

## District Emissions Summary

The greenhouse gas inventory for Warwick District covers emissions within the local authority boundary, calculated in tonnes of 'CO2-equivalent' expressed as tCO2e. CO2e includes the following gases CO2 (carbon dioxide), N2O (nitrous oxide) and CH4 (methane) are include. Some sectors and subsectors have very low emissions and are clearly visible on the graph. The most recent data is for 2017.

The District emissions from the SCATTER tool are shown below. The most recent data available is shown for 2017.

Summary greenhouse gas emissions (metric tonnes CO2e)		Scope 1	Scope 2	Scope 3	
Sector	Sub-sector	Total tCO2e	Total tCO2e	Total tCO2e	Total tCO2e
		DIRECT	INDIRECT	OTHER	TOTAL
Stationary energy	Residential buildings	146,182.18	88,187.45	38,852.42	273,222.05
	Commercial buildings & facilities	19,340.73	14,877.40	6,185.68	40,403.81
	Institutional buildings & facilities	40,777.20	75,178.63	17,958.56	133,914.39
	Industrial buildings & facilities	24,004.96	43,579.66	11,847.39	79,432.02
	Agriculture	4,097.99	1.53	978.52	5,078.05
	Fugitive emissions	-	-	-	-
Transportation	On-road	413,738.62	IE	-	413,738.62
	Rail	16,077.97	IE	3,833.51	19,911.48
	Waterborne navigation	11.89	NO	2.83	14.72
	Aviation	-	IE	73,888.08	73,888.08
	Off-road	-	IE	-	-
Waste	Solid waste disposal	6,668.51	-	-	6,668.51
	Biological treatment	-	-	-	-
	Incineration and open burning	-	-	-	-
	Wastewater	8,716.89	-	-	8,716.89
IPPU	Industrial process	0.03	-	NE	0.03
	Industrial product use	0.00	-	NE	0.00
AFOLU	Livestock	5,142.82	-	NE	5,142.82
	Land use	- 0.01	-	NE	- 0.01
	Other AFOLU	NE	-	NE	-
Generation of grid-supplied energy	Electricity-only generation	-	-	-	-
	CHP generation	-	-	-	-
	Heat/cold generation	-	-	NE	-
	Local renewable generation	-	NE	NE	-

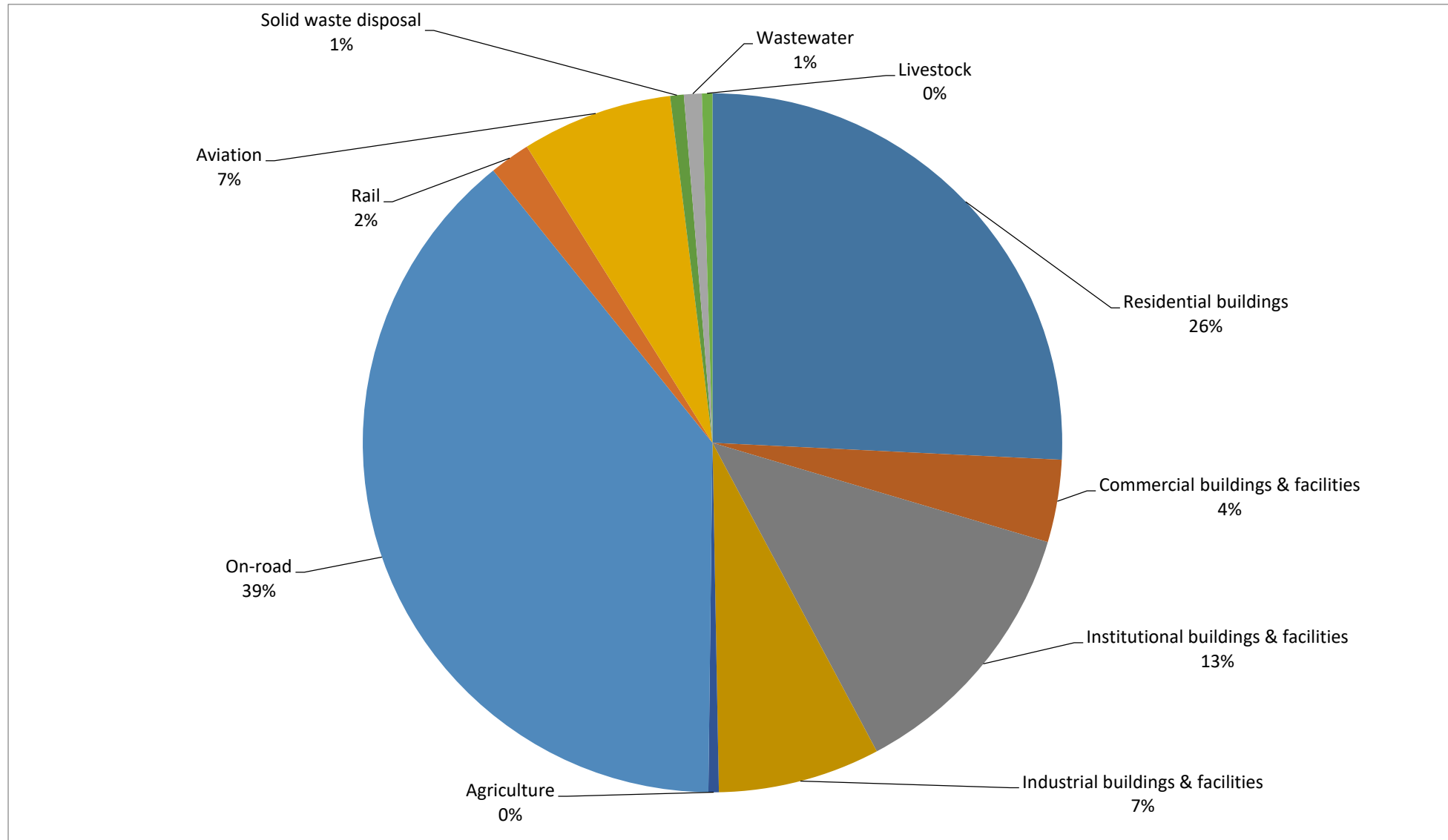
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N/A
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Optional

