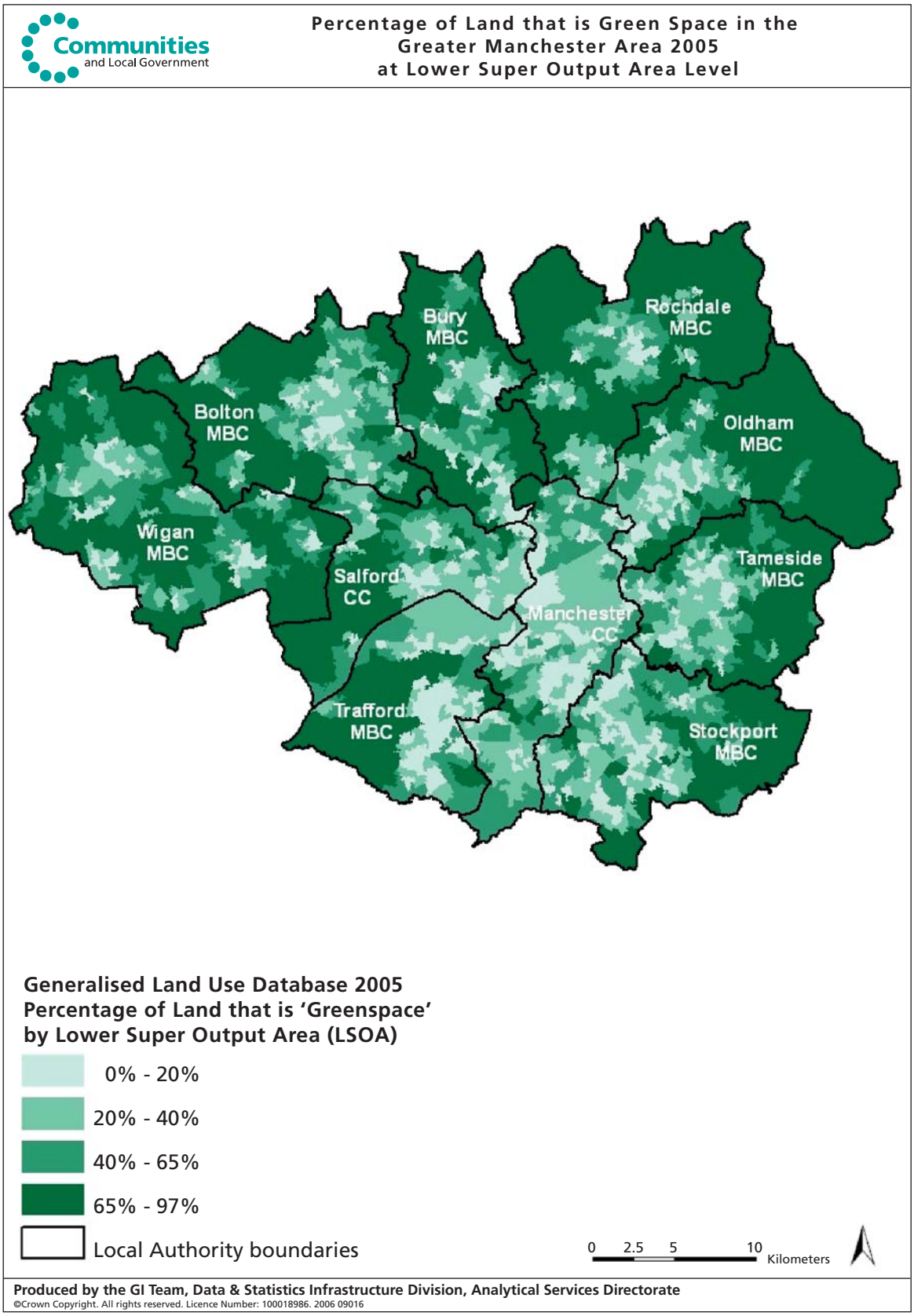


Figure 4

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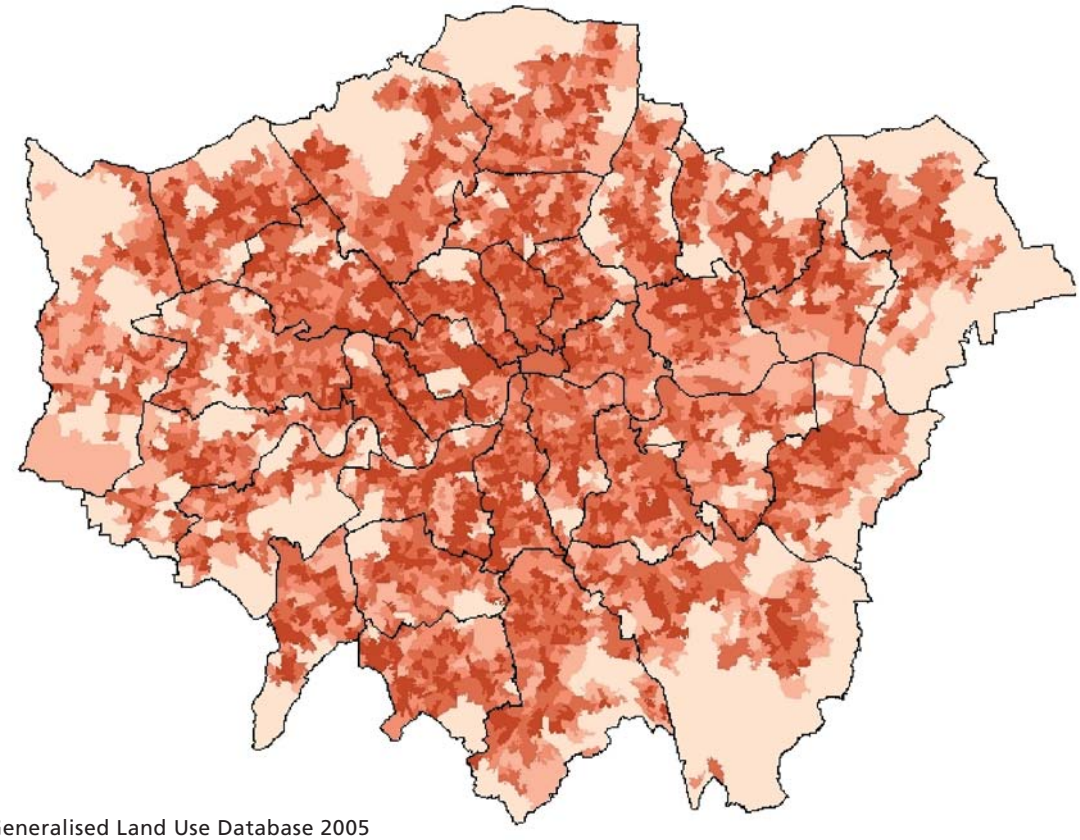
Percentage of Land that is developed and domestic gardens in London 2005 at Lower Super Output Area Level



Generalised Land Use Database 2005
Percentage of Land developed and domestic gardens

- Less than 40%
- 40% - 60%
- 60% - 75%
- 75% - 90%
- Over 90%
- Local Authority boundaries

