WinACC
Winchester Action on the Climate Crisis

Consumption emissions
in Winchester District local areas

7 November 2021

Introduction

The annual WinACC reports on Winchester District emissions are mainly based on subnational data on emissions provided by the UK Government's Department for Business Energy and Industrial Strategy (BEIS)– the latest published in June 2021 giving annual emissions from 2005 up to the end of 2019.

BEIS provides data on CO_2 emissions produced within geographic areas. The only exception is emissions caused generating electricity consumed within each geographic area, wherever it is generated. BEIS refers to this as **'territorial'** data. It is relatively easy to calculate and therefore reliable and provides a record of progress that goes back to 2005. The focus on 'territorial' data means that some emissions arising as a result of activities of people who live in Winchester District, such as international shipping and flights, are not included.

Districts such as Winchester are the smallest geographic areas for which BEIS publishes a comprehensive set of detailed subnational data covering all CO_2 emissions, although they do provide data on gas and electricity consumption at postcode level. They also publish territorial data for counties, regions and nations, as well as for the whole of the UK.

This paper complements the work on territorial emissions by looking at emissions resulting from **consumption** by people who live in Winchester District, even if the emissions are not produced within Winchester District boundaries. For example, when someone in Winchester takes a flight the emissions may occur anywhere in the world, but they have been allocated to the area where that person lives.

Because elected councillors serving on Winchester City Council (WCC) and Hampshire County Council (HCC) are in a position to make decisions that will reduce emissions, and are committed to doing so, this paper concentrates on

consumption data grouped by WCC wards[1] and HCC divisions[2] in Winchester District. It also looks at data on parishes.

Both WCC and HCC have declared climate emergencies, with cross-party support. We hope councillors will use this valuable information on the patterns of consumption across the district to develop spatial strategies for tackling emissions, and actively work to drive down emissions caused by consumption in the areas they represent starting with where emission levels are highest..

A detailed local picture on consumption

We have made use of consumption data sets produced by CSE (the Centre for Sustainable Energy) (Impact | Community carbon calculator (impact-tool.org.uk). These reflect emissions caused by our consumption of food, goods and services, powering our homes, and from travel. The categories they report on are different from those reported on by BEIS, and CSE have added to the CO_2 emissions, reported on by BEIS, emissions caused by other greenhouse gases, such as methane. This increases total emissions by about 25%, especially emissions related to food and waste. These emissions are measured in the weight equivalent of CO_2, or "CO_2e." The CSE data result from extensive modelling and interpretation based on over 20 sources. CSE data have been made available for each parish. We have grouped them into wards and divisions on a 'best fit' basis to make them directly relevant to local councillors.

These data sets give a detailed picture of how Winchester District activities and habits cause emissions, even if they are produced elsewhere and outside the district.

These data sets are available at the level of civil parishes (https://www.winacc.org.uk/wecan/). That webpage also includes data sets for non-parished wards in Winchester town, which are not available from the main Impact website. The charts below, showing how wards compare, use this additional information.

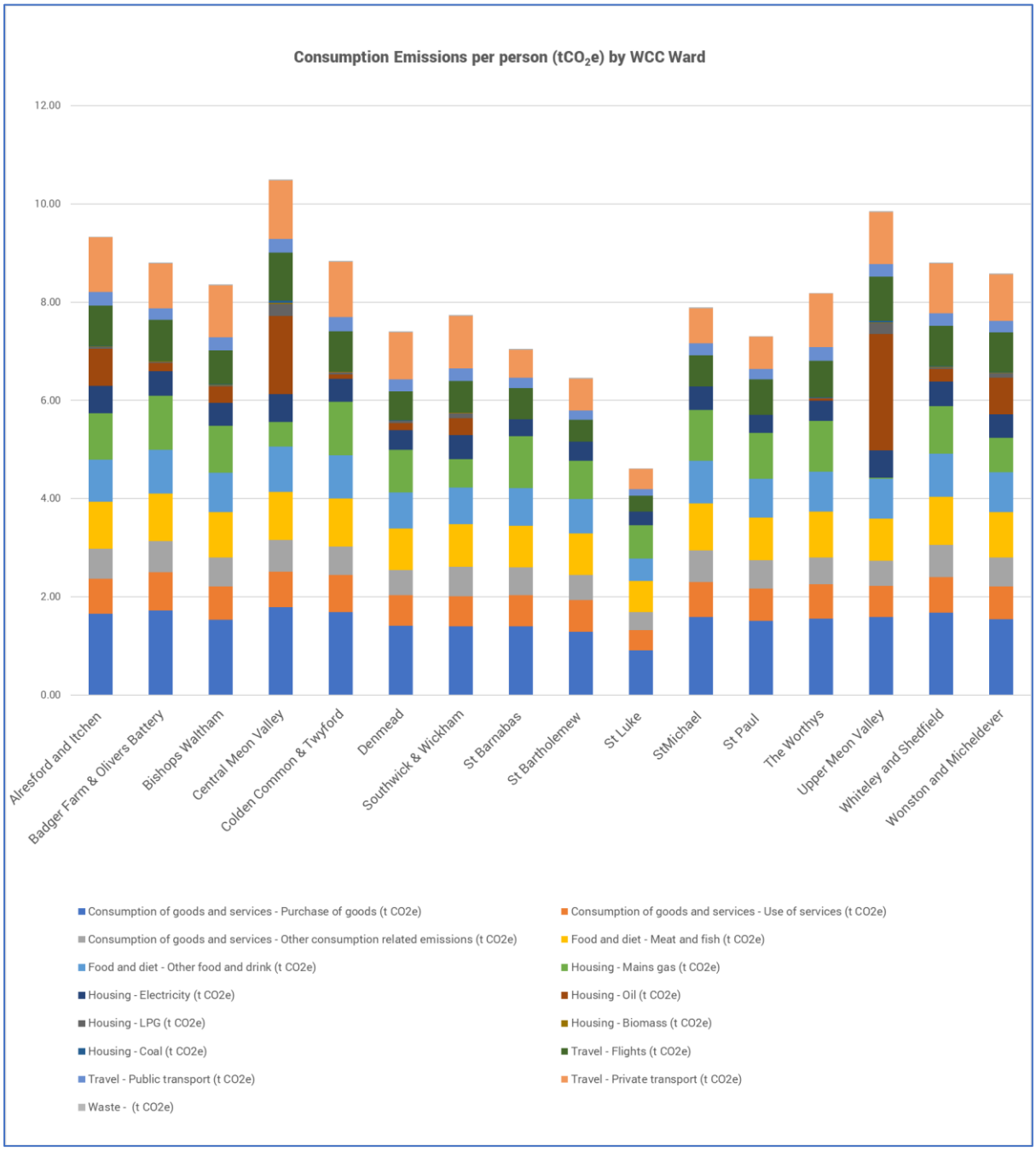
The following sections look at patterns in greenhouse gas emissions caused by the way we live throughout the district. CSE produced this data for the first time this year. We hope that funding will be available for further refinements, and for the same data to be produced annually so that progress can be measured through time.