<b>Total (ALL)</b>	<b>1,060,131.46</b>
<b>Total Optional</b>	<b>1,046,271.72</b>
<b>Total Optional (Excluding Agriculture, Fugitive Emissions, Waterborne Navigation, Aviation, All Waste)</b>	<b>940,710.88</b>

Total Stationary Energy	532,050.31
Total Transportation	507,552.91
Total Waste	6,668.51
Total IPPU	8,716.89
Total AFOLU	5,142.82

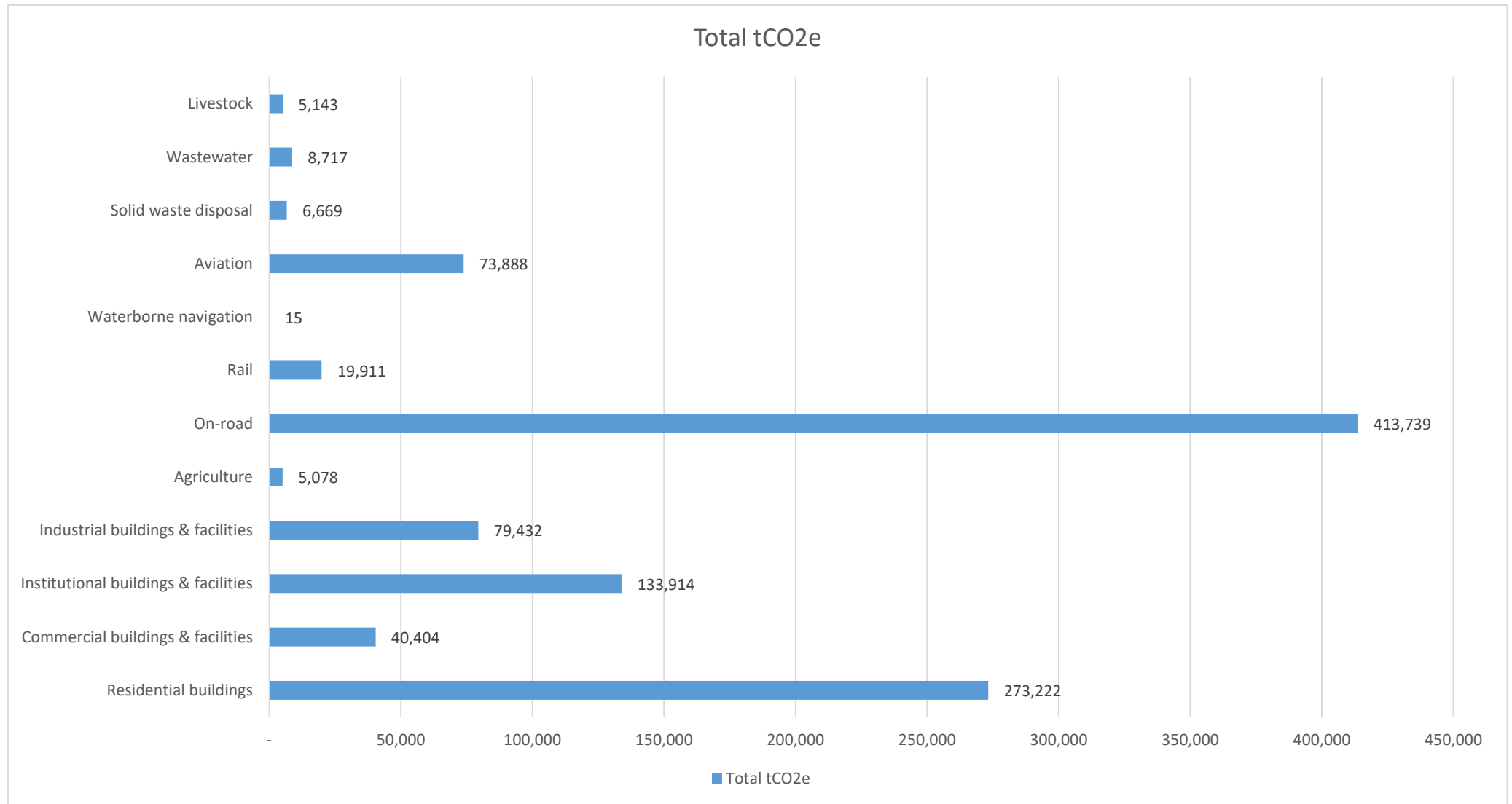
## District Emissions Summary

The pie chart below shows the overall spread of emissions across the different sector areas.



## District Emissions Summary

The graph below also usefully depicts the tCO<sub>2</sub>e from each sector area with some areas more significant than others.



## **District Emissions Summary**

The following provides further information of the emissions included with the key sector areas.

### **1. Stationary Sources**

Greenhouse gas emissions are generated in this sector through the combustion of fuel in buildings, manufacturing industries, construction processes and power plants. This includes fugitive emissions. Fugitive emissions refer to emissions lost due to leakages that occur when extracting, processing and transporting fossil fuels. This sector includes the following sub-sectors:

- Residential buildings
- Commercial building and facilities
- Institutional buildings and facilities
- Industrial buildings and facilities
- Agriculture
- Fugitive emissions

### **2. Transportation**

This sector produces greenhouse gas emissions through the combustion of fuel or use of electricity during journeys travelled by road, rail, air or water for inter-city and international travel. This sector produces greenhouse gas emissions through the combustion of fuel or use of electricity during journeys travelled by road, rail, air or water for inter-city and international travel. This sector includes the following sub-sectors:

- On-road
- Rail
- Waterborne navigation
- Aviation
- Off-road

## District Emissions Summary

### 3. Aviation

Data for aviation emissions was extracted from the Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2017, Categories 1A3a and Aviation Bunkers for England, Wales, Scotland and Northern Ireland for Aviation Spirit and Aviation Turbine Fuel. This gave total emissions for landing and take-off (LTO) and Cruise phases of UK flights. A percentage of total aircraft movements for each UK airport was calculated from the Civil Aviation Authority (CAA) 2017 dataset Table\_05\_Air\_Transport\_Movements, Airport data 2017, Civil Aviation Authority.