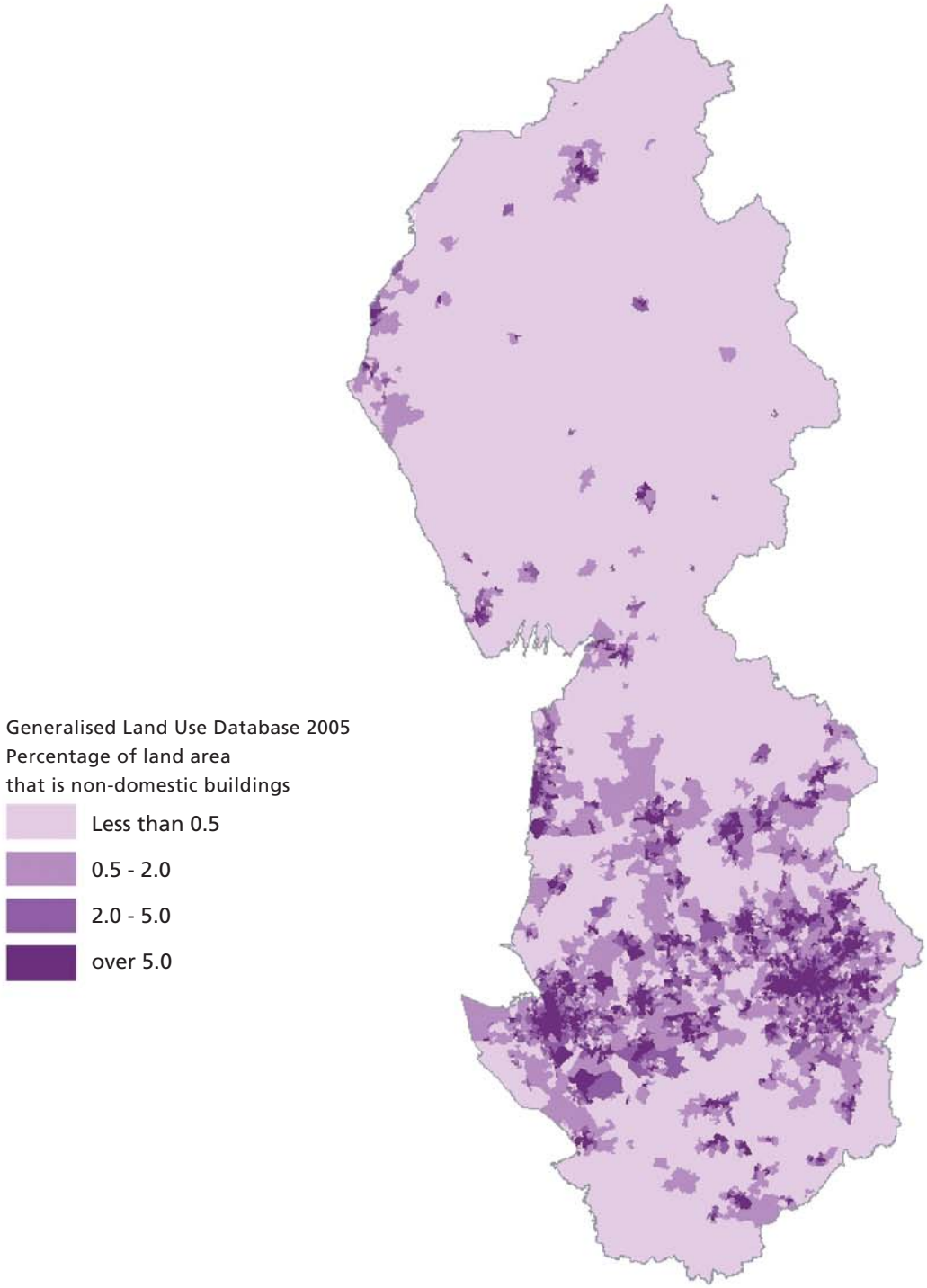
This map defines 'developed' land as the following GLUD categories:
domestic buildings, non-domestic buildings, road, rail, path, other.

Produced by the GI Team, Data & Statistics Infrastructure Division, Analytical Services Directorate

Figure 5

Communities and Local Government

Percentage of Land that is non-domestic buildings in the north west 2005 at Lower Super Output Area Level



Produced by the GI Team, Data & Statistics Infrastructure Division, Analytical Services Directorate

22. Licenced users wishing to thematically map the GLUD statistics with GIS software can do so by linking to the relevant local authority Boundary Line boundaries available from Ordnance Survey, and Census ward boundaries available from ONS. This will be achieved by linking on the relevant ONS codes contained within the GLUD dataset. Requests for advice may be e-mailed to gis@communities.gsi.gov.uk

23. An interesting feature of the GLUD is the ability to provide large scale maps of land use within small geographic areas.

Figures 6, 7 and 8: Large scale land use maps based on topographic features derived from OS MasterMap®

Figure 6

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Large scale Generalised Land Use Database maps based on OS Master Map(r)