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[1] An area that elects 2 or 3 City councillors
[2] An area that elects a County councillors

Consumption emissions by WCC ward

Per person

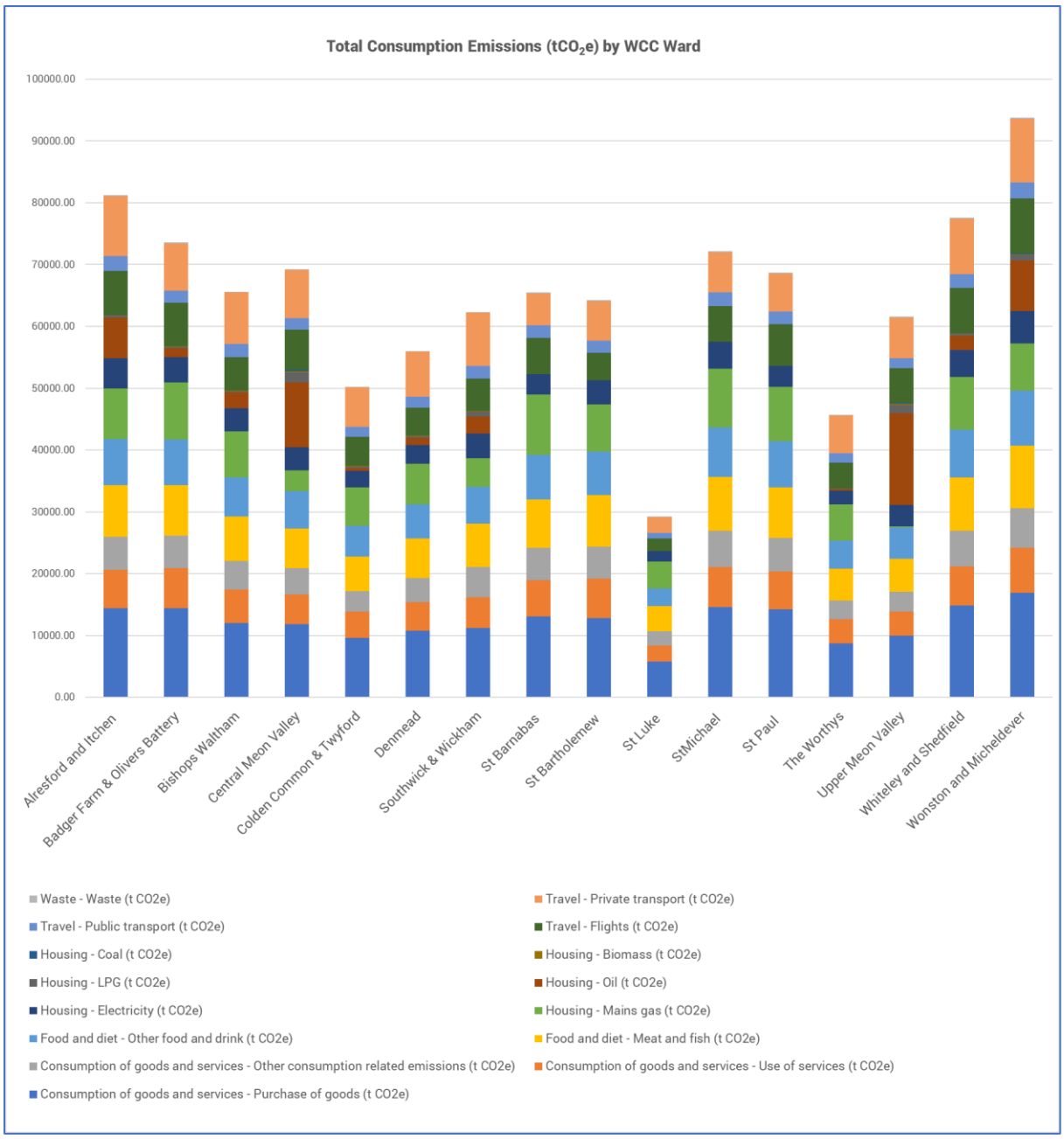


The highest per person emissions are found in the Meon Valley and the lowest in Winchester town especially where income is low. This would suggest that:

- urban living enables a lifestyle with a lower carbon footprint than rural living
- low income forces people to lead a low emission lifestyle, and

- emissions often tend to be high where oil is commonly used as a heating fuel, houses are large and not necessarily well-insulated, and people rely heavily on private transport (cars).

