



## Warwickshire County Council

### Building Energy Consumption & Emissions Review

**April 2018 to March 2019**

Report prepared by WCC Resources Directorate - Enabling Services - Construction Services - Energy Team

<https://www.warwickshire.gov.uk/buildingenergyperformance>

#### Version History

Date	Document Version	Document Revision History	Document Author / Reviser / Approver
Draft 1 December 2019	1	Basis of report prepared and sent out as draft for consultation.	Tony Quin, Energy Data Analyst Max Usen, Junior Energy Manager Apprentice Dr Jacky Lawrence, Energy Manager;
Draft 2 January 2020	2	Appendix changed minor amendments and budget spend recalculated	Tony Quin, Energy Data Analyst Max Usen, Junior Energy Manager Apprentice Dr Jacky Lawrence, Energy Manager;

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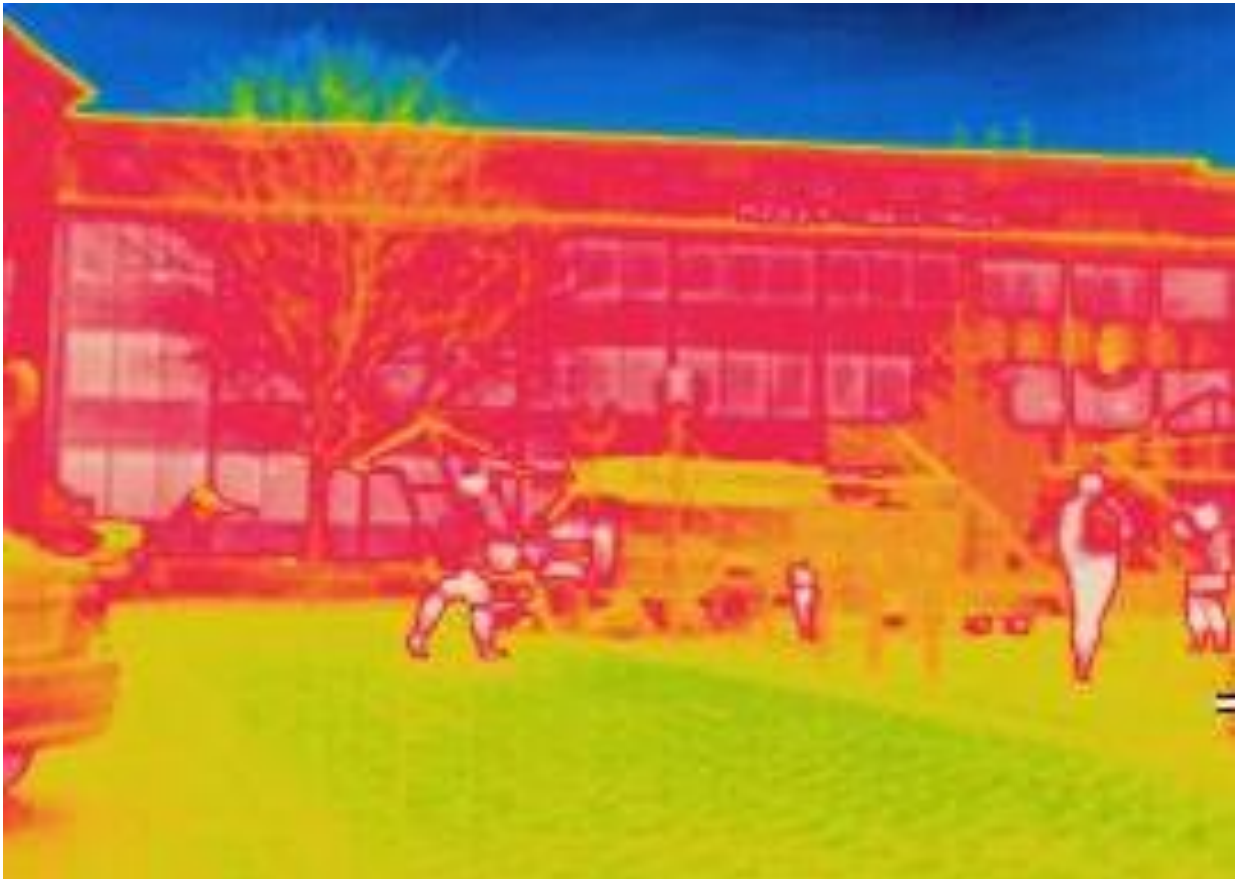
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## Summary

### *Introduction*

This publication gives information about energy consumption (combined gas and electricity, then separate by utility) for buildings in the Warwickshire County Council (WCC) property portfolio for the financial year 2018/19 and compares it to data from previous years. (For property specific details - see Appendix).

Similar reports for previous years can be found on the internet on the WCC Energy Performance web page:  
<https://www.warwickshire.gov.uk/buildingenergyperformance>









## Summary

### Commentary

2019 is the 9th year WCC has undertaken annual building energy consumption reporting and benchmarking.

The scope of this report is limited to Corporate buildings only.

For the purposes of this report, “Corporate buildings” are defined as those from which WCC operates its services. Therefore it does not include estate that is under WCC’s demise but non-operational or let for 3<sup>rd</sup> party operation.

Headline Overview:		
	CO <sub>2</sub>	Total Carbon Emissions in tonnes (t CO <sub>2</sub> ) is DOWN
	Energy	Total Energy Consumption (gas + electricity kWh) is UP
	Gas	Average cost per square metre (£/m <sup>2</sup> ) is UP
	Electricity	Average cost per square metre (£/m <sup>2</sup> ) is UP
	Water	Average cost per square metre (£/m <sup>2</sup> ) (First Non Estimated Report)
	Renewables	Zero Carbon Generation (kWh) is UP From 2016 WCC every unit of electricity procured is matched by a Renewable Energy Guarantee of Origin (REGO) certificate. REGOs guarantee that electricity is generated from a renewable source – matching the amount of electricity supplied with the equivalent amount supplied from 100% renewable sources.

With electronic invoice data, direct meter readings, voluntary automatic meter reading (AMR) installed and invoice validation, the data continues to improve. Even so, the data quality and accuracy can still be improved year upon year. Common potential sources of data inaccuracy include:

- Meter read errors or meter faults.
- Paying invoices based on estimated readings.
- Uncorrected billing errors.
- Submission of customer reads in the wrong unit of measure (e.g. confusing m<sup>3</sup> with kWh).

The data in this report provides a basis for further more detailed investigations wherever it provokes questions about unexpected patterns of energy consumption. Both higher than average and lower than average energy consumption need to be investigated to:

- Find out why this is the case,
- Better understand energy consumption and cost in WCC properties,
- Gather more accurate data where necessary,
- Detect avoidable energy wastage that otherwise may remain hidden,
- Learn from best practice in order to know what to do to reduce costs where energy performance can be improved,
- Identify areas for investment,
- Quantify potential savings from energy saving projects,
- Improve budget forecasting,
- Develop up to date Warwickshire specific benchmarks, and
- Set informed targets.

## CO<sub>2</sub> Emissions



### Introduction

The UK is committed to achieving carbon neutrality by 2050. In one of her last acts as prime minister, Theresa May confirmed that parliament will implement the recommendations of the Committee on Climate Change, creating a legally binding net-zero carbon target for 2050. There continues to be calls on the government to aim to achieve net-zero emissions and for ministers to outline urgent proposals to deliver a "zero waste economy".

WCC's corporate energy target is to achieve at least an average annual 2.5% reduction in total CO<sub>2</sub> emissions from the corporate property estate per £million gross revenue expenditure.

WCC maintains a robust energy, cost and CO<sub>2</sub> reporting system for the WCC estate to assess actions and progress towards meeting targets.

In this section:

- 1. Reporting on Carbon Emissions**  
Information on the UK Carbon Reduction Commitment (CRC) Energy Efficiency Scheme
- 2. Carbon Dioxide Emissions Data**  
Year on Year comparison table showing total tonnes of CO<sub>2</sub>, floor area and property numbers for each utility.
- 3. Emission Factors**  
Details on how CO<sub>2</sub> is calculated.
- 4. CO<sub>2</sub> Equivalents**  
Giving our emissions context.
- 5. CO<sub>2</sub> Tonnes per £million of Gross Revenue Expenditure**  
Our annual CO<sub>2</sub> emissions expressed in terms of the CRC reporting metric.

## CO<sub>2</sub> Emissions

### Reporting on Carbon Emissions

Local authorities in England have been requested by Government to measure and report their Green House Gas (GHG) emissions from their own estate and operations. Whilst Warwickshire County Council was not a participant in Phase 2 of the Carbon Reduction Commitment (CRC), the 2017/18 and 2018/2019 energy data was collected the same as if it had formed part of the required CRC Evidence Pack.

We maintain this structure as it provides a useful management tool for energy efficiency and it also ensures continuity of reporting.

