

### London, Ontario

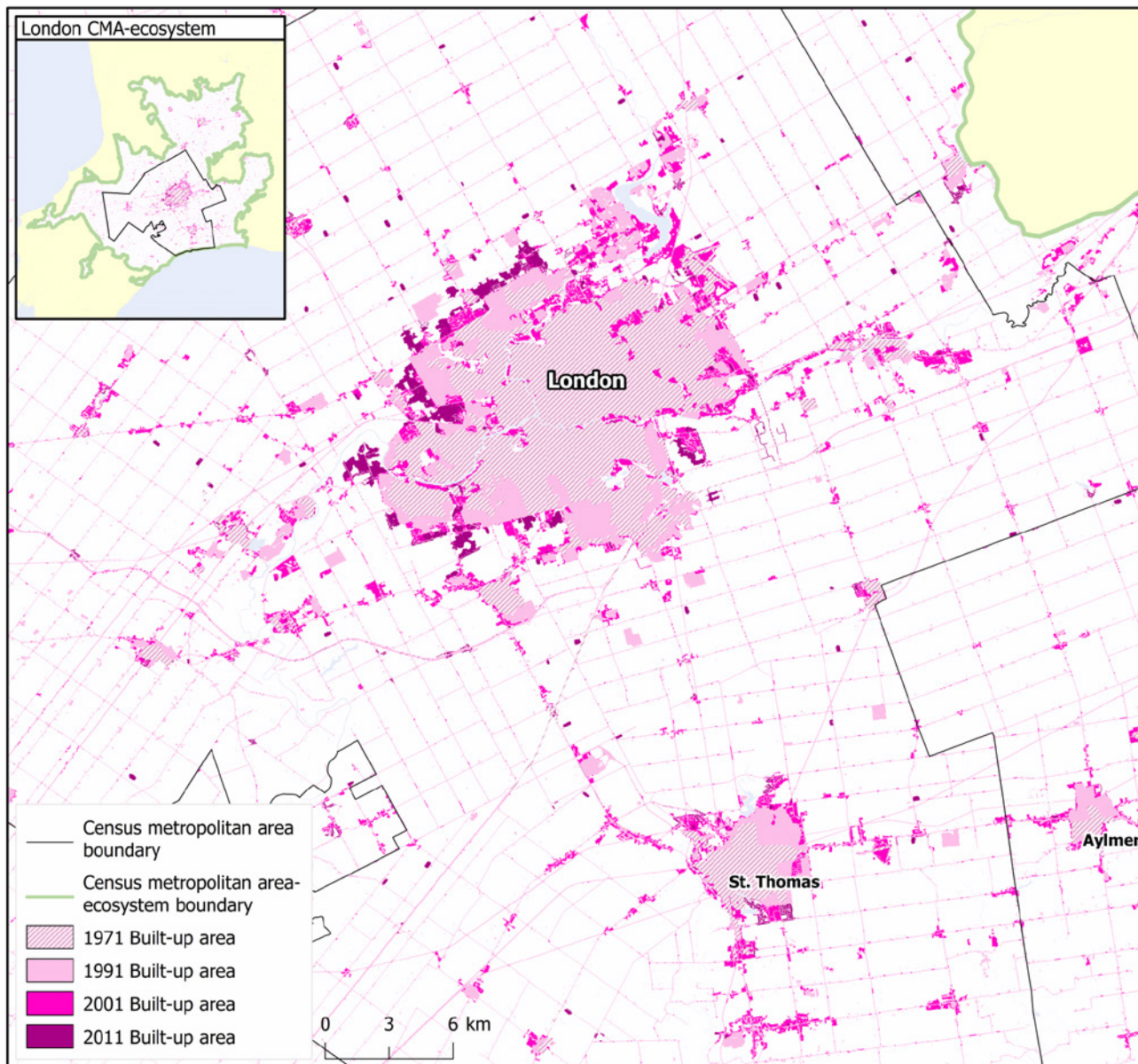
#### Highlights

- At the CMA level, built-up area increased from 167 km<sup>2</sup> in 1971 to 415 km<sup>2</sup> in 2011, an increase of 148%.
- At the CMA-E level, built-up area increased from 253 km<sup>2</sup> in 1971 to 798 km<sup>2</sup> in 2011, an increase of 215%.
- In 2011, the natural and semi-natural land class was divided into forest (52%), water (4%) and other (44%).
- From 1971 to 2011, 256 km<sup>2</sup> of arable land and 94 km<sup>2</sup> of natural and semi-natural land were lost to settled area.
- Of the natural and semi-natural land converted to settled area from 1971 to 2011, 34.3% was forest, 58.5% was natural land for pasture and 7.2% was classed as other.
- Population in the CMA increased by 54% from 307,743 to 474,786 between 1971 and 2011.
- The number of dwellings in the CMA increased by 127% from 93,018 to 211,260 between 1971 and 2011.

## The changing landscape of Canadian metropolitan areas

Map 3.13

Built-up area, London census metropolitan area (CMA) and census metropolitan area-ecosystem (CMA-E), 1971, 1991, 2001 and 2011