Total emissions

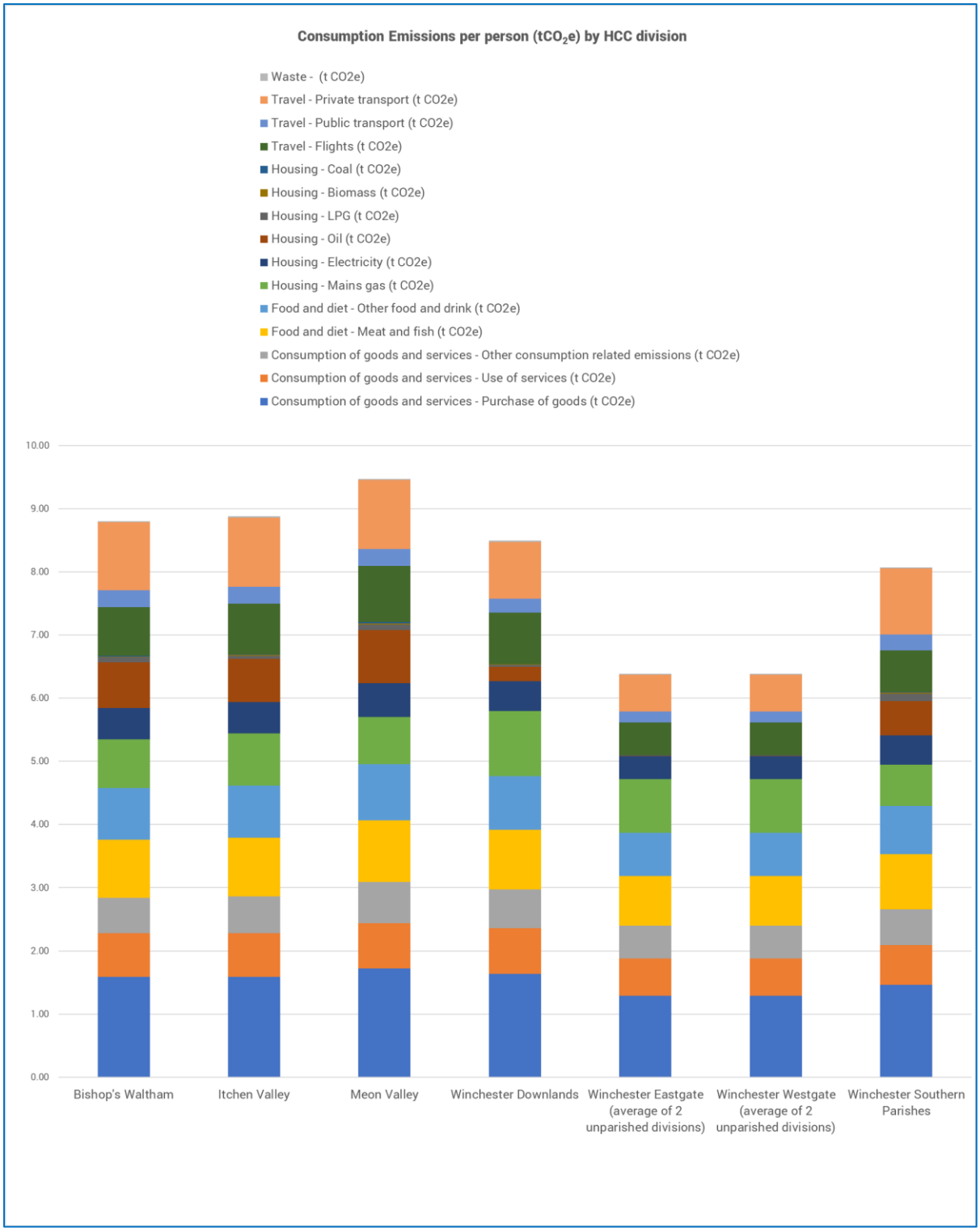


There are significant differences in levels of population across wards. Emissions from the Meon Valley wards still look quite high but the larger populations of Alresford and Itchen, Whiteley and Shedfield, and Wonston and Micheldever wards mean their total emissions are the highest. Although the Winchester town wards, except St Michael, each have lower than average district emissions, they are small in area and more densely populated, so new

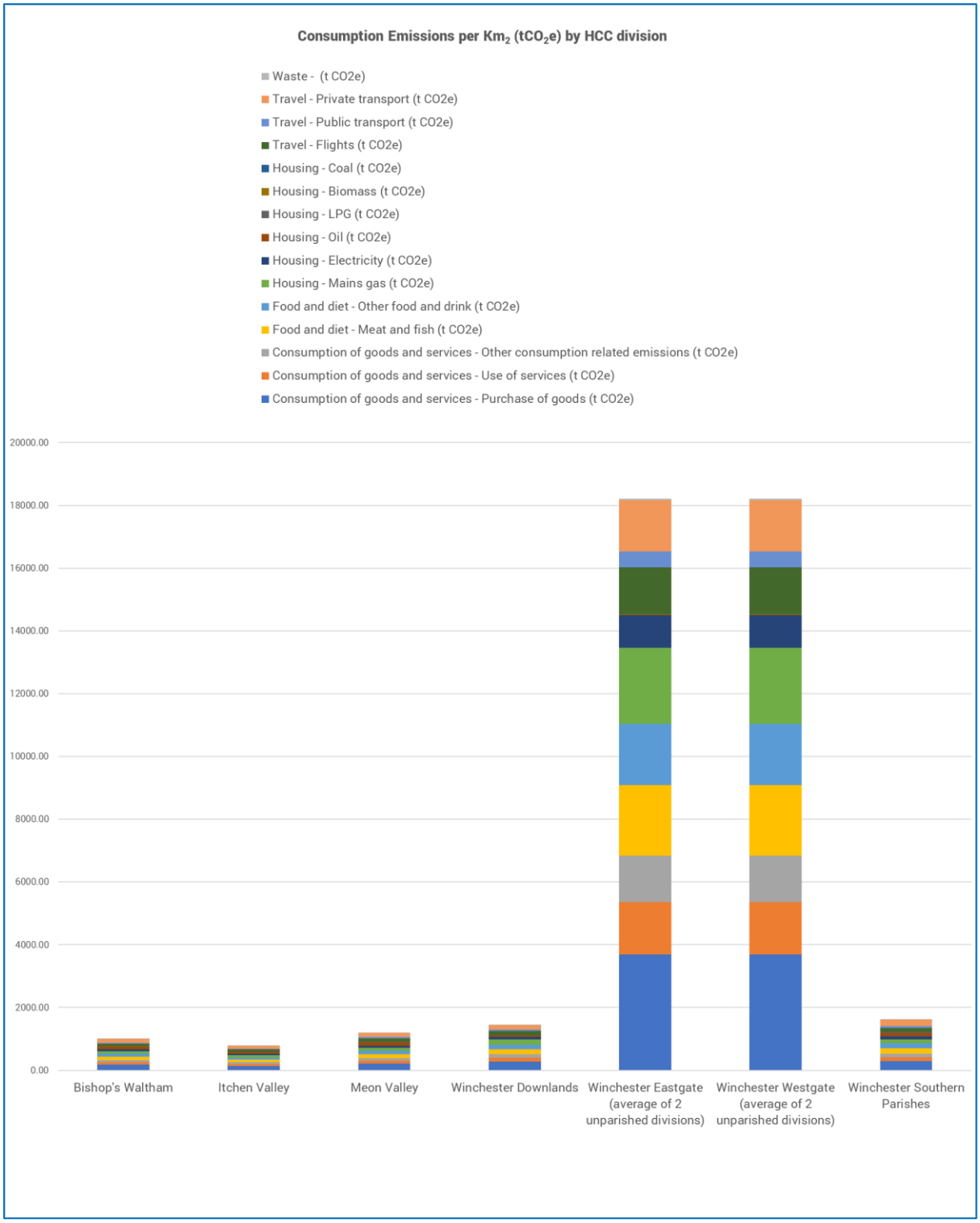
infrastructure (e.g. footpaths and heat networks) are likely to have a big impact on reducing emissions for the length of infrastructure required.