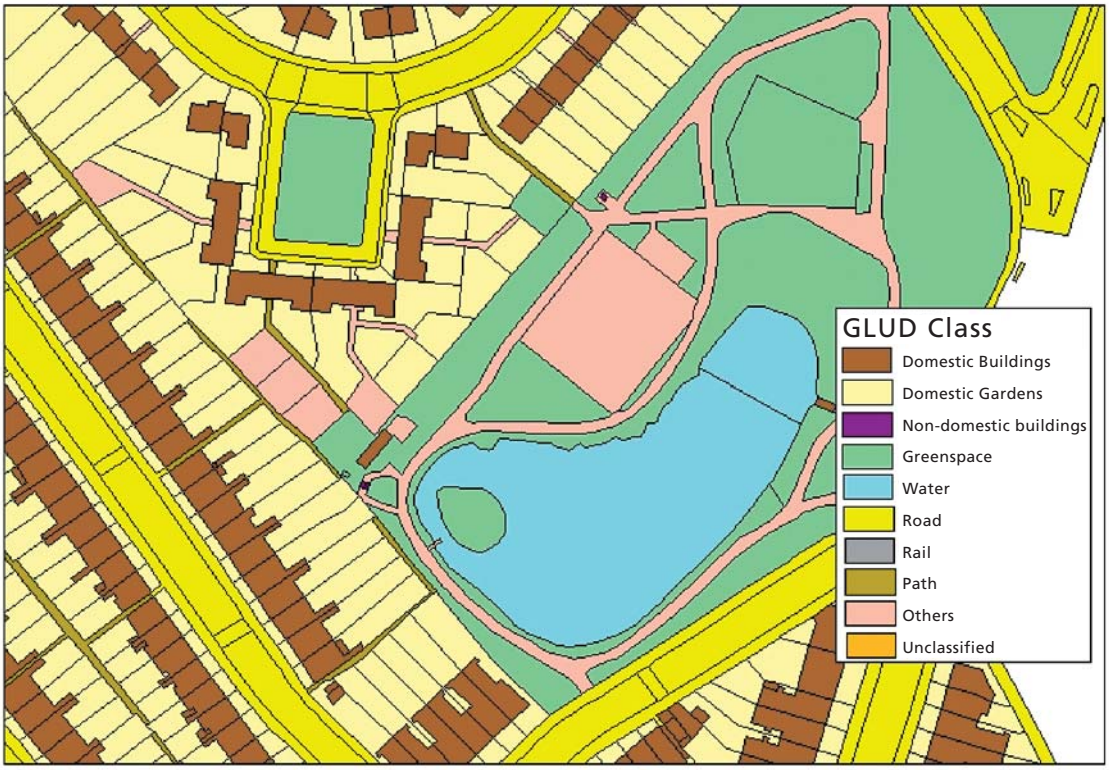

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Figure 7

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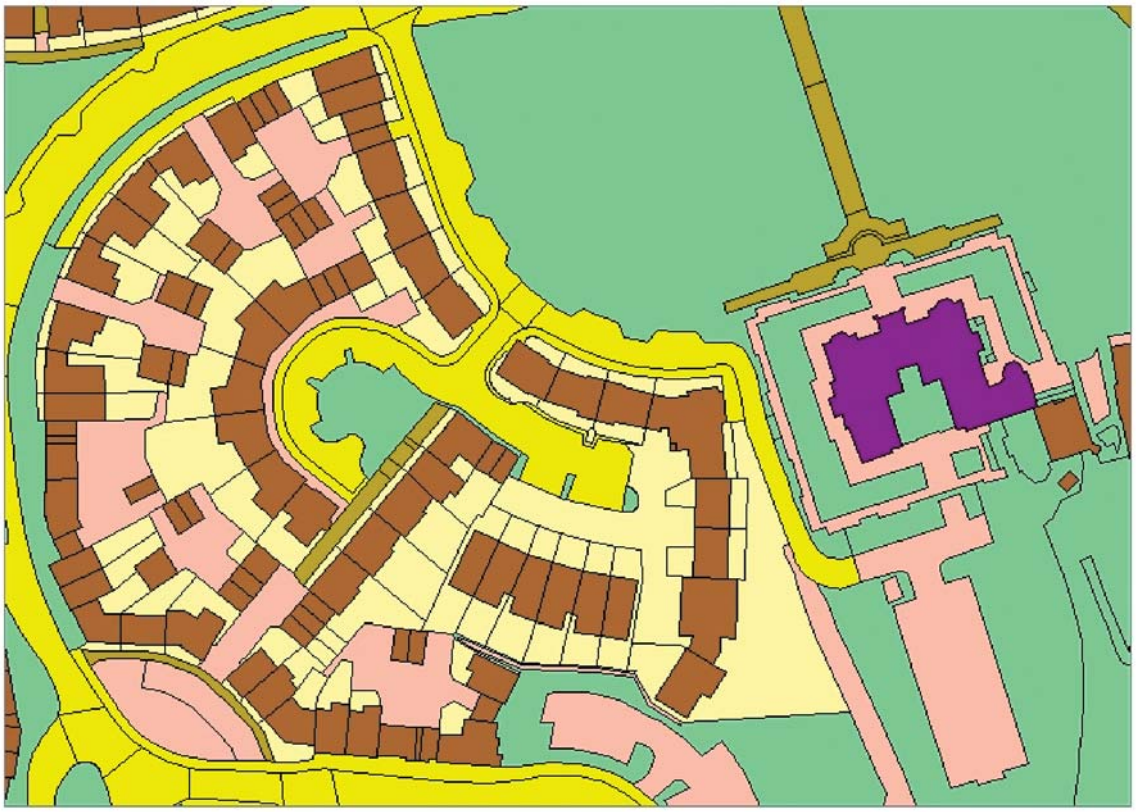
Generalised Land Use Database 2005 map for some new housing in the Thames Gateway



Generalised Land Use Database 2005

- Domestic buildings
- Gardens
- Non-domestic buildings
- Road
- Rail
- Path
- Greenspace
- Water
- Others
- Unclassified