**Note:** Sources for 1971 built-up area do not contain the same level of detail as the more recent years.

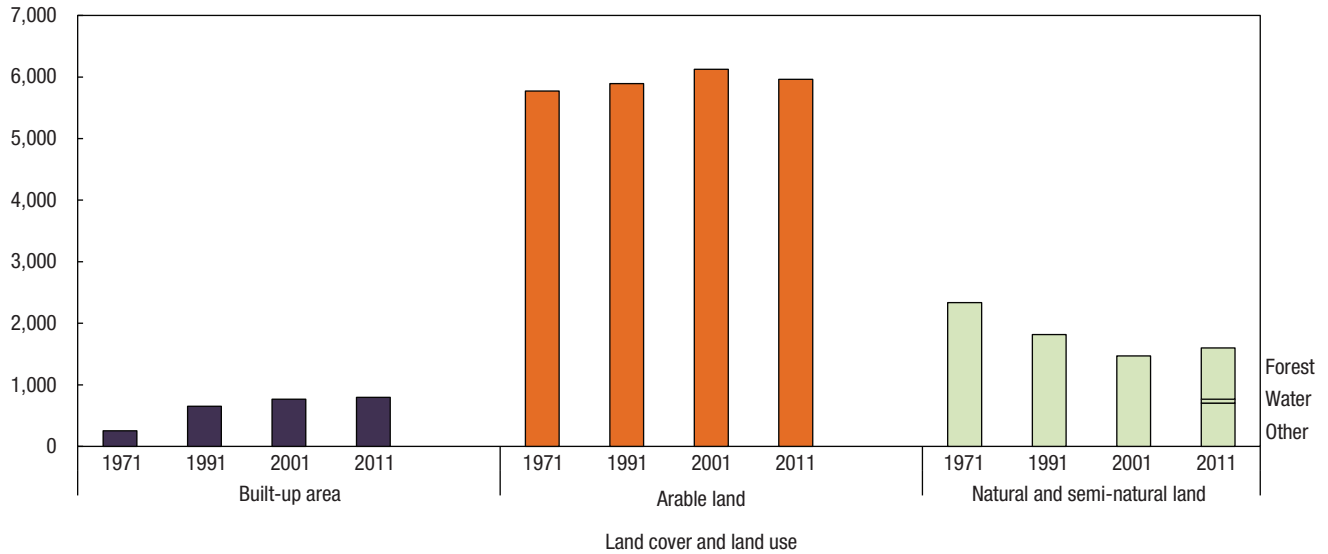
**Sources:** Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016, special tabulation of data from Natural Resources Canada (NRCan), Canada Centre for Remote Sensing (CCRS), 1999, *Canada Land Inventory: CLI Land Use (circa 1966)*, [ftp://ftp2.cits.nrcan.gc.ca/pub/geott/cli\\_250k/landuse/](ftp://ftp2.cits.nrcan.gc.ca/pub/geott/cli_250k/landuse/) (accessed September 15, 2015); NRCan, CCRS, 1999, *Canada Land Use Monitoring Program (CLUMP): Land Use (1971)*, [ftp://ftp2.cits.nrcan.gc.ca/pub/geott/clump/clump\\_1971/](ftp://ftp2.cits.nrcan.gc.ca/pub/geott/clump/clump_1971/) (accessed September 15, 2015); Agriculture and Agri-Food Canada, 2015, *Land Use 1990, 2000 and 2010*, <http://open.canada.ca/data/en/dataset/18e3ef1a-497c-40c6-8326-aac1a34a0dec> (accessed September 16, 2015); NRCan, Canada Centre for Mapping and Earth Observation, 2014, *CanVec+*, <ftp://ftp2.cits.nrcan.gc.ca/pub/canvec+/shp/> (accessed August 10, 2015).