Emissions by County Council division

Hampshire County Council divisions within Winchester district present a similar pattern, but with differences that reflect the different boundaries. Again divisions outside Winchester City have relatively high emissions per person and Meon Valley and Itchen Valley have high emissions both per person and in total. Lower populations in Downlands and Southern parishes reduce their total emissions, and the roughly 25% greater populations of Winchester divisions bring them up to emissions levels seen in other divisions. Spatially emissions in Winchester Town are 12 times more concentrated in Winchester Town divisions than elsewhere in the district.


Consumption Emissions per person (tCO2e) by HCC division
Waste - (t CO2e)
Travel - Private transport (t CO2e)
Travel - Public transport (t CO2e)
Travel - Flights (t CO2e)
Housing - Coal (t CO2e)
Housing - Biomass (t CO2e)
Housing - LPG (t CO2e)
Housing - Oil (t CO2e)
Housing - Electricity (t CO2e)
Housing - Mains gas (t CO2e)
Food and diet - Other food and drink (t CO2e)
Food and diet - Meat and fish (t CO2e)
Consumption of goods and services - Other consumption related emissions (t CO2e)
Consumption of goods and services - Use of services (t CO2e)
Consumption of goods and services - Purchase of goods (t CO2e)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Bishop's Waltham
Itchen Valley
Meon Valley
Winchester Downlands
Winchester Eastgate (average of 2 unparished divisions)
Winchester Westgate (average of 2 unparished divisions)
Winchester Southern Parishes