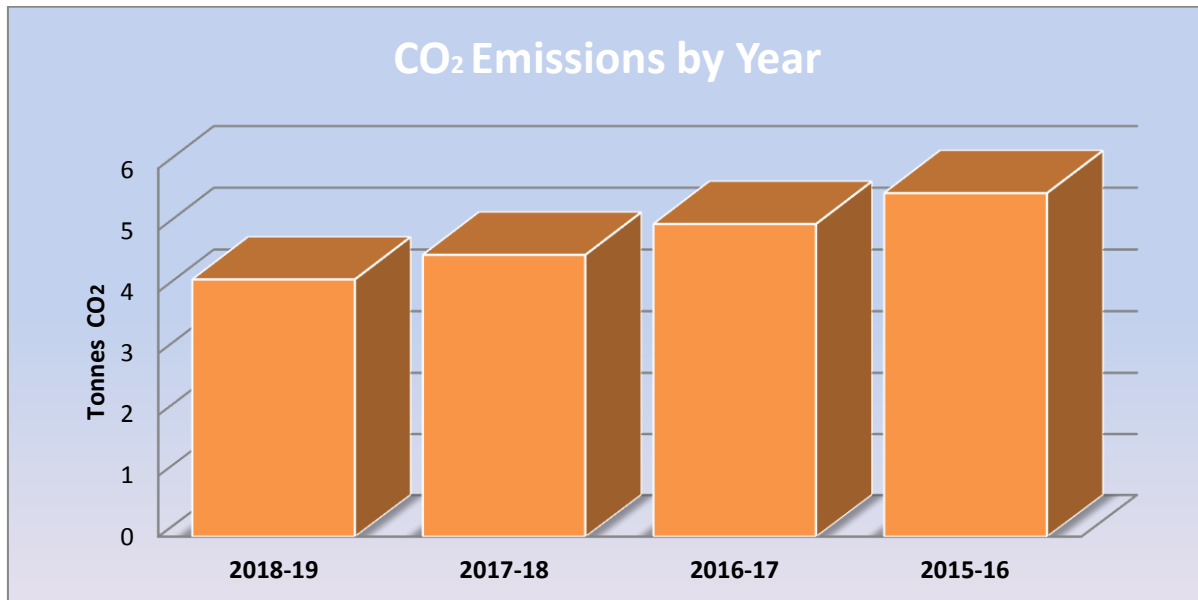
### Carbon Dioxide Emissions Data 2018/19

Includes:	Year	Fuel kWh	No of properties	GIA (m <sup>2</sup> )	Emissions (t CO <sub>2</sub> )
Corporate Buildings Only	2018/19				<b>4,019</b>
		Gas	67	92,040	1,950
		Electricity	85	107,722	2,069
	2017/18				<b>4,598</b>
		Gas	65	92,015	2,063
		Electricity	83	100,842	2,535
	2016/17				<b>5,073</b>
		Gas	67	93,127	1,935
		Electricity	87	101,431	3,138
	2015/16				<b>5,604</b>
		Gas	64	90,119	1,969
		Electricity	84	103,024	3,635

\* Corporate Buildings only, operational for whole reporting period.

\* From the 1st October 2016 WCC buys Pure Green Tariff Electricity

## Carbon Dioxide Emissions Data 2018/19



## Carbon Dioxide Emission Factors

### Emissions Factors:

To convert kilowatt hours of Gas and Electricity into CO<sub>2</sub>, the following CRC Phase 2 Conversion Factors v8 are used, published 22<sup>nd</sup> August 2018:

Natural Gas: 0.18362 kg CO<sub>2</sub> / kWh

Electricity: 0.30482 kg CO<sub>2</sub> / kWh (including transmission and distribution losses)

More information about Emissions Factors, how they are calculated and what assumptions are made, are available here:

<https://www.gov.uk/government/publications/crc-conversion-factors>

## Carbon Dioxide Equivalents

### Equivalents

What does 4,019 tonnes of carbon dioxide look like?

The graphics below give context by illustrating equivalents for 4,019 tonnes of CO<sub>2</sub>

More information about these equivalents, how they are calculated and what assumptions are made, are available here:

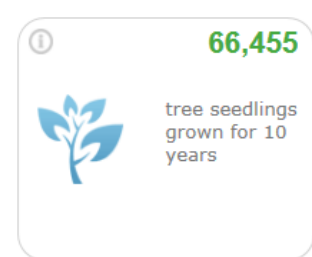
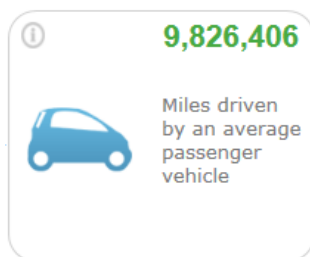
<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

### Equivalency Results [How are they calculated?](#)

Greenhouse gas emissions from

CO<sub>2</sub> emissions from

Carbon sequestered by





## Carbon Dioxide Tonnes per £millions of Gross Revenue Expenditure

### Tonnes of carbon dioxide per £million of gross revenue expenditure

The CRC reporting metric was tonnes of carbon dioxide per £million pounds of gross revenue expenditure. On this metric the lower the CO<sub>2</sub>/£million value, the better the performance. WCC will continue to report on this metric even though the CRC has ended.

For financial year 2018/19

WCC's Gross Revenue Expenditure was:

598

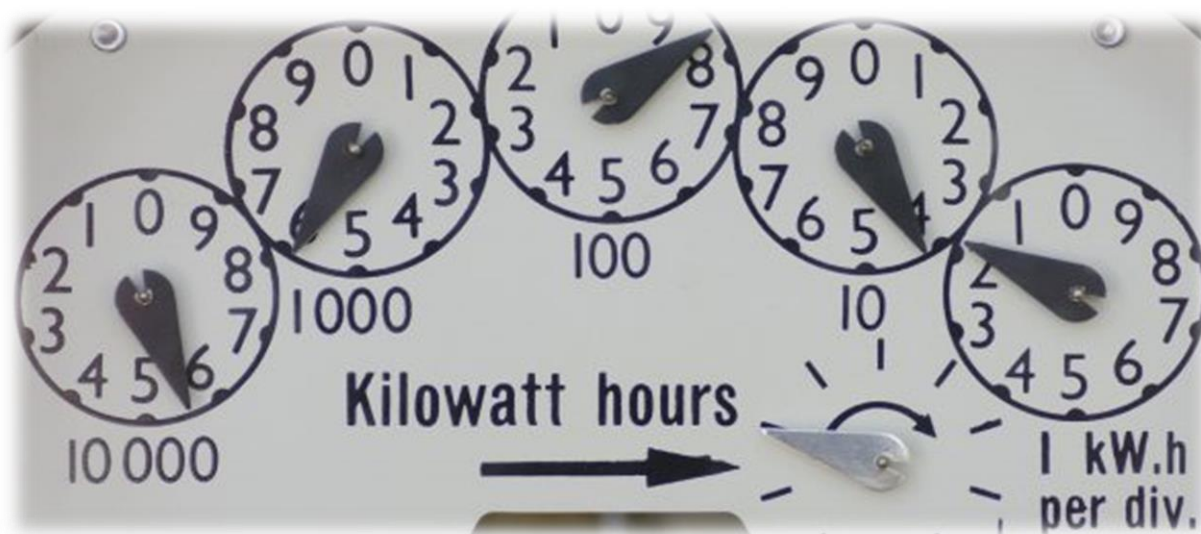
(£millions)

Year:	tonnes CO <sub>2</sub> /£million Gross Revenue Expenditure	% change since 2014/15:	% change year on year
2018/19	6.98	-47%	-6.9%
2017/18	7.50	-43%	-11.5%
2016/17	8.47	-36%	-11.8%
2015/16	9.60	-27%	-27%

There has been significant reductions in carbon dioxide per £million pounds of gross revenue expenditure since reporting began in 2014/15. Year on year reductions in carbon has naturally slowed since the initial quick wins found through better property insulation, inefficient properties being disposed of through property rationalisation and investment in energy efficiency projects.

Moving forward it will become increasingly more difficult to find carbon reductions without substantial investment and increasing our renewable production capacity.

## Combined Energy Consumption (Electricity & Gas)



### Introduction

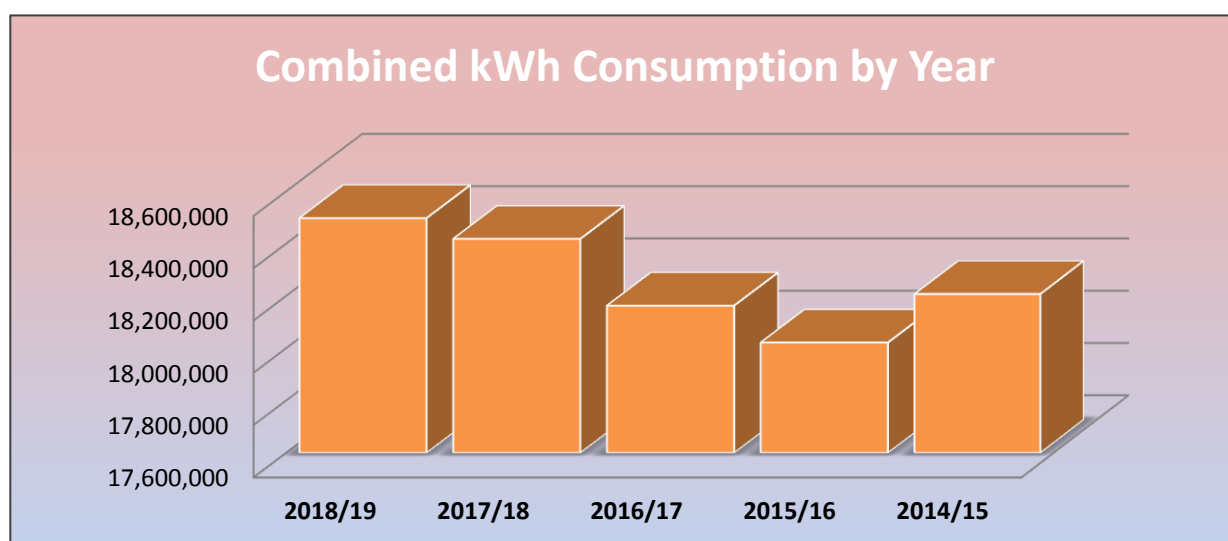
This section details the combined electricity & gas consumption in kWh for WCC's buildings. It also identifies the largest contributing properties to the headline CO<sub>2</sub> figures from the previous section.