Scope 1 emissions: LTO emissions are used as a proxy for flights that take off and land within the boundary of the local authority area. The disadvantage of this methodology is that LTO actually relates to flights that do not start and end in boundary (i.e. are not considered scope 1 according to the GPC methodology). Here it is used as a proxy to represent emissions relating in-boundary flights e.g. police helicopters/'grass strip' flights that fall under this category, which do take off and land in-boundary.

LTO emissions have been allocated to UK airports based on the percentage of total aircraft movements. Airport names have been manually matched to individual local authority codes in the Civil Aviation Authority air transport movements dataset. LTO tonnes of fuel were calculated from the total impacts using BEIS fuel emission factors. LTO impacts are reported as Scope 1 aviation.

Scope 3 emissions: Cruise impacts were allocated to LAs based on percentage of population, assuming that flying is uniformly distributed across the whole population. Cruise tonnes of fuel were calculated from the total impacts using BEIS fuel emission factors. Cruise impacts are reported as Scope 3 aviation.

### 4. Waste

Disposal and treatment of solid waste and wastewater produces greenhouse gas emissions through incineration, aerobic and anaerobic decomposition. This sector includes the following sub-sectors:

- Solid waste disposal
- Biological treatment
- Incineration and open burning
- Wastewater

## **District Emissions Summary**

### **5. Industrial processes and product use (IPPU)**

Industrial processes used to physically or chemically transform materials produce greenhouse gas emissions. Also, industries use products that release greenhouse gas emissions throughout its use. This sector includes the following sub-sectors:

- Industrial Process
- Product Use

### **6. Agriculture, forestry and other land use (AFOLU)**

The AFOLU sector produces greenhouse gas emissions through methane created by livestock, nutrient management for agricultural purposes, and land use change altering soil compositions.

The AFOLU sector produces greenhouse gas emissions through methane created by livestock, nutrient management for agricultural purposes, and land use change altering soil compositions. Agricultural data for livestock including the total number of dairy cattle, non-dairy cattle, sheep, pigs, horses and poultry by local authority for England, Scotland, Wales and Northern Ireland was amalgamated, and where no individual local authority data was readily available combined authority averages were applied.

- Livestock
- Land use
- Other AFOLU

### **7. Energy Generation**

This sector includes the following sub-sectors:

- Electricity-only generation
- CHP generation
- Heat/cold generation (NE)
- Local renewable generation