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Chart 3.25

### Land cover and land use, London census metropolitan area-ecosystem (CMA-E), 1971, 1991, 2001 and 2011

square kilometres

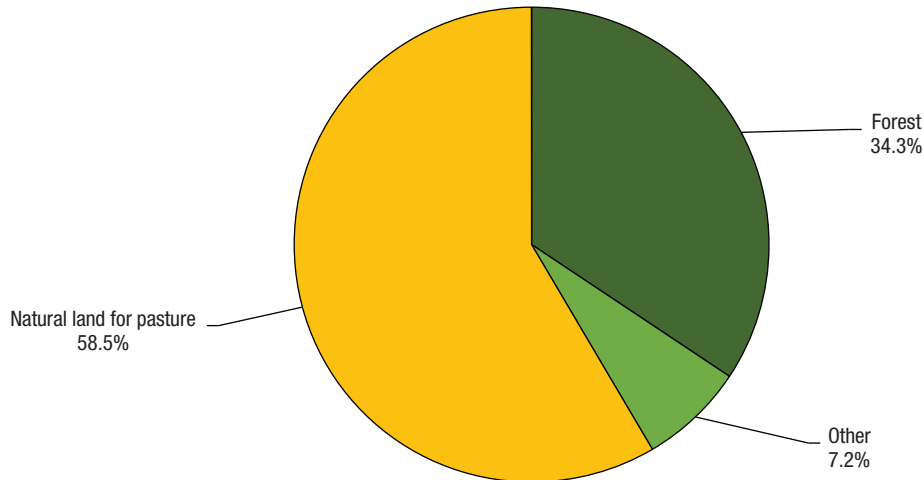


**Notes:** Built-up area for 1971 is based on *Canada Land Inventory: Land Use* (CLI: LU) and *Canada Land Use Monitoring Program* (CLUMP), with modeling of roads. CLI: LU and CLUMP built-up areas that were not built-up in the *AAFC Land Use, 1990* dataset were removed from the 1971 built-up data and reclassified according to their 1990 cover. Built-up areas for other years are taken from *Land Use, 1990, 2000 and 2010*. Arable land is composed of the cropland, tame or seeded pasture and summerfallow land from the Interpolated Census of Agriculture. Natural and semi-natural land is the residual area remaining after subtracting built-up and arable land from the total area. Because it was calculated residually, the class also includes some homes and other buildings, particularly those located on large lots and in rural areas, since these may not be captured by satellite imagery as built-up, due in part to the resolution of the data, but also overlying tree canopy. For 2011, forest and water are broken out separately based on data from *AAFC Crop Inventory, 2011* and *CanVec+* respectively. Other natural and semi-natural land is a residual class calculated by subtracting all other classes from the total area.