What's in this section:

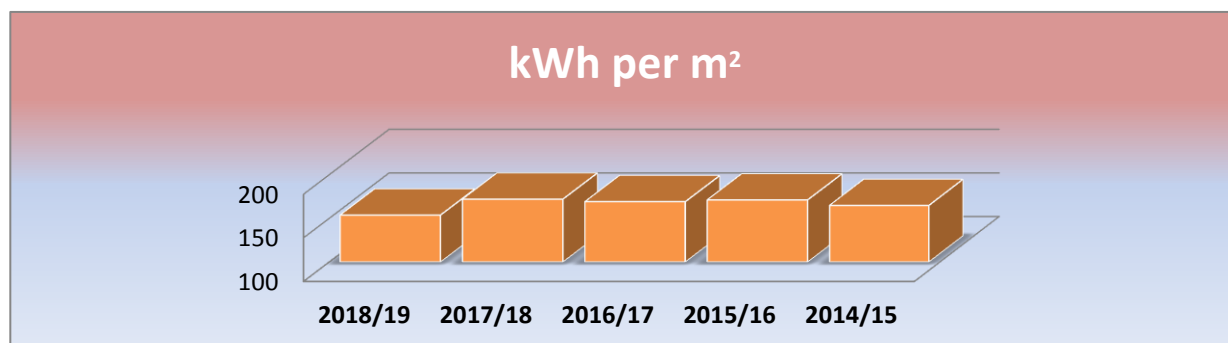
- 1. Combined Consumption Data**  
Year on Year comparison table showing total kilowatt hours, floor area, property numbers and a weighted average cost per m<sup>2</sup> for each utility.
- 2. Highest Consumers**  
Chart showing the 20 highest consuming properties for the current year expressed in tonnes of CO<sub>2</sub>.
- 3. Proportional Split**  
Chart showing the proportional contribution of gas & electricity towards our total combined consumption.
- 4. Weighted average cost per metre squared of floor area**  
Explanation for how this metric is calculated

## Combined Energy Consumption (Electricity & Gas)

Year	No of Properties	GIA (m2)	Total kWh	(outliers removed) wgt'd Av £/m <sup>2</sup>	Wgt'd Av kWh/m <sup>2</sup>
2018/19	96	126,872	18,499,594	£10.49	146
2017/18	86	107,048	18,418,393	£9.71	172
2016/17	89	107,428	18,162,905	£9.22	169
2015/16	88	105,307	18,021,835	£10.03	171
2014/15	94	110,431	18,207,278	£10.50	165
				£ per m <sup>2</sup>	kWh per m <sup>2</sup>



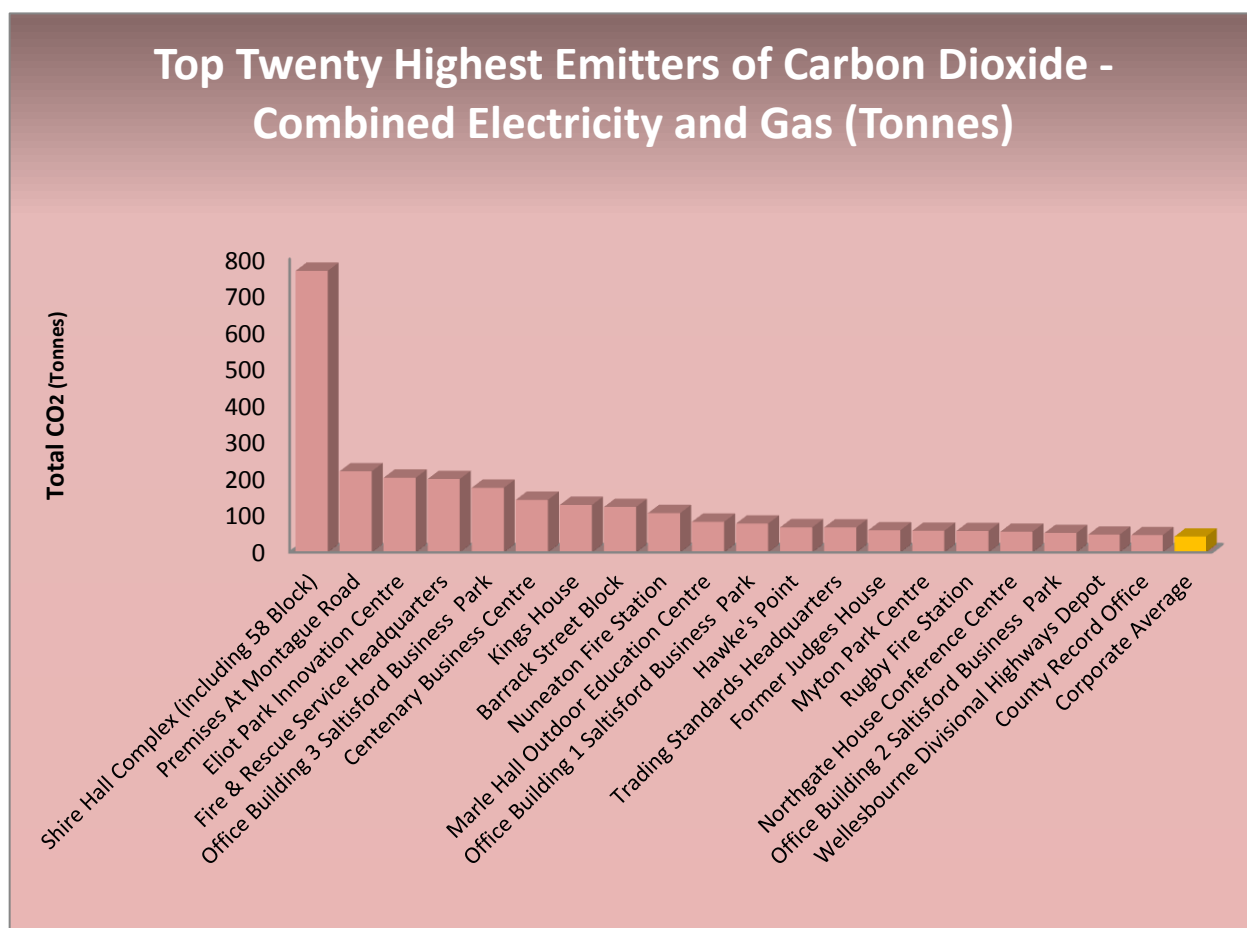
Looking through the above charts it is clear to see that our consumption of energy has increased slightly by 79,000 kWh. However, when we divide the energy being consumed by the total Gross Internal floor Area (GIA) the 96 properties we can see that the weighted average has been reduced.



## Combined Consumption Detail - 2018/19

### Current Year Highest Emitters of Carbon Dioxide Overall:

The graph below shows the 20 highest emitters of carbon dioxide (in tonnes) for WCC's Corporate Portfolio. To give context to these values, the average across all properties is shown in orange on the right.