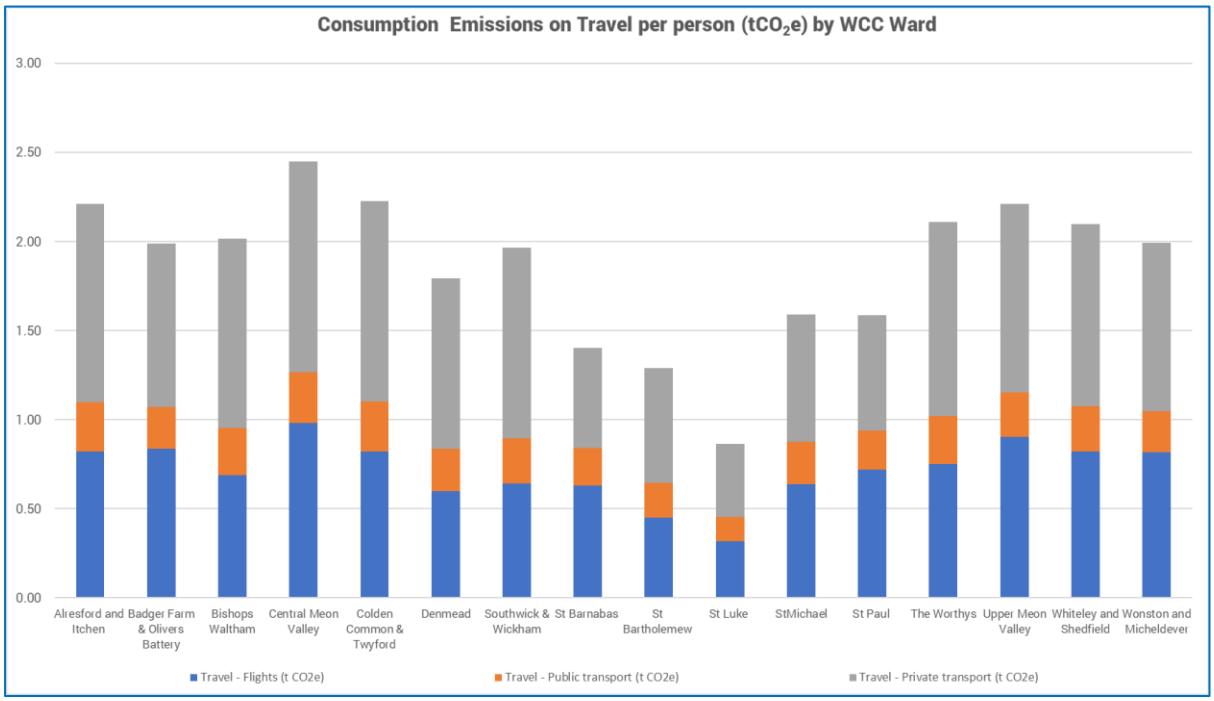

Total Consumption Emissions (tCO2e) by HCC division
Waste - Waste (t CO2e)
Travel - Private transport (t CO2e)
Travel - Public transport (t CO2e)
Travel - Flights (t CO2e)
Housing - Coal (t CO2e)
Housing - Biomass (t CO2e)
Housing - LPG (t CO2e)
Housing - Oil (t CO2e)
Housing - Electricity (t CO2e)
Housing - Mains gas (t CO2e)
Food and diet - Other food and drink (t CO2e)
Food and diet - Meat and fish (t CO2e)
Consumption of goods and services - Other consumption related emissions (t CO2e)
Consumption of goods and services - Use of services (t CO2e)
Consumption of goods and services - Purchase of goods (t CO2e)
180000.00
160000.00
140000.00
120000.00
100000.00
80000.00
60000.00
40000.00
20000.00
0.00
Bishop's Waltham
Itchen Valley
Meon Valley
Winchester Downlands
Winchester Eastgate (average of 2 unparished divisions)
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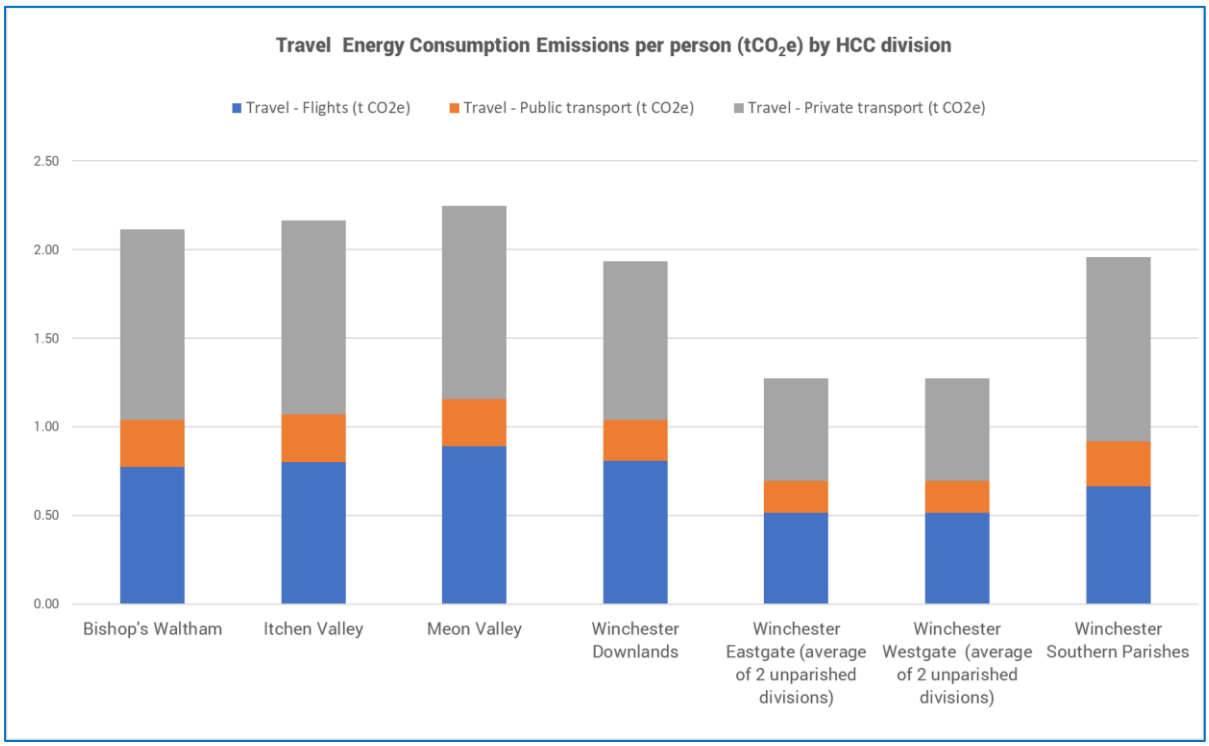


Travel consumption emissions

CSE has reallocated most of the data that BEIS allocates to “road transport” emissions to different categories of household consumption emissions (e.g. goods delivery is now allocated to consumption of goods and services) so the total impact of transport emissions is not easy to see from the CSE data.

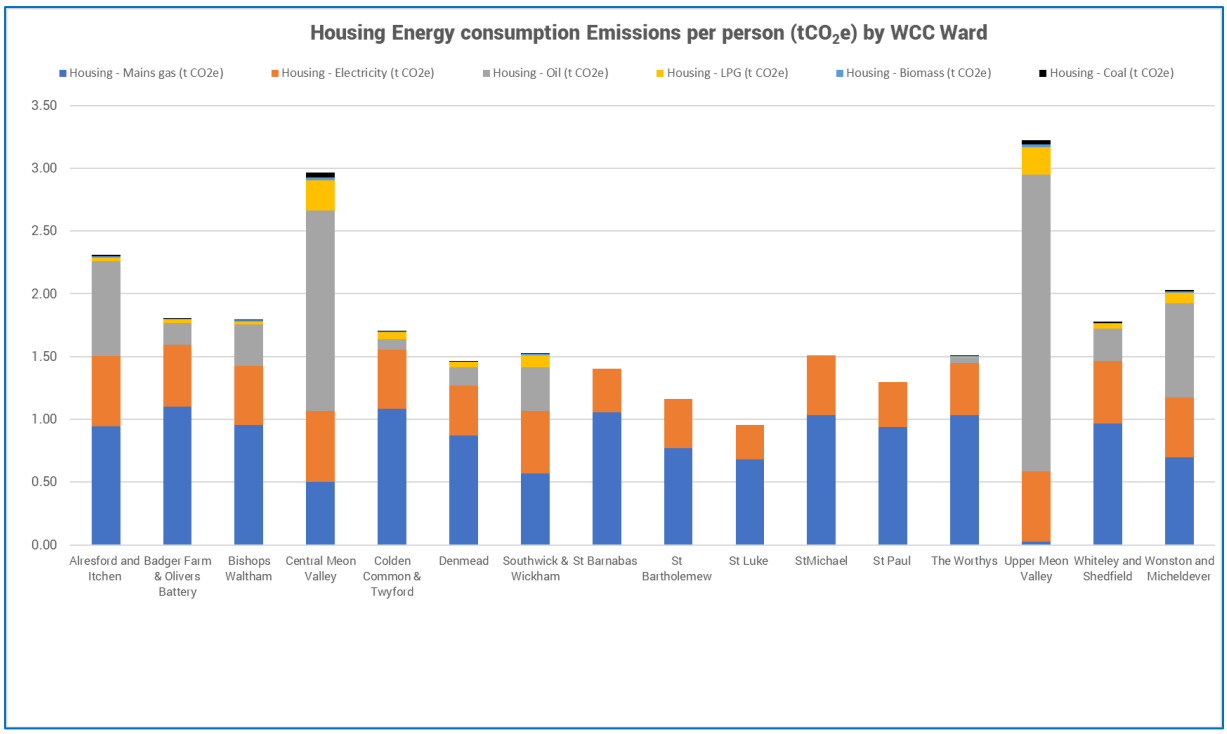
However, the significance of flight emissions and the impact of private transport are clear:

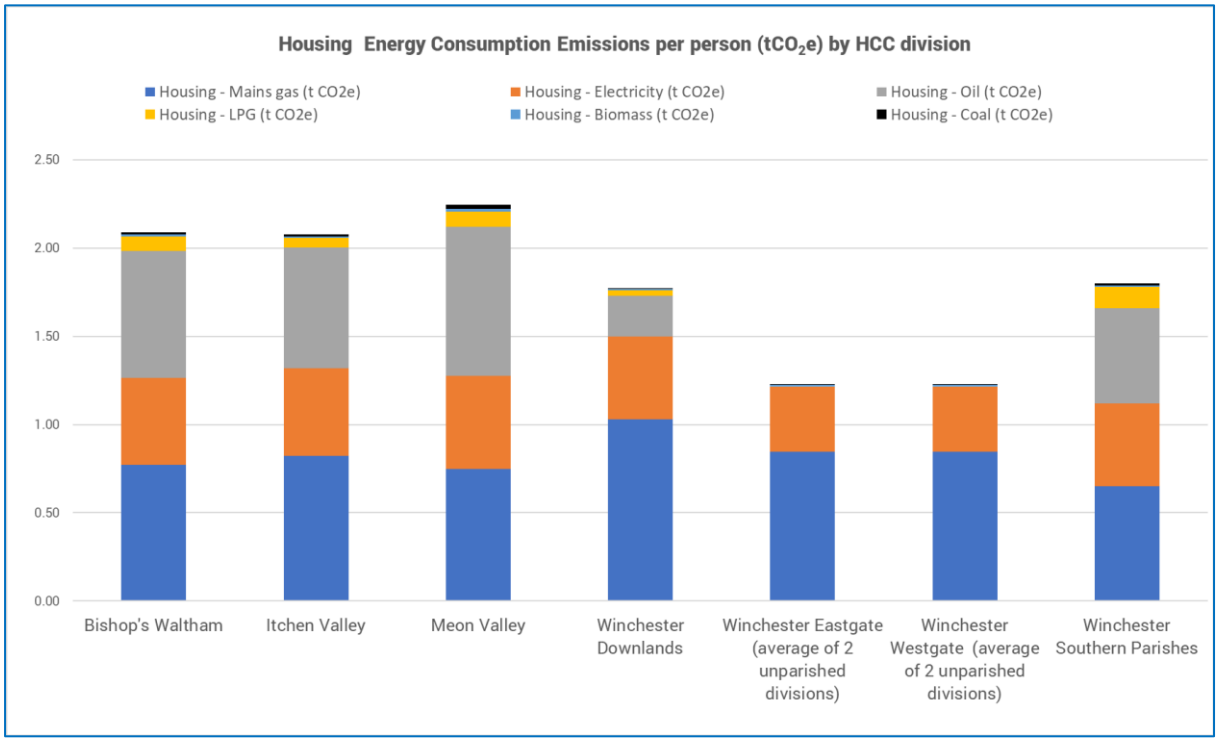




Housing consumption emissions

CSE has maintained BEIS's strong focus on emissions for energy used in housing, and provides additional detailed data on emissions from energy used in housing. This is how that breaks down by Winchester City Council ward and Hampshire County Council division.