**Sources:** Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016, special tabulation of data from Natural Resources Canada (NRCAN), Canada Centre for Remote Sensing (CCRS), 1999, *Canada Land Inventory: CLI Land Use (circa 1966)*, [ftp://ftp2.cits.mcan.gc.ca/pub/geott/cli\\_250k/landuse/](ftp://ftp2.cits.mcan.gc.ca/pub/geott/cli_250k/landuse/) (accessed September 15, 2015); NRCAN, CCRS, 1999, *Canada Land Use Monitoring Program (CLUMP): CLUMP Land Use (1971)*, [ftp://ftp2.cits.mcan.gc.ca/pub/geott/clump/clump\\_1971/](ftp://ftp2.cits.mcan.gc.ca/pub/geott/clump/clump_1971/) (accessed September 15, 2015); Agriculture and Agri-Food Canada (AAFC), 2015, *Land Use 1990, 2000 and 2010*, <http://open.canada.ca/data/en/dataset/18e3ef1a-497c-40c6-8326-aac1a34a0dec> (accessed September 16, 2015); AAFC and Statistics Canada, special tabulation, *Census of Agriculture*, Census Geographic Component Base 2011 and Census of Agriculture Regular Base 1971; AAFC, 2013, *AAFC Crop Inventory, 2011*, <http://open.canada.ca/data/en/dataset/58ca7629-4f6d-465a-88eb-ad7fd3a847e3> (accessed August 10, 2015); NRCAN, Canada Centre for Mapping and Earth Observation, 2014, *CanVec+*, <ftp://ftp2.cits.mcan.gc.ca/pub/canvec+/shp/> (accessed August 10, 2015).

Chart 3.26

Natural and semi-natural land lost to settled area, by selected land class, London census metropolitan area-ecosystem (CMA-E), 1971 to 2011



**Notes:** Natural and semi-natural land lost to settled area is calculated by overlaying the growth in settled area from 1971 to 2011 on natural and semi-natural land from the *Canada Land Inventory: Land Use (CLI: LU)* base layer and, for areas where the 1971 settled area was trimmed, on the area reclassified using AAFC's *Land Use, 1990*. Natural and semi-natural land lost to roads is not included. Other could include rock and unvegetated surfaces; wetland; mines, quarries, sand and gravel pits; outdoor recreation; other natural and semi-natural land and unmapped areas.

**Sources:** Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016, special tabulation of data from Natural Resources Canada (NRCan), Canada Centre for Remote Sensing (CCRS), 1999, *Canada Land Inventory: CLI Land Use (circa 1966)*, [ftp://ftp2.cits.mcan.gc.ca/pub/geotit/cli\\_250k/landuse/](ftp://ftp2.cits.mcan.gc.ca/pub/geotit/cli_250k/landuse/) (accessed September 15, 2015); NRCan, CCRS, 1999, *Canada Land Use Monitoring Program (CLUMP): CLUMP Land Use (1971)*, [ftp://ftp2.cits.mcan.gc.ca/pub/geotit/clump/clump\\_1971/](ftp://ftp2.cits.mcan.gc.ca/pub/geotit/clump/clump_1971/) (accessed September 15, 2015); Agriculture and Agri-Food Canada, 2015, *Land Use 1990, 2000 and 2010*, <http://open.canada.ca/data/en/dataset/18e3ef1a-497c-40c6-8326-aac1a34a0dec> (accessed September 16, 2015).

## The changing landscape of Canadian metropolitan areas

**Table 3.37**

**Population and dwellings, total and settled area, London census metropolitan area (CMA) and census metropolitan area-ecosystem (CMA-E), 1971, 1991, 2001 and 2011**

	CMA <sup>1</sup>		CMA-ecosystem <sup>2</sup>	
	Total area	Settled area <sup>3</sup>	Total area	Settled area <sup>3</sup>
	number			
<b>1971</b>				
Population	307,743	272,709	440,607	338,024
Dwellings	93,018	83,689	131,207	104,180
<b>1991</b>				
Population	401,191	390,842	551,729	532,505
Dwellings	153,586	150,107	205,288	199,101
<b>2001</b>				
Population	435,007	417,436	589,585	535,075
Dwellings	184,310	178,105	241,778	223,458
<b>2011</b>				
Population	474,786	456,004	637,821	578,946
Dwellings	211,260	204,263	274,943	254,035
	percent			
<b>Population and dwelling change, 1971 to 2011</b>				
Population	54	67	45	71
Dwellings	127	144	110	144

1. 2011 census metropolitan area (CMA) boundaries are used for all years.

2. The CMA-Ecosystem (CMA-E) combines any Soil Landscapes of Canada (SLC) polygon that is contained within or that intersects with the CMA boundary, as well as SLC polygons that are fully contained within this newly formed boundary of the CMA-E.