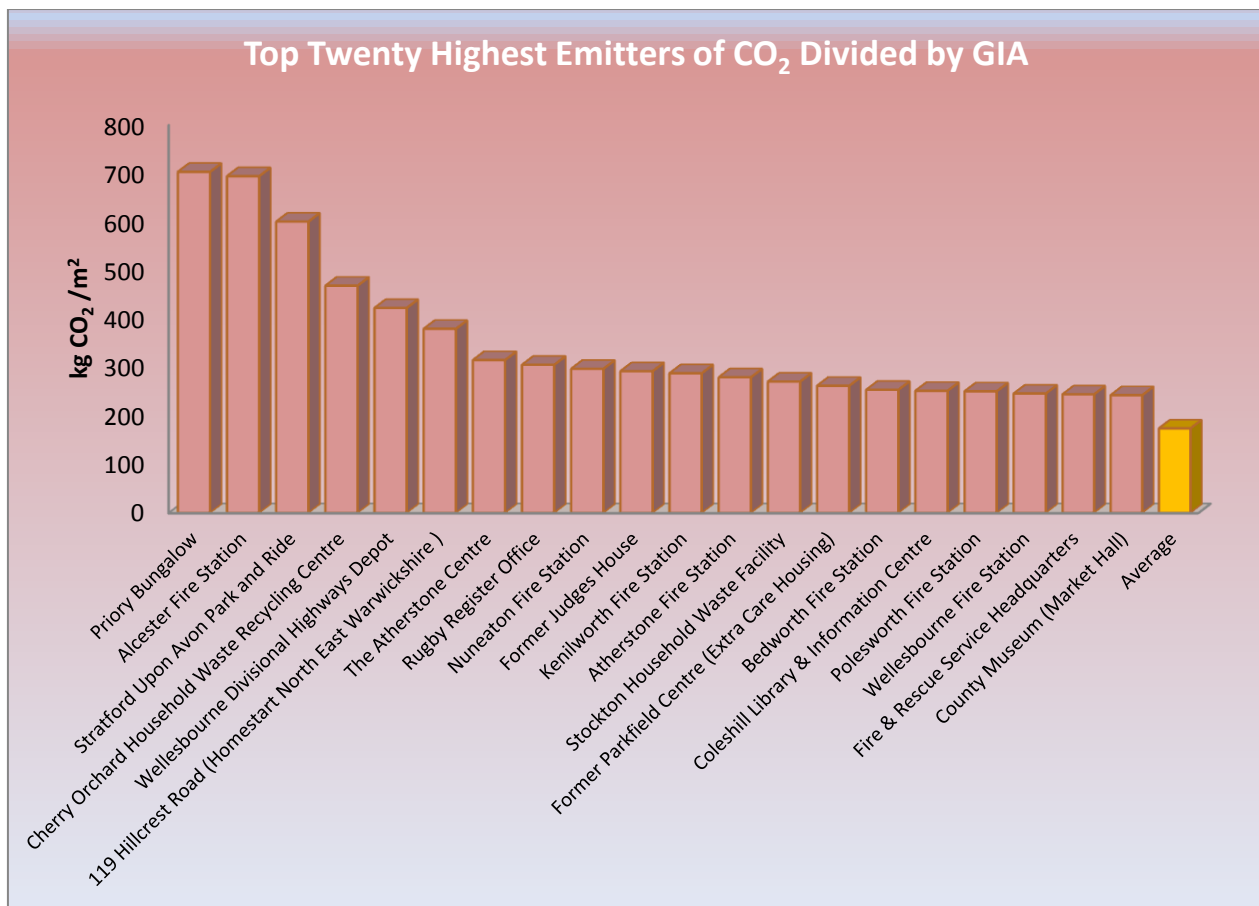


Although it is useful to know which properties emit the most Carbon Dioxide, it does not tell us the full picture. In simple terms it tells us that the bigger the property the more it consumes i.e. Shire Hall Complex is the biggest property and producer of most Carbon Dioxide. It is more useful to look at the emissions divided by the Gross Internal Area (GIA) of the property to identify where Carbon Dioxide can be reduced. As we can see from the graph below, Shire Hall does not appear in the top twenty of emitters when dividing Carbon Dioxide by GIA.

## Combined Consumption Detail - 2018/19

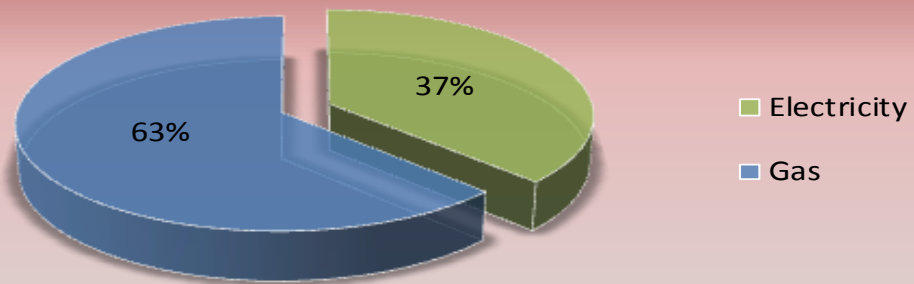
### Current Year Highest Emitters of Carbon Dioxide per m<sup>2</sup> of GIA:

The graph below shows the 20 highest emitters of Carbon Dioxide (in tonnes) divided by the GIA of the building. Using this formula creates a clearer picture of properties that need to be investigated for energy saving schemes. To give context to these values, the average across all properties is again shown in orange on the right.



## Combined Consumption Detail - 2018/19

### Combined Consumption - Split by Utility



#### Weighted average cost per square metre (£/m<sup>2</sup>)

WCC pays a range of tariff rates for gas and electricity across its portfolio relevant to the annual quantities supplied to each meter point.

In general terms, the cost per unit for gas is cheaper than the cost per unit of electricity, also the larger the annual quantity supply, the more preferential the unit rate.

To take account of these variances when generating a singular average cost value, a weighted average is used. The weighted average is calculated by dividing the total cost for the annual quantity of each gas and electricity supply by the **gross internal area** (GIA) in metres squared:

$$\text{£/m}^2 \text{ per utility} = \frac{\text{Total of annual costs per supply (£)}}{\text{Total floor area supplied (m}^2\text{)}}$$

As some properties are not connected to both utilities, (e.g. electrically or oil heated), the combined GIA is not the same as the individual GIA's for gas and electricity. As such the combined £/m<sup>2</sup> is not the same as simply adding the average costs for gas plus the average cost for electricity, and is calculated as:

$$\text{Combined £/m}^2 = \frac{(\text{Total £ Gas}) + (\text{Total £ Electricity})}{\text{Combined Floor area supplied (m}^2\text{)}}$$

## Gas Consumption



### *Introduction*

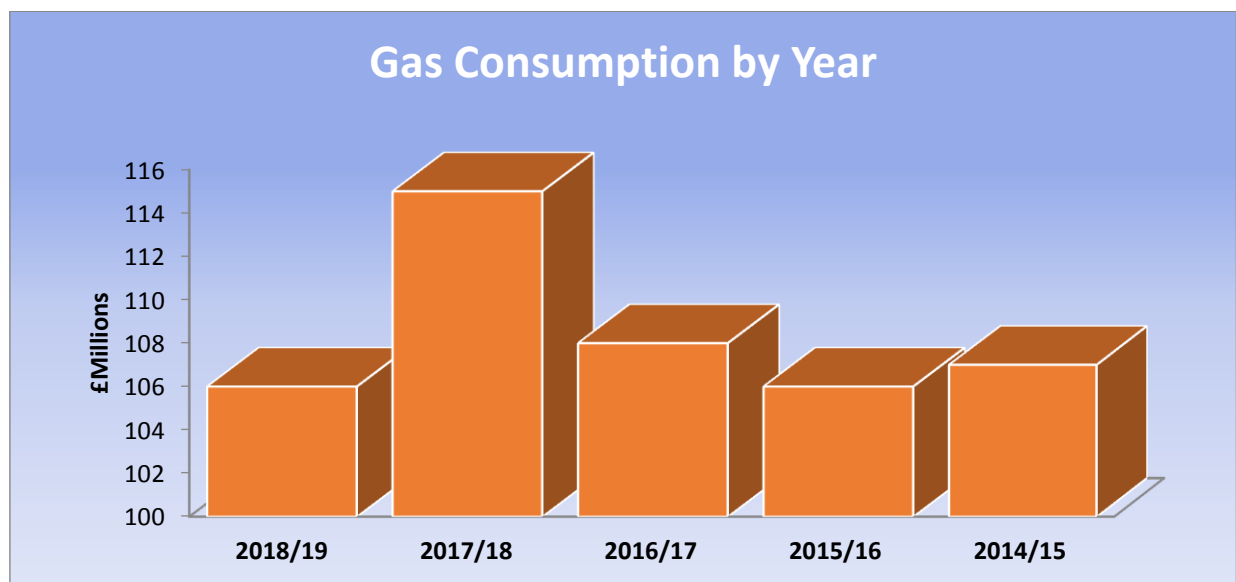
This section provides a more detailed insight for the gas consumption figures measured in kilowatt hours, (kWh) that comprise the headline CO<sub>2</sub> and combined consumption data above.

What's in this section:

- 1. Gas Consumption Data**  
Year on Year comparison table showing total kilowatt hours, floor area, property numbers and a weighted average cost per m<sup>2</sup> for gas.
- 2. Meter Statistics & Methodology**  
Details on the gas meters included in our analysis and data preparation.
- 3. Where We Use Our Gas**  
Illustration of the relationship between gas consumption and floor area served for each benchmark property type.
- 4. Quartile Distribution**  
Illustration of the ranges of gas consumption observed within each benchmark property classification.
- 5. Top Ten**  
This year's highest gas consuming properties per unit of floor area.

## Gas Consumption Data 2018/19

Includes:	Year	No of properties	wgt'd Av £/m <sup>2</sup>	GIA (m <sup>2</sup> )	Total kWh
Corporate Buildings Only	2018/19				
		67	£2.88	92,040	10,621,311
	2017/18				
		65	£2.78	94,622	11,570,990
	2016/17				
		67	£2.56	95,802	10,858,983
	2015/16				
		64	£3.45	90,062	10,698,020
	2014/15				
		68	£3.78	94,934	10,784,233