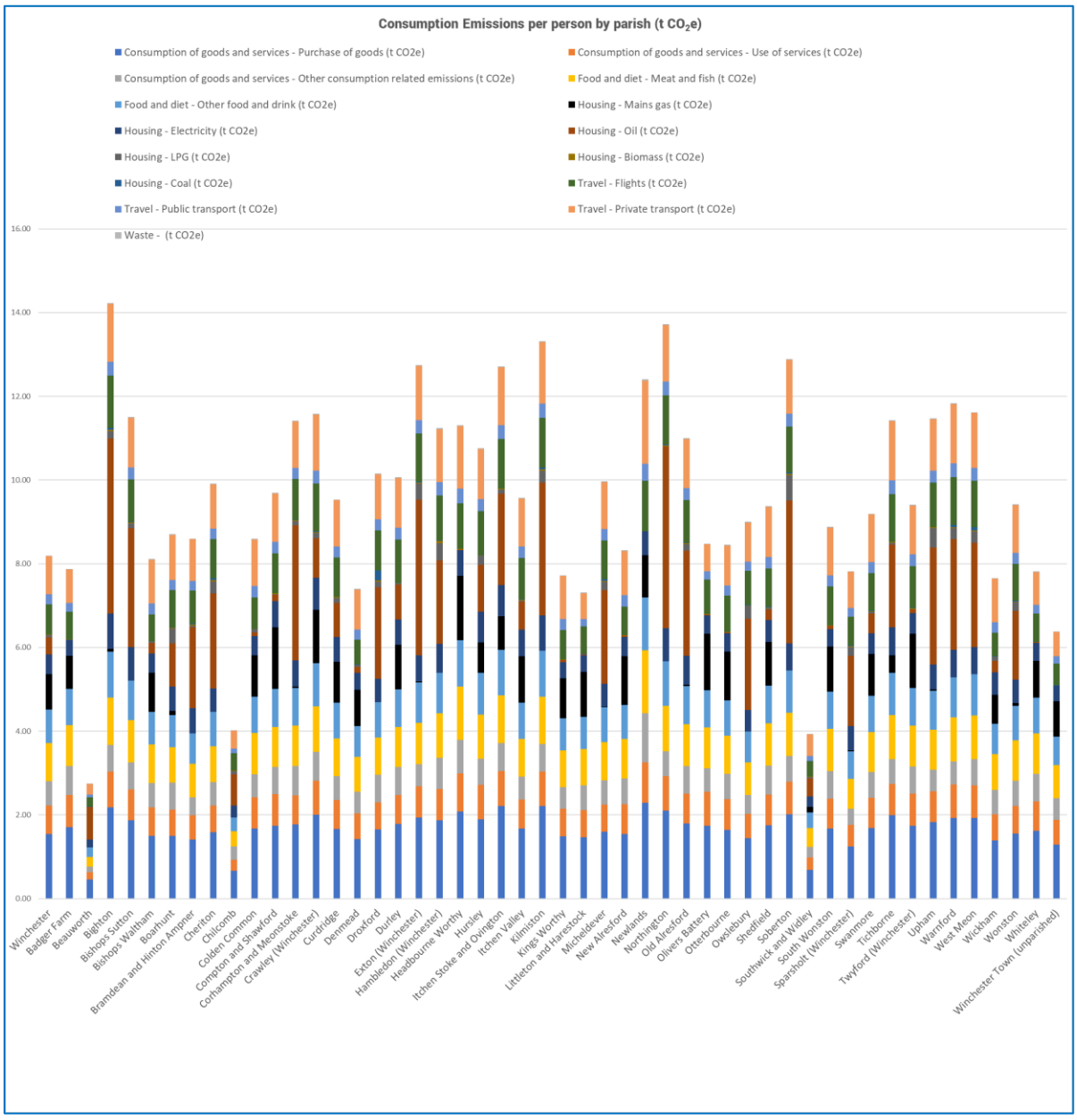
The charts show the impact of the availability of gas, the decline of coal, how reliance on oil increases emissions (for the same energy produced it causes 20% more emissions than gas), and how small the part played by LPG (whose emissions are similar to gas) and biomass is. This all suggests that heat pump replacement of gas- and oil-fuelled heating coupled with decarbonisation of the electricity supply and better insulation, are essential to achieve net zero emissions. Once again, the Meon Valley wards show up as super-emitters.

Emissions by small area

The top 12 (24%) parishes emit almost 70% of the emissions in the district. This is mostly the result of the population distribution across the district. The impact of some programmes of intervention could be most effective most quickly if they were to concentrate on those areas.