3. Settled area is defined as the built-up area excluding roads. Settled area population and dwelling counts include 1971 and 1991 enumeration area points and 2001 and 2011 dissemination block points located within 400 m of the settled area. Population and dwelling data for 2001 and 2011 is finer in scale than data for 1971 and 1991 and can therefore be better attributed to the settled areas, which may limit comparability of the data over time.

**Sources:** Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016, special tabulation of data from the 1971, 1991, 2001 and 2011 Censuses of Population; Natural Resources Canada (NRCan), Canada Centre for Remote Sensing (CCRS), 1999, *Canada Land Inventory: CLI Land Use (circa 1966)*, [ftp://ftp2.cits.nrcan.gc.ca/pub/geott/cli\\_250k/landuse/](ftp://ftp2.cits.nrcan.gc.ca/pub/geott/cli_250k/landuse/) (accessed September 15, 2015); NRCan, CCRS, 1999, *Canada Land Use Monitoring Program (CLUMP): CLUMP Land Use (1971)*, [ftp://ftp2.cits.nrcan.gc.ca/pub/geott/clump/clump\\_1971/](ftp://ftp2.cits.nrcan.gc.ca/pub/geott/clump/clump_1971/) (accessed September 15, 2015); Agriculture and Agri-Food Canada, 2015, *Land Use 1990, 2000 and 2010*, <http://open.canada.ca/data/en/dataset/18e3ef1a-497c-40c6-8326-aac1a34a0dec> (accessed September 16, 2015).

## The changing landscape of Canadian metropolitan areas

**Table 3.38**

**Land cover and land use, London census metropolitan area (CMA) and census metropolitan area-ecosystem (CMA-E), 1971, 1991, 2001 and 2011**

	CMA <sup>1</sup>	CMA-ecosystem <sup>2</sup>	CMA as a proportion of CMA-ecosystem
	square kilometres		percent
<b>Total land area</b>	2,666	8,361	32
<b>1971</b>			
Total built-up <sup>3</sup>	167	253	66
Settled	104	135	77
Roads	63	118	54
Arable <sup>4</sup>	..	5,771	..
Natural and semi-natural <sup>5</sup>	..	2,337	..
<b>1991</b>			
Total built-up <sup>6</sup>	331	652	51
Settled	205	347	59
Roads	126	305	41
Arable <sup>4</sup>	..	5,892	..
Natural and semi-natural <sup>5</sup>	..	1,817	..
<b>2001</b>			
Total built-up <sup>6</sup>	397	767	52
Settled	270	460	59
Roads	127	307	41
Arable <sup>4</sup>	..	6,124	..
Natural and semi-natural <sup>5</sup>	..	1,470	..
<b>2011</b>			
Total built-up <sup>6</sup>	415	798	52
Settled	285	485	59
Roads	130	313	42
Arable <sup>4</sup>	..	5,963	..
Natural and semi-natural <sup>7</sup>	..	1,600	..
Forest	..	833	..
Water	..	62	..
Other	..	705	..
		percent	
<b>Land cover and land use change, 1971 to 2011</b>			
Total built-up area <sup>3,6</sup>	148	215	...
Arable <sup>4</sup>	...	3	...
Natural and semi-natural <sup>5</sup>	...	-32	...

1. 2011 census metropolitan area (CMA) boundaries are used for all years. Total area excludes water.

2. The CMA-Ecosystem (CMA-E) combines any Soil Landscapes of Canada (SLC) polygon that is contained within or that intersects with the CMA boundary, as well as SLC polygons that are fully contained within this newly formed boundary of the CMA-E. Includes all terrestrial and water surfaces.

3. Built-up area for 1971 is based on *Canada Land Inventory Land Use (CLI: LU)* and *Canada Land Use Monitoring Program (CLUMP)*, code B – Urban Built-up. CLI: LU and CLUMP built-up areas that were not built-up in the AAFC *Land Use, 1990* dataset were removed from the 1971 built-up data and reclassified according to their 1990 cover. To improve comparability with the other years, roads included in the core built-up area were identified and removed to produce the 1971 settled area. The 1971 dataset did not include roads outside the core built-up area. Roads were modeled by applying the ratio of roads to settled area from 1990 to the 1971 settled area.

4. Arable land area is composed of the cropland, tame or seeded pasture and summerfallow land from the Interpolated Census of Agriculture.