## Gas Consumption Detail 2018/19

### Gas Meter Statistics

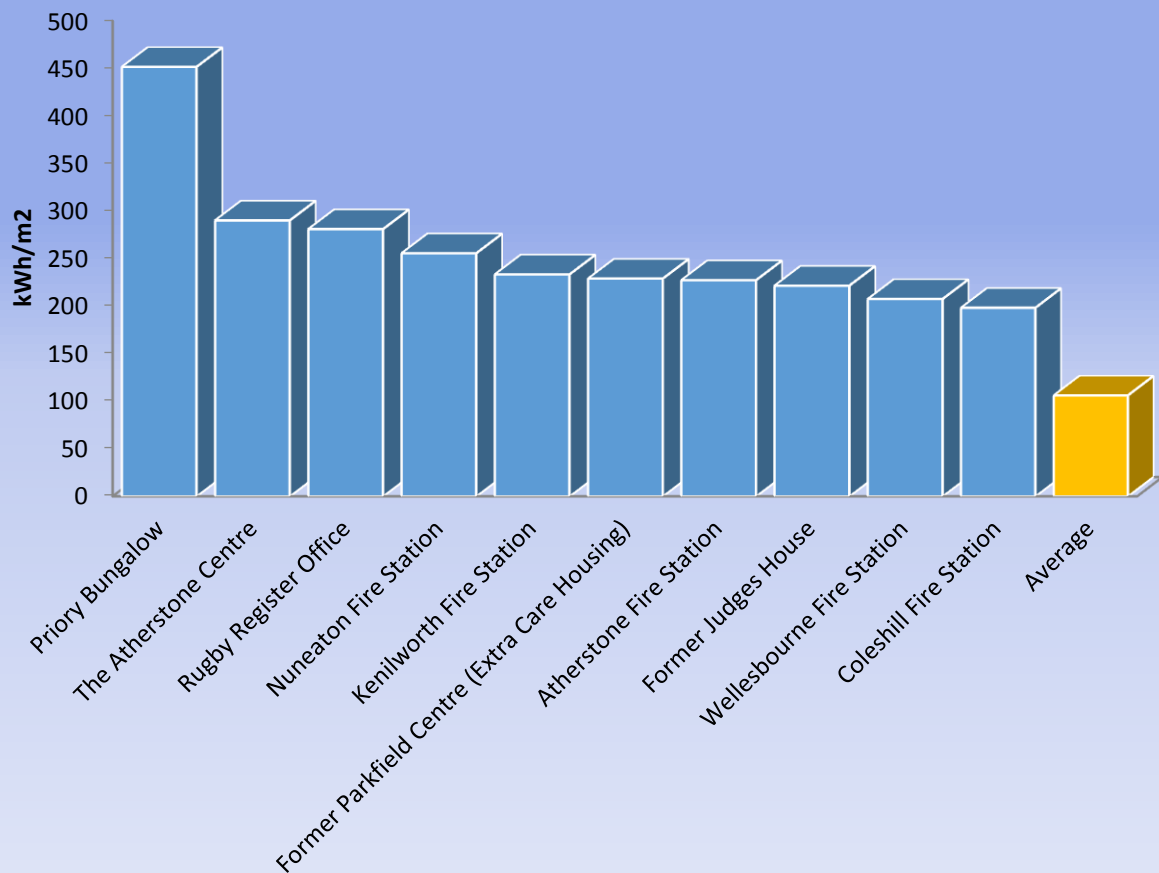
84

Total number of Meter Point Reference Numbers (MPRNs) included in our analysis

### Gas Data Validation - Methodology

- Annual supply summaries are compiled using a Data Range apportionment of invoices per meter per property supplied.
- Where meters serve more than one property the consumption is apportioned between the properties based on floor area.
- Where the meters serve a property that is partially tenanted, the consumption is apportioned based on floor area occupied by WCC.
- Properties grouped by operational type for comparative performance.
- Cleansing, validation & cross checks for anomalies against invoice data held in WCC Energy Database.

### Top 10 Highest Gas Consumers Per Unit of Floor Area - (kWh/m<sup>2</sup>)



## Electricity Consumption



### Introduction

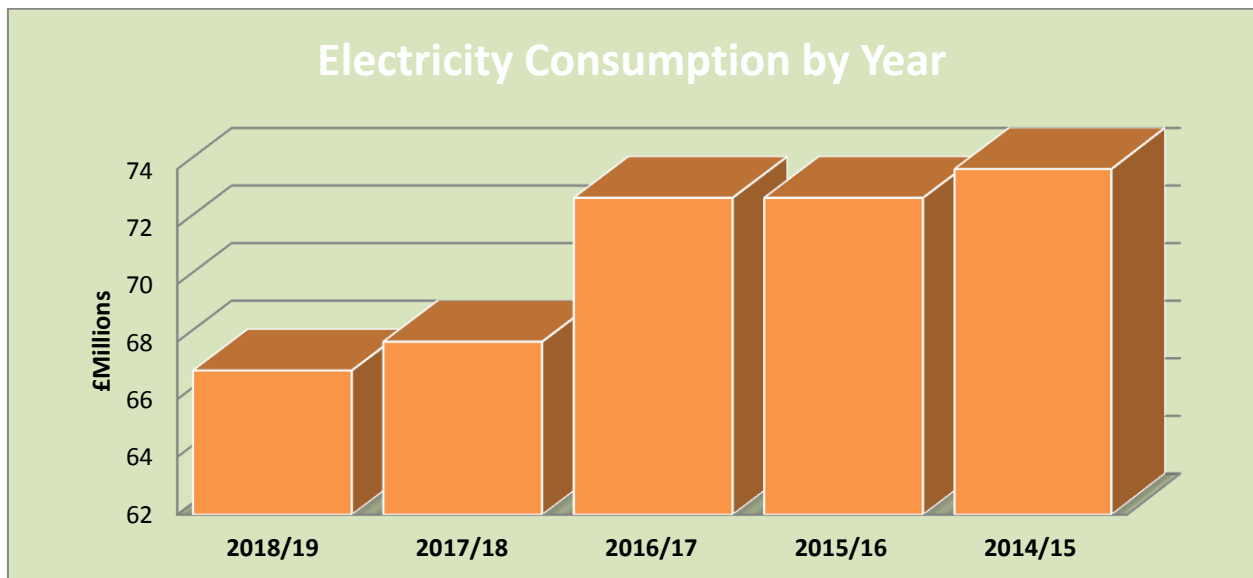
This section provides a more detailed breakdown for electricity consumption figures measured in kilowatt hours, (kWh) that comprise the headline CO<sub>2</sub> and combined consumption data above.

What's in this section:

- 1. Electricity Consumption Data**  
Year on Year comparison table showing total kilowatt hours, floor area, property numbers and a weighted average cost per m<sup>2</sup>.
- 2. Meter Statistics & Methodology**  
Details on the electricity meters included in our analysis and data preparation.
- 3. Where We Use Our Electricity**  
Illustration of the relationship between gas consumption and floor area served for each benchmark property type.
- 4. Quartile Distribution**  
Illustration of the ranges of electricity consumption observed within each benchmark property classification.
- 5. Top Ten**  
This year's highest electricity consuming properties per unit of floor area.

## Electricity Consumption Data 2018/19

Includes:	Year	No of properties	wgt'd Av £/m <sup>2</sup>	GIA (m <sup>2</sup> )	Total kWh
Corporate Buildings	2018/2019				
		85	£7.61	107,722	6,786,313
	2017/18				
		83	£7.33	105,650	6,847,403
	2016/17				
		87	£7.00	106,257	7,303,922
	2015/16				
		84	£7.23	102,967	7,323,814
	2014/15				
		87	£7.40	108,187	7,423,045



## Electricity Consumption Detail 2018/19

### Electricity Meter Statistics:

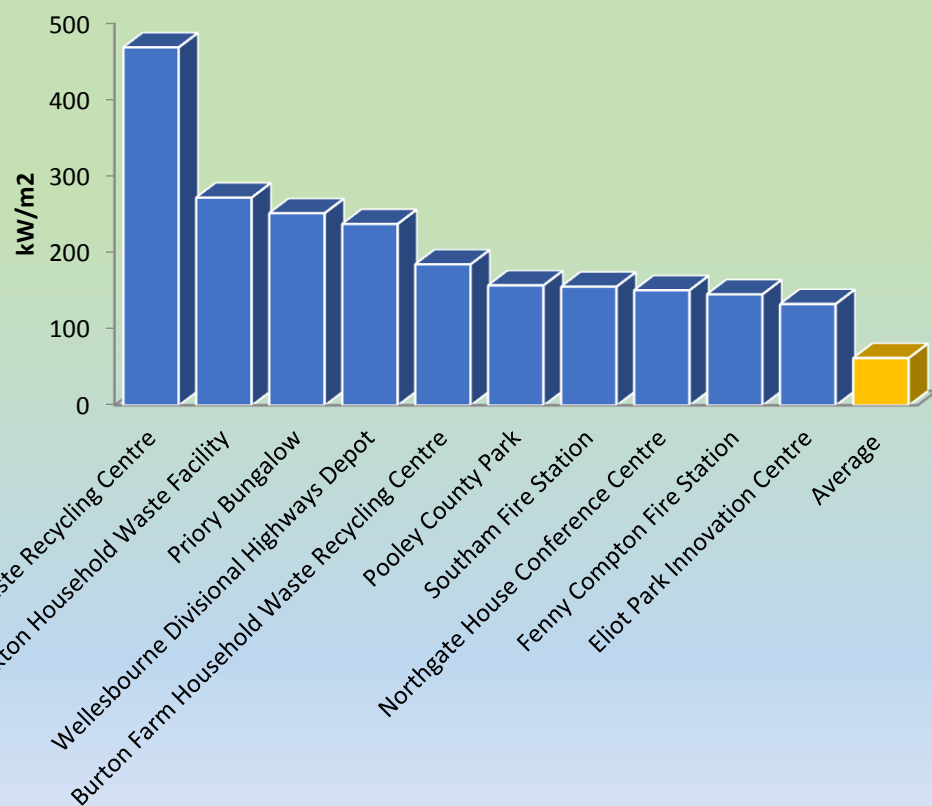
140

Total number of Meter Point Administration Numbers (MPANs) included in our analysis.

### Electricity Data Validation - Methodology:

- Annual supply summaries are compiled using a Date Range apportionment of invoices per meter and per property supplied.
- Where meters serve more than one property the consumption is apportioned between the properties based on floor area.
- Where the meters serve a property that is partially tenanted, the consumption is apportioned based on floor area occupied by WCC.
- Properties grouped by operational type for comparative performance
- Cleansing, validation & cross checks for anomalies against invoice data held in WCC Energy Database.