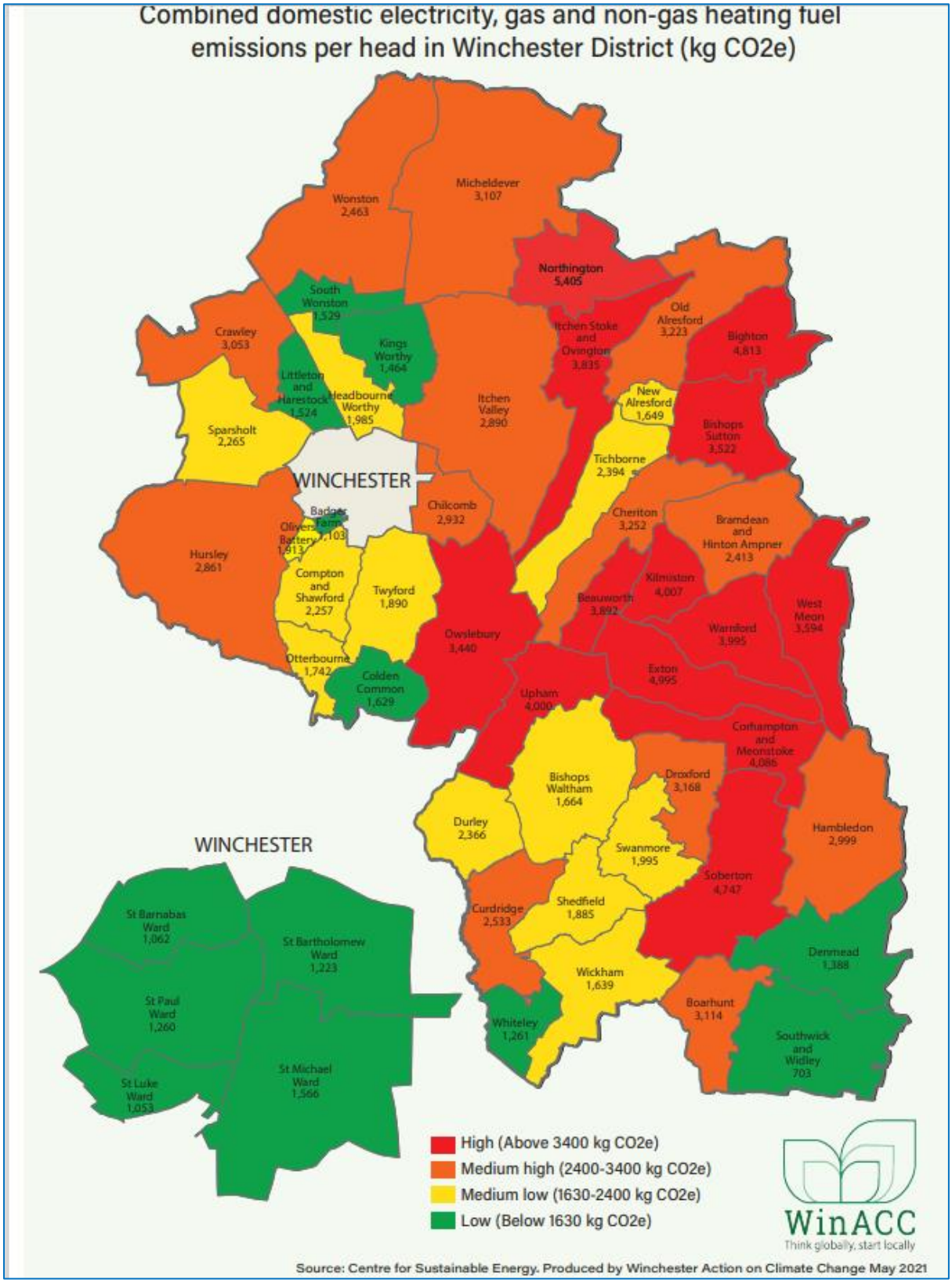
Total Consumption Emissions Ranking					
parish name	Total Consumption Emissions Per Parish	Percentage	cumulative Percentage	Rank	Rank Percentage
Winchester Town (unparished)	294,906	28.58%	28.58%	1	2.04%
Denmead	56,044	5.43%	34.01%	2	4.08%
Bishops Waltham	55,783	5.41%	39.41%	3	6.12%
New Alresford	44,937	4.35%	43.77%	4	8.16%
Shedfield	37,567	3.64%	47.41%	5	10.20%
Kings Worthy	37,512	3.64%	51.04%	6	12.24%
Wickham	36,312	3.52%	54.56%	7	14.29%
Colden Common	34,307	3.32%	57.89%	8	16.33%
Swanmore	30,578	2.96%	60.85%	9	18.37%
Littleton and Harestock	27,098	2.63%	63.48%	10	20.41%
Whiteley	26,226	2.54%	66.02%	11	22.45%
South Wonston	25,124	2.43%	68.45%	12	24.49%
Soberton	20,629	2.00%	70.45%	13	26.53%
Badger Farm	19,444	1.88%	72.33%	14	28.57%
Compton and Shawford	16,678	1.62%	73.95%	15	30.61%
Twyford (Winchester)	15,928	1.54%	75.49%	16	32.65%
Micheldever	15,278	1.48%	76.97%	17	34.69%
Itchen Valley	15,127	1.47%	78.44%	18	36.73%
Wonston	14,013	1.36%	79.80%	19	38.78%
Otterbourne	13,839	1.34%	81.14%	20	40.82%
Curdridge	13,815	1.34%	82.48%	21	42.86%
Olivers Battery	13,283	1.29%	83.77%	22	44.90%
Newlands	13,219	1.28%	85.05%	23	46.94%
Hambledon (Winchester)	10,946	1.06%	86.11%	24	48.98%
Hursley	10,348	1.00%	87.11%	25	51.02%
Durley	9,858	0.96%	88.07%	26	53.06%
Corhampton and Meonstoke	9,371	0.91%	88.97%	27	55.10%
West Meon	8,961	0.87%	89.84%	28	57.14%
Upham	8,648	0.84%	90.68%	29	59.18%
Owslebury	8,292	0.80%	91.48%	30	61.22%
Headbourne Worthy	8,191	0.79%	92.28%	31	63.27%
Sparsholt (Winchester)	7,594	0.74%	93.01%	32	65.31%
Cheriton	7,545	0.73%	93.74%	33	67.35%
Boarhunt	7,261	0.70%	94.45%	34	69.39%
Droxford	7,130	0.69%	95.14%	35	71.43%
Old Alresford	6,018	0.58%	95.72%	36	73.47%
Southwick and Widley	5,563	0.54%	96.26%	37	75.51%
Bramdean and Hinton Ampner	5,057	0.49%	96.75%	38	77.55%
Bishops Sutton	4,855	0.47%	97.22%	39	79.59%
Crawley (Winchester)	4,681	0.45%	97.67%	40	81.63%
Bighton	4,382	0.42%	98.10%	41	83.67%
Northington	3,321	0.32%	98.42%	42	85.71%
Kilmiston	3,249	0.31%	98.74%	43	87.76%
Exton (Winchester)	2,932	0.28%	99.02%	44	89.80%
Warnford	2,616	0.25%	99.27%	45	91.84%
Itchen Stoke and Ovington	2,607	0.25%	99.53%	46	93.88%
Tichborne	2,526	0.24%	99.77%	47	95.92%
Chilcomb	1,246	0.12%	99.89%	48	97.96%
Beauworth	1,120	0.11%	100.00%	49	100.00%
Total District	1,031,963				

However, it is also the case that emissions per person are highest in the parishes that have very low population density and low total emissions:



A number of rural parishes have emissions per person at over twice the emissions per person in the Winchester unparished town. (Data for Beauworth, Chilcomb, and Southwick and Widley appear to be anomalies for which we have no explanation).

WinACC has created a map of domestic emissions across the district:



Conclusions

In many cases it will be appropriate to have generic programmes for intervention to bring about reduction in carbon emissions. However, data on local areas provide useful insights that can help focus carbon reduction activity where it will have most impact, and project design could benefit from taking account of the spatial distribution of:

- emissions per person
- emissions per square kilometre.

It appears that there is one group of areas that have relatively high emissions per person, and that there is another group of areas that produce high total emissions concentrated within a relatively small space. There is a tension between these two factors, and each proposed intervention may benefit from considering how a local focus might maximise emissions reduction.

It may be that initiatives to improve infrastructure (such as improved bus services, street heating schemes such as shared boreholes, better cycling routes and walking facilities) that will lead to lower emissions should first concentrate on the 25% of areas with the highest total emissions.

Initiatives to influence household choices could concentrate where emissions are highest per person in (mostly) rural areas, unless on-the-ground initiatives require a local presence, in which case they would reach more people where the population and emissions are densest.