5. Natural and semi-natural land is the residual area remaining after subtracting built-up and arable land from the total area. Because it was calculated residually, the class also includes some homes and other buildings, particularly those located on large lots and in rural areas, since these may not be captured by satellite imagery as built-up, due in part to the resolution of the data and overlying tree canopy.

6. Built-up area estimates for 1991, 2001 and 2011 are based on *Land Use, 1990, 2000 and 2010*, codes 21 (Settlement–Built-up and urban) and 25 (Roads–primary, secondary and tertiary).

7. For 2011, forest and water are broken out separately based on data from AAFC *Crop Inventory, 2011* and *CanVec+* respectively. Other natural and semi-natural land is a residual class calculated by subtracting all other classes from the total area. The change over time for these categories requires further validation.

**Sources:** Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016, special tabulation of data from Natural Resources Canada (NRCan), Canada Centre for Remote Sensing (CCRS), 1999, *Canada Land Inventory: CLI Land Use (circa 1966)*, [http://ftp2.cits.mcan.gc.ca/pub/geoit/cli\\_250k/landuse/](http://ftp2.cits.mcan.gc.ca/pub/geoit/cli_250k/landuse/) (accessed September 15, 2015); NRCan, CCRS, 1999, *Canada Land Use Monitoring Program (CLUMP): CLUMP Land Use (1971)*, [http://ftp2.cits.mcan.gc.ca/pub/geoit/clump/clump\\_1971/](http://ftp2.cits.mcan.gc.ca/pub/geoit/clump/clump_1971/) (accessed September 15, 2015); Agriculture and Agri-Food Canada (AAFC), 2015, *Land Use 1990, 2000 and 2010*, <http://open.canada.ca/data/en/dataset/18e3ef1a-497c-40c6-8326-aac1a34a0dec> (accessed September 16, 2015); AAFC and Statistics Canada, special tabulation, *Census of Agriculture*, Census Geographic Component Base 2011 and 2001 and *Census of Agriculture*, Regular Base 1991 and 1971; AAFC, 2013, *AAFC Crop Inventory, 2011*, <http://open.canada.ca/data/en/dataset/58ca7629-4f6d-465a-88eb-ad7fd3a847e3> (accessed August 10, 2015); NRCan, Canada Centre for Mapping and Earth Observation, 2014, *CanVec+*, <http://ftp2.cits.mcan.gc.ca/pub/canvec+/shp/> (accessed August 10, 2015).



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**Table 3.39**

**Ecosystem asset account, London census metropolitan area-ecosystem (CMA-E), 1971 to 2011**

	Total built-up area <sup>1</sup>			Natural and semi-natural <sup>3</sup>
	Settled	Roads	Arable <sup>2</sup>	
	square kilometres			
Opening stock 1971	135	118	5,771	2,337
Land lost to settled area	...	...	-256	-94
Balance of change <sup>4</sup>	350	194	448	-643
Closing stock 2011	485	313	5,963	1,600