### Current Top 10 Highest Electricity Consumers Per Unit of GIA - (kWh/m<sup>2</sup>)



## Water Consumption



### *Introduction*

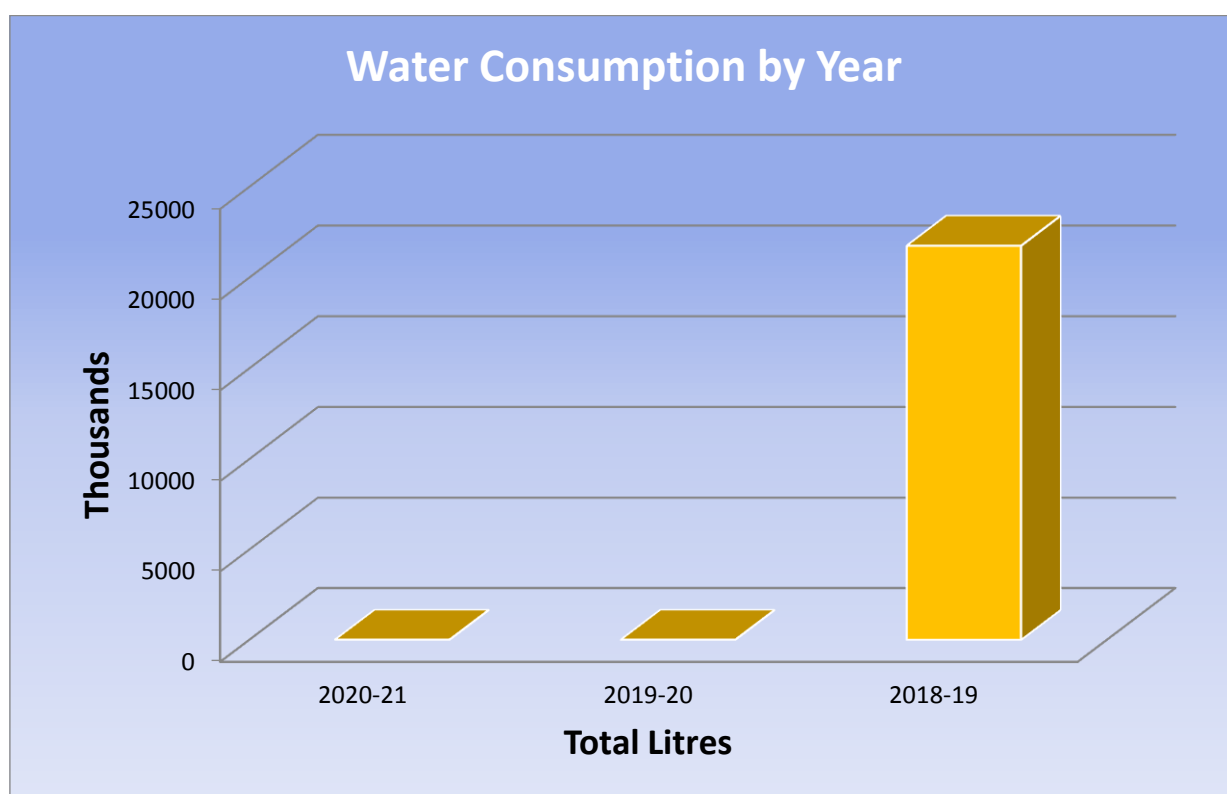
Commercial water use is measured in litres and is split into three main elements: the fresh water consumed, sewerage and surface water drainage. This section provides a breakdown for the metered water consumption for the buildings WCC operates.

What's in this section we look at Water Consumption Data:

1. Year on Year comparison table showing total litres, floor area, property numbers and a weighted average cost per m<sup>2</sup>.

## Water Metered Consumption Data 2018/19

Includes:	Year	No of Properties	Wgt'd Av £/m <sup>2</sup>	GIA (m <sup>2</sup> )	Total Litres
Corporate Buildings	2020/21				
	2019/20				
	2018/19	56	£1.89	69,616	21,749,020



## Notes On Analysis



### *Introduction*

Here we provide more background information for some of the overarching concepts that relate to the preparation of the figures for this annual building energy consumption review.

In this section...

- 1. Energy Benchmarking**  
Information on why we split our portfolio into different property type categories for comparative analysis.
- 2. Year on Year Changes**  
Contributory factors that influence the differences in consumption values reported year on year.
- 3. WCC Building Performance vs Standard Benchmarks**  
Categorised illustrations of building performance against Standard Energy Benchmarks.
- 4. Degree Day Summary**  
An explanation of what degree days are and how they can be used.

## Year On Year Changes

### Reasons for the Range of Values and Year on Year Changes in Energy Consumption and Cost

Factors for consideration on the wide range of Year on Year values include:

#### Improvements

- Improvements following investigations into top 10s consumers

#### Practical:

- Exclusion of outliers where data is incomplete or questionable.

#### Invoicing:

- There may be billing issues such as corrections, overcharges and refunds between years.
- There could be a high number of under-estimates or over-estimates on which invoices were paid rather than being based on customer reads where an actual read was not taken.

#### Physical:

- Corporate emissions will change due to property disposal and acquisition; the property rationalisation programme; works to improve the building fabric, insulation, heating, lighting and controls; increased use of IT etc.
- The property may have been vacated during the year resulting in low consumption.

#### Data:

- The meter may supply more properties than the supply address (e.g. Shire Hall supplies Barrack St). Where the buildings are not of similar construction and operation, the apportioning by m<sup>2</sup> methodology may not accurately reflect consumption for each building.
- The data sets that have been made available to us may be incomplete.
- Partial data availability due to property sale, purchase or change of supplier during the year.
- Meters accidentally read or reported in the wrong units (e.g. confusing gas ft<sup>3</sup> & m<sup>3</sup> units).

#### Past legislation:

- In 10/11 and 11/12 WCC was allowed to report on a total of only 93% of its total CO<sub>2</sub> emissions from electricity, gas and heating oil consumption. WCC were permitted to exclude some residual CO<sub>2</sub> emissions.
- Properties that were excluded in the 7% of emissions classed as residual and not reported. These were properties on the sensitive property list (to make future years more comparable as properties were disposed of) and all the ones with oil fired heating (due to difficulties in obtaining robust and accurate oil consumption data).
- Estimated supplies had to have a 10% uplift on reported emissions for the CRC Phase 1. In 13/14.
- In 13/14 – 11.6% of electricity consumption and 14.7% of gas consumption was from estimated readings. Estimated readings artificially inflated reported emissions.
- In 12/13 the CRC rules changed and WCC had to report on 100% of its total CO<sub>2</sub> emissions, but from only electricity and gas rather than all fuels. This resulted in having to report on electricity and gas consumption for an extra 8% of property by floor area and an extra 38 corporate properties.
- WCC is not included in phase2 of the CRC, however, reporting is maintained for consistency.

#### Environmental:

- The winter of 12/13 was the second worst winter in 20 years. (*note - See Degree Days*)
- The rules about CRC reporting allowed for no weather correction of consumption data for heating purposes.



## WCC Building Performance by category

### Libraries and Information Centres

Name	Combined	Gas	Electricity
<b>Typical Practice</b>	<b>256</b>	<b>210</b>	<b>46</b>
Atherstone Library & Information Centre	120	73	47
Bedworth Library & Information Centre	243	167	76
Coleshill Library & Information Centre	253	182	71
Kenilworth Library & Information Centre	109	81	29
Lillington Library & Information Centre	122	93	29
Nuneaton Library & Information Centre	102	93	10
Polesworth Library & Information Centre	115	0	115
Shipston on Stour Library & Information Centre	106	78	28
Stratford-Upon-Avon Library & Information Centre	147	112	36
Wellesbourne Library & Information Centre	126	89	37
Whitnash Library & Information Centre	104	0	104
Wolston Library & Information Centre	110	0	110
<b>Good Practice</b>	<b>145</b>	<b>113</b>	<b>32</b>

- Gas usage for all libraries is better than Typical Practice<sup>1</sup>.
- With the exception of Bedworth and Coleshill Libraries all libraries show Good Practice with their gas usage.
- For the majority of Libraries electricity usage is better than Typical Practice. Polesworth, Whitnash and Wolston Libraries have no gas for heating and subsequently show higher use of electricity.
- Bedworth and Coleshill Libraries are showing higher than Good Practice usage in gas and electricity and will need to be investigated.
- When looking at combined usage all Libraries are operating better than Typical Practice. Bedworth and Coleshill will need further investigation to find ways of moving them towards Good Practice.

<sup>1</sup> CIBSE TM46

## WCC Building Performance by category

### Offices & Conference Centres

Name	Combined	Gas	Electricity
<b>Typical Practice</b>	<b>404</b>	<b>178</b>	<b>226</b>
Rugby Register Office	389	281	108
Globe House (Alcester Area Office)	213	127	87
County Record Office	153	85	67
Budbrooke County Highways Head Office	150	83	67
Office Building 2 Saltisford Business Park	135	68	66
Office Building 1 Saltisford Business Park	106	59	47
Office Building 3 Saltisford Business Park	62	37	25
Northgate House Conference Centre	201	51	150
Former Judges House	293	222	72
The Saltway Centre & Stratford Family Centre	218	160	58
Kings House	199	131	68
Premises At Montague Road	176	173	3
<b>Good Practice</b>	<b>225</b>	<b>97</b>	<b>128</b>

- All Offices & Conference Centres (O&CC) electricity usage is better than Typical Practice and with the exception of Northgate House are showing Good Practice.
- The majority of Offices & Conference Centres Gas usage is better than Typical Practice. Rugby Register Office and Former Judges House are worse than Typical Gas Usage.
- 6/12 O&CC show Good Practice with their Gas Usage and 4/12 are better than Typical Practice.
- Rugby Register Office and The Former Judges House are better than Typical Practice.