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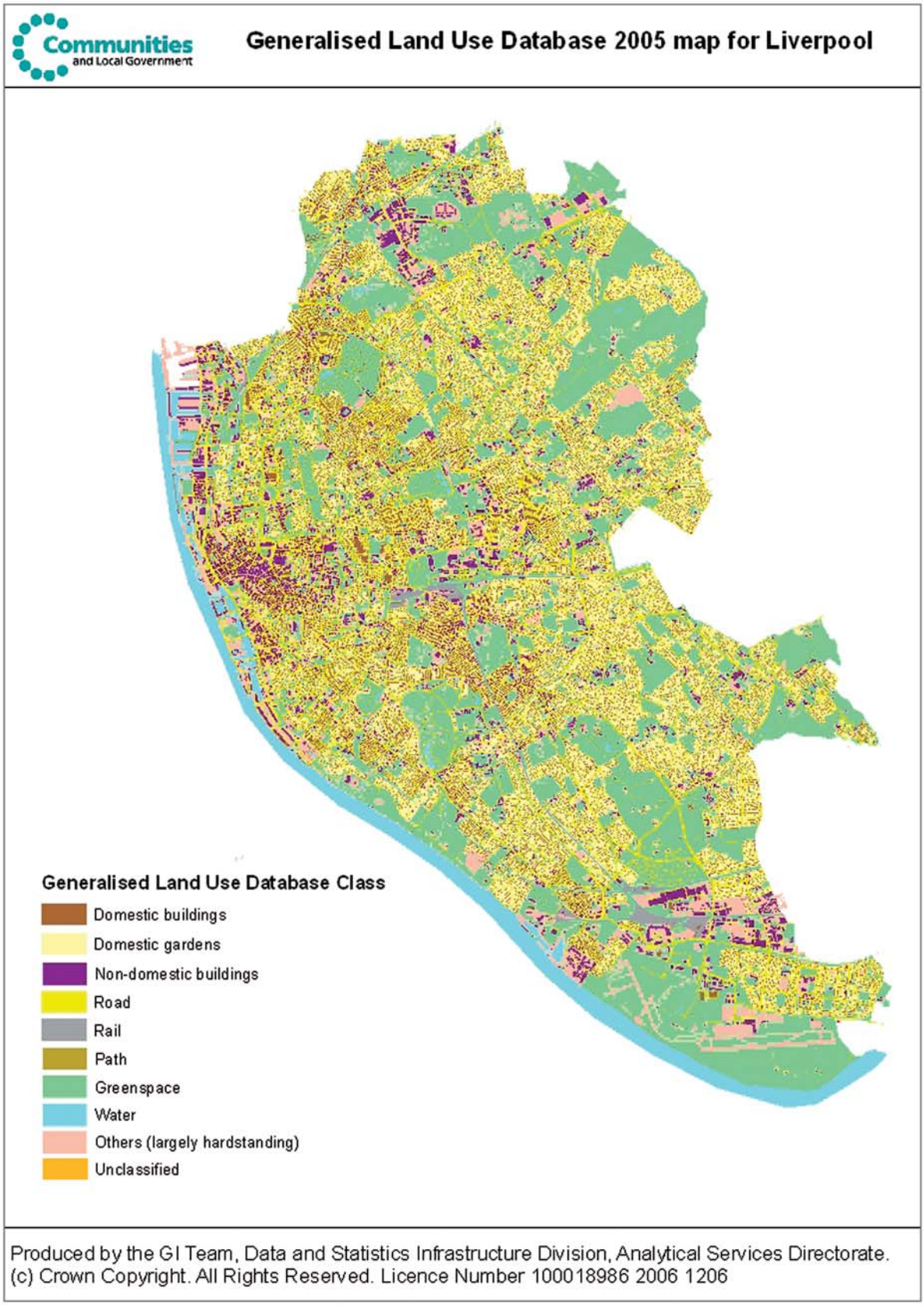
Figure 8


Communities and Local Government
Generalised Land Use Database 2005 map for Liverpool
Generalised Land Use Database Class
Domestic buildings
Domestic gardens
Non-domestic buildings
Road
Rail
Path
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Water
Others (largely hardstanding)
Unclassified
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Enquiries and comments

24. Users interested in the detailed maps at land parcel level who hold the appropriate public sector licence to use OS MasterMap® can request to see the GLUD data at this large scale level. Please send requests to gis@communities.gsi.gov.uk. Please also provide feedback on the usability and relevance of the Generalised Land Use Database or contact us for further information by emailing the Geographic Information Team at the same email address.

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Data and Statistics Infrastructure Division
Analytical Services Directorate
Communities and Local Government
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