1. Built-up area data are taken from multiple sources. The 1971 built-up area is based on *Canada Land Inventory: Land Use* (CLI: LU) and *Canada Land Use Monitoring Program* (CLUMP). CLI: LU and CLUMP built-up areas that were not built-up in the AAFC *Land Use, 1990* dataset were removed from the 1971 built-up data and reclassified according to their 1990 cover. To improve comparability with the other years, roads included in the 1971 core built-up area were identified and removed to produce the 1971 settled area. As the 1971 dataset did not include roads outside the core built-up area, roads were modeled by applying the ratio of roads to settled area from 1990 to the 1971 settled area. Built-up area estimates for 2011 are based on *Land Use, 1990, 2000 and 2010*, codes 21 (Settlement–Built-up and urban) and 25 (Roads–primary, secondary and tertiary).
  2. Arable land lost to settled area is calculated by overlaying the growth in settled areas from 1971 to 2011 on the CLI: LU base layer and, for areas where the 1971 settled area was trimmed, on the area reclassified using AAFC *Land Use, 1990*. The following CLI: LU classes were included: cropland, improved pasture and forage crops, orchards and vineyards and horticulture.
  3. Natural and semi-natural land lost to settled area is calculated by overlaying the growth in settled area from 1971 to 2011 on the CLI: LU base layer and, for areas where the 1971 settled area was trimmed, on the area reclassified using AAFC *Land Use, 1990*. The following CLI: LU classes were included: forest, natural pasture and rangeland, outdoor recreation areas, rock and unvegetated surfaces, open wetland and unmapped areas.
  4. The balance of change row reports the change, other than arable and natural and semi-natural land lost to settled area, that occurred from 1971 to 2011. These values are determined using an accounting procedure and represent the remaining difference between the opening and closing stock. Some rounding may occur.
- Sources:** Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016, special tabulation of data from Natural Resources Canada (NRCan), Canada Centre for Remote Sensing (CCRS), 1999, *Canada Land Inventory: CLI Land Use (circa 1966)*, [ftp://ftp2.cits.mcan.gc.ca/pub/geott/cli\\_250k/landuse/](ftp://ftp2.cits.mcan.gc.ca/pub/geott/cli_250k/landuse/) (accessed September 15, 2015); NRCan, CCRS, 1999, *Canada Land Use Monitoring Program (CLUMP): CLUMP Land Use (1971)*, [ftp://ftp2.cits.mcan.gc.ca/pub/geott/clump/clump\\_1971/](ftp://ftp2.cits.mcan.gc.ca/pub/geott/clump/clump_1971/) (accessed September 15, 2015); Agriculture and Agri-Food Canada (AAFC), 2015, *Land Use 1990, 2000 and 2010*, <http://open.canada.ca/data/en/dataset/18e3ef1a-497c-40c6-8326-aac1a34a0dec> (accessed September 16, 2015); AAFC and Statistics Canada, special tabulation, *Census of Agriculture*, Census Geographic Component Base 2011 and 2001 and *Census of Agriculture*, Regular Base 1971 and 1991; NRCan, Canada Centre for Mapping and Earth Observation, 2014, *CanVec+*, <ftp://ftp2.cits.mcan.gc.ca/pub/canvec+/shp/> (accessed August 10, 2015).

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### Links to more information

Tables by metropolitan area, London

[www.StatCan.gc.ca/tables-tableaux/sum-som/l01/met01/met113-eng.htm](http://www.StatCan.gc.ca/tables-tableaux/sum-som/l01/met01/met113-eng.htm)

London CMA, population change, 2006 to 2011, by 2011 census tract

[www12.StatCan.gc.ca/census-recensement/2011/geo/map-carte/pdf/thematic/2011-98310-001-555-013-01-00-eng.pdf](http://www12.StatCan.gc.ca/census-recensement/2011/geo/map-carte/pdf/thematic/2011-98310-001-555-013-01-00-eng.pdf)

Metropolitan gross domestic product, experimental estimates, CANSIM TABLE 381-5000

[www5.StatCan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=3815000&paSer=&pattern=&stByVal=1&p1=1&p2=31&tabMode=dataTable&csid](http://www5.StatCan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=3815000&paSer=&pattern=&stByVal=1&p1=1&p2=31&tabMode=dataTable&csid)

London CMA, Census Profile, 2011

[www12.StatCan.gc.ca/census-recensement/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CMA&Code1=555&Geo2=PR&Code2=35&Data=Count&SearchText=london&SearchType=Begins&SearchPR=01&BI=All&Custom=&TABID=1](http://www12.StatCan.gc.ca/census-recensement/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CMA&Code1=555&Geo2=PR&Code2=35&Data=Count&SearchText=london&SearchType=Begins&SearchPR=01&BI=All&Custom=&TABID=1)

London CMA, National Household Survey (NHS) Profile, 2011

[www12.StatCan.gc.ca/nhs-enm/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CMA&Code1=555&Data=Count&SearchText=london&SearchType=Begins&SearchPR=01&AI=All&BI=All&Custom=&TABID=1](http://www12.StatCan.gc.ca/nhs-enm/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CMA&Code1=555&Data=Count&SearchText=london&SearchType=Begins&SearchPR=01&AI=All&BI=All&Custom=&TABID=1)