## WCC Building Performance by category

### Museums

Name	Combined	Gas	Electricity
<b>Typical Practice</b>	<b>212</b>	<b>142</b>	<b>70</b>
County Museum (Market Hall)	244	157	87
St John`s House Museum	110	82	28
Globe House (Alcester Area Office)	193	127	67
<b>Good Practice</b>	<b>153</b>	<b>96</b>	<b>57</b>

- St John`s Museum usage of both electricity and gas is operating better than Good Practice levels.
- Globe House is operating below typical usage levels and higher than Good Practice levels.
- County Museum is worse than Typical Practice levels, however unlike St John`s House and Globe House it operates a cafeteria during its opening hours.

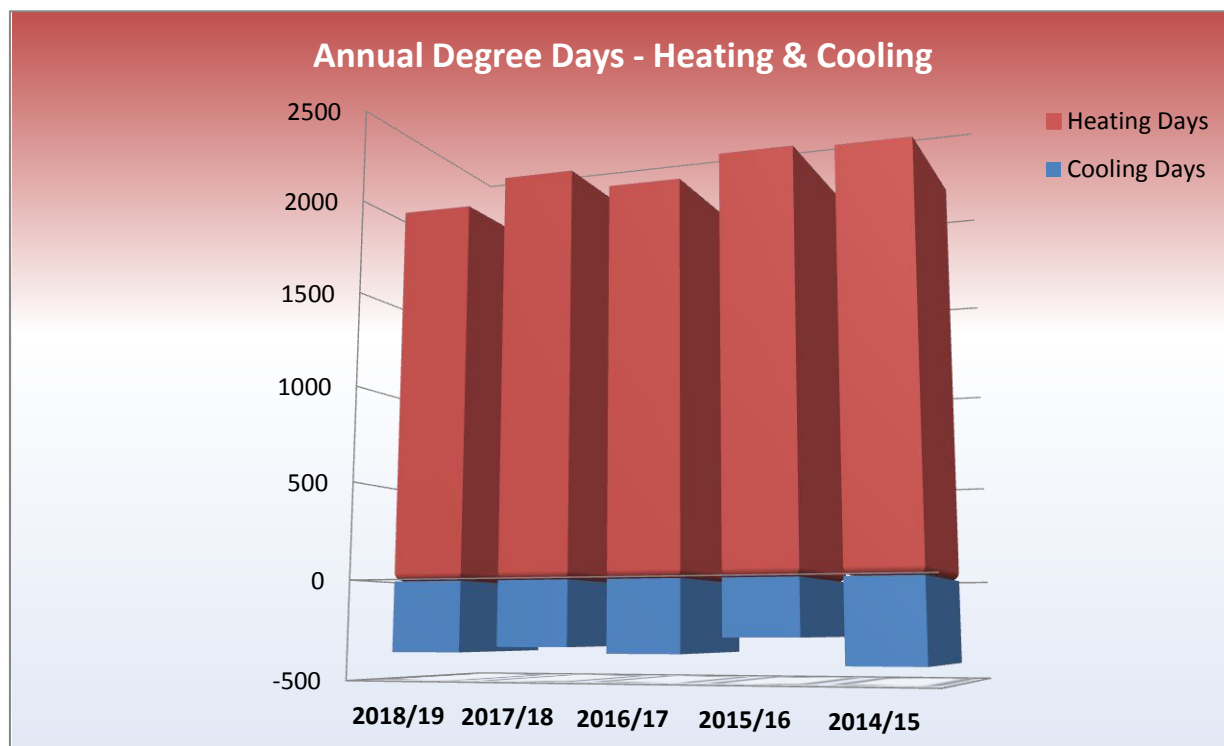


## Summary

The following buildings will need to be investigated to see if energy costs can be reduced.

<b>Gas investigation (G)</b> <b>Top four Gas Consumers.</b>	<b>Electricity investigation (E)</b> <b>Top four Electricity Consumers.</b>
Priory Bungalow	Cherry Orchard Household Waste Recycling Centre
The Atherstone Centre	Stockton Household Waste Facility
Rugby Register Office	Priory Bungalow
Nuneaton Fire Station	Wellesbourne Divisional Highways Depot

## Degree Days



### What are Degree Days?

Put simply, colder temperatures require heating & warmer temperatures require cooling.

Degree Days are used to give an index of how hot or cold the local weather is relative to a UK baseline of 15.5<sup>0</sup> Celsius.

The chart above shows the total degree days in each year.

The red bars show heating degree days and the blue bars cooling.

As both space heating and cooling require energy, we can infer a relationship between the total size of the Degree Day bars in the graph and the demand for heating and cooling year on year.

You would expect the total energy consumption to be higher in years with larger bars and potentially a different mix of energy types consumed depending on the systems used for space heating & cooling (Electricity or Gas)

## Low & Zero Carbon Technologies



### Introduction

Renewable energy refers to energy generated by sustainable means, i.e. from resources that are naturally replenished on a human timescale, such as sunlight, wind, biomass and hydro rather than fossil fuels.

The Climate Change Act 2008 set the UK's legally binding emission target of a reduction of at least 80% by 2050 (against the 1990 baseline). In 2019 the UK government committed to "net zero" greenhouse gases by 2050 when they declared a climate emergency.

Emission factors related to electricity change every year as the grid as the number of low and zero carbon generation technologies connected to it increases and coal fired power stations are not required. For estimating avoided emissions, the emission factor for 'on site generated and self-supplied' has been used.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/742381/crc-energy-efficiency-scheme-conversion-factors\\_v8\\_2018\\_19.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/742381/crc-energy-efficiency-scheme-conversion-factors_v8_2018_19.pdf)

In this section...

#### **1. Renewable Energy Generation**

Information on WCC's installed renewable energy generation technologies.

## Low & Zero Carbon Technologies - renewable energy generation

Includes:	Year	Total installed declared net capacity (kWp)	Generation (kWh)	Net on site consumption (kWh)	Total avoided carbon dioxide emissions (tonnes)
Renewable energy Installations	2018/19				
		284	251,833	181,251	51
	2017/18				
		284	218,796	164,860	58
	2016/17				
		284	231,086	177,181	73

### What we're doing and why

In 2015 Warwickshire County Council's Cabinet approved the establishment of a Warwickshire Energy Plan. This plan has three main policy areas:

- Increase the use of low and zero-carbon technologies
- Increase public support for low and zero-carbon technologies
- Take people out of fuel poverty to improve their health and well-being

The Council has had a regularly reviewed and revised 'Energy Policy for Properties and Action Plan' in place since cabinet adopted the first one in 2001. One of the current six Policy Commitments is:

- WCC will enable the growth of low and zero carbon energy generation on the corporate estate and elsewhere to support long term financial management, improve energy security and resilience to future energy price fluctuations.

To date, WCC has investigated the potential on its estate for building integrated photovoltaics (BIPV), ground mounted solar (GMS) PV, battery storage with and without GMS PV, on-farm anaerobic digestion, wind, biomass boilers and growing its own wood fuel.

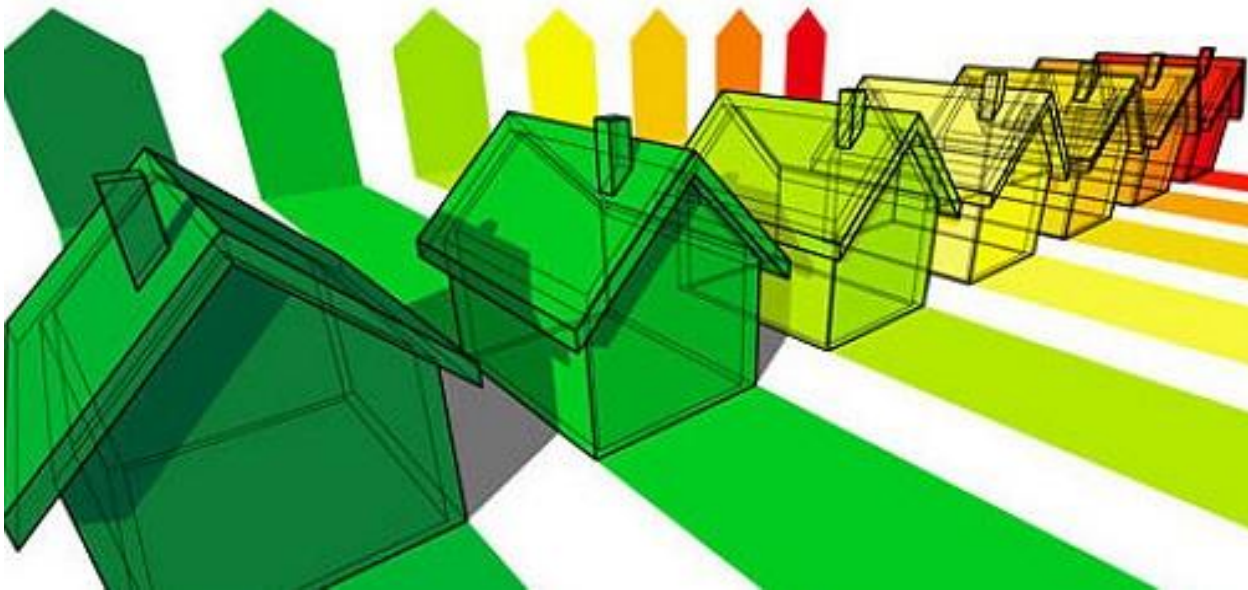
WCC has a 105 kWp solar PV array on the Eliot Park Innovation Centre. This was installed before the Feed in Tariff was available. WCC also has 13 BIPV installations and one on-farm wind turbine with a total installed declared net capacity of 284 kWp for which it receives income from the Feed in Tariff and Deemed Export Tariff. Further details about these 14 systems are shown in the table above.

Set against the electricity consumed annually within WCC's corporate building portfolio for 18/19, WCC's current generation from renewable sources is equivalent to 4% of the total electricity consumption.

If WCC were to have achieved the EU target of 20% of total electricity consumption to come from renewable energy by 2020 then generation would have had to have increased to over 1 million kWh.

WCC has planning permission for one GMS site and is currently discharging planning conditions.

## Display Energy Certificates (DECs) & Advisory Reports (ARs) 2018/19



### Introduction

In order to comply with the Energy Performance of Buildings Directive 2007 (EPBD), all buildings occupied by a public authority, with a useful floor area of over 250 m<sup>2</sup> and frequently visited by the public (i.e. every week they are open) are required to have a Display Energy Certificate (DEC).

In this section:

1. **What are DECs & ARs?**  
Background information on content, legal requirements and production
2. **Production Procurement & Statistics**  
Information on how our DECs & ARs are produced.
3. **Corporate Property Profile**  
Statistics on the ratings achieved by WCC Corporate Buildings
4. **Performance Measuring**  
How we measure the performance of our buildings
5. **Improving DEC Ratings of Corporate Properties**  
Methods for improving the energy performance of our building stock



## DEC/AR Background & Procurement

### What are DEC's & ARs?

A Display Energy Certificate (DEC), provides an overview of the energy performance of a building based upon its actual recorded energy consumption (electricity, gas, heating oil, biomass, solid fuel) and the CO<sub>2</sub> emissions that result from that energy use.

This is shown as a banded performance rating on the certificate from A to G, where A has the lowest CO<sub>2</sub> emissions (best) and G the highest CO<sub>2</sub> emissions (worst).

The rating is also shown as a number. A typical building of its type would have a rating of 100.

A building with twice the typical CO<sub>2</sub> emissions would have a rating of 200 (or G).



The DEC must be displayed in colour at A3 size in a prominent place, usually the main entrance area.

- Those buildings with a floor area of 1,000 m<sup>2</sup> + need a DEC every year
- Those buildings with a floor area of between 250 m<sup>2</sup> and 1,000 m<sup>2</sup> require a DEC every ten years.

The Advisory Report accompanies the DEC and highlights recommendations to improve the energy performance of the building categorised by their potential short, medium and long term payback periods.

Advisory Reports issued before 09/01/14 for a building over 1000m<sup>2</sup> are valid for a period of 7 years, all Advisory Reports issued after this date are valid for 10 years regardless of building size.

Energy assessors must be a member of an approved accreditation scheme. Energy assessors are responsible for conducting an energy assessment, producing a DEC and AR and lodging the DEC and AR with their accreditation scheme. The accreditation scheme is responsible for checking and lodging certificates on the national register. Accreditation schemes are also responsible for monitoring the quality of the certificates energy assessors produce.

## DEC/AR Background & Procurement

### WCC DEC & AR Procurement

WCC commissions the required DEC/ARs through the ESPO framework 343.

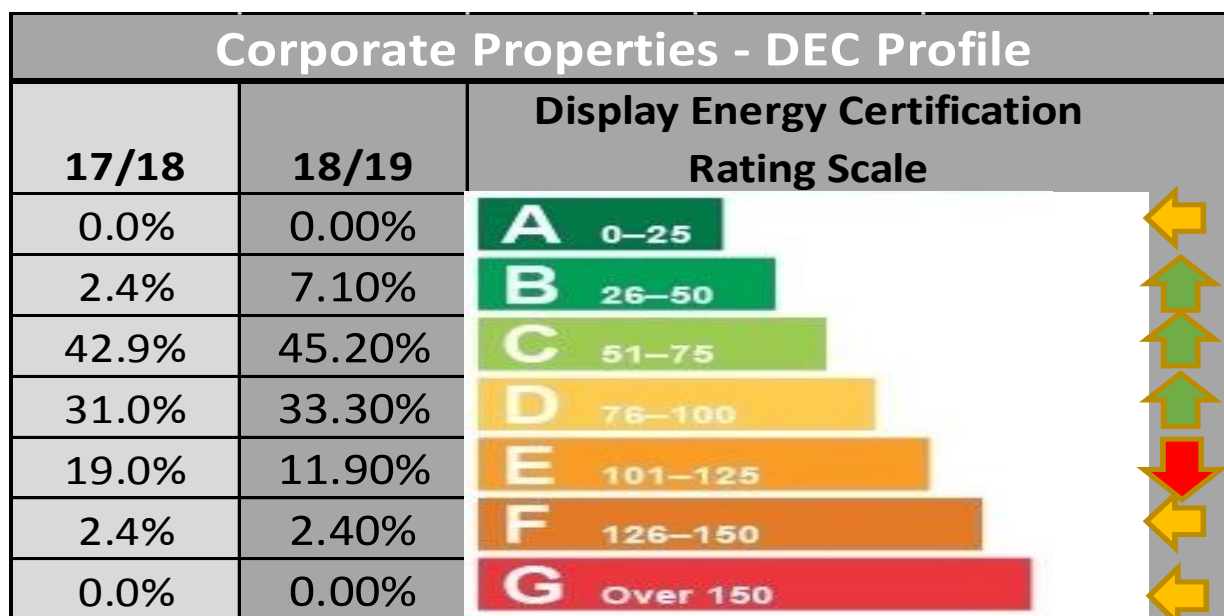
<https://www.espo.org/Frameworks/Energy/343-Energy-Performance-of-Buildings-Surveying.-Ass>

ESPO is a public sector owned professional buying organisation committed to pursuing best practice in procurement, sourcing, supply chain partner support and management, contract management and ensuring EU compliance.

ESPO was established in 1981 and is jointly owned by the following member authorities:

1. Leicestershire County Council
2. Lincolnshire County Council
3. Cambridgeshire County Council
4. Norfolk County Council
5. Warwickshire County Council
6. Peterborough City Council

## DEC Corporate Profile & Performance



Property details can be found in the Appendix 3.



## DEC Rating

### Performance measuring

WCC still does not boast an A rated property. However, more properties have moved into B, C & D ratings whilst there has been a decrease in the number of E rated properties.

WCC expects the average DEC rating to continually improve over time: as the quality of the data improves; as inefficient properties are disposed of through property rationalisation and as more investment is made in energy efficiency in properties that are retained.

### Improving DEC Rating of Corporate Properties

Improving the energy performance of buildings that will be kept for the medium to long term can be achieved through projects such as:

- Implementing an effective maintenance and minor works programme to ensure optimum operational efficiency,
- Intelligent use of the Building Energy Management System (BMS),
- Improving insulation, heating & lighting systems, voltage control and server rooms,
- Improving the thermal performance of the building envelope,
- Implementing renewable and micro-generation energy systems,
- Low carbon whole building retrofits,
- Reducing the size of the WCC estate (property rationalisation)
- Procuring only buildings that fall into the top quartile of energy performance,
- Ensuring all new builds and major refurbishments (with a contract value of over £1M) achieve a BREEAM 'very good' rating,
- Ensuring all projects (with a contract value of between £350k to £1M) achieve minimum BREEAM credits in energy use / carbon reduction, water use, materials / waste minimisation and ecology,
- Rolling out smart metering ensuring accurate data, and
- Resourcing effective awareness raising and behaviour change campaigns.



## Utility Costs

### *Calculating Representative Average Utility Costs per Unit*

#### **Methodology**

Reporting the cost per square metre (£/m<sup>2</sup>) for a specific property presents a challenge if:

- The invoice data isn't complete or available in WCC's finance system (the ledger).
- The site doesn't procure through the Eastern Shires Purchasing Organisation (ESPO). The WCC Energy Team only receives invoice consumption and cost data from sites that procure through ESPO.
- The energy supply is shared between different properties on a site, or between sites.
- The energy supply is shared between tenancies within the properties served by those supplies.

Where invoice data is missing the WCC Energy Team derive a cost based on data given by the supplier with the caveat that estimation and apportioning is used to generate a consumption figure where the billing cycle does not align naturally to the financial year.

Where an energy supply is shared between properties, the consumption for the affected meter(s) is apportioned based on floor area (m<sup>2</sup>) only for the purposes of this analysis. This is a coarse methodology, as consideration is not given to other factors such as individual occupancy, operating hours and building fabric etc, but serves sufficiently for the purposes of this report.

Where an energy supply is shared between WCC and tenants within the building complex served, the consumption for the affected meter(s) is apportioned based on either:

- a) The proportion of energy costs (%) set out as the tenant's responsibility in their rental contract.
- Or
- b) The percentage of total floor area occupied by WCC.

The cost per kWh charged to each site will vary based on level of consumption, meter type and tariff.

In light of this, we establish representative single costs per unit (pence/kWh) for gas and electricity based on a weighted average using the following approach:

- Using the WCC portfolio that procures through ESPO as a representative sample range of meter types, consumptions and tariffs.
- Using the contract rate for each supply, including billing factors such as standing charge and feed in tariff recovery charge, but excluding VAT; multiplied by annual consumption values per supply.
- Aggregating all the costs per supply then dividing this figure by the total consumption to achieve a weighted average cost per kWh consumed across the entire portfolio.

For water, the same basic principle was applied to establish a representative single cost per unit (pence/litre). Here the combined charges for fresh water, surface water drainage and sewerage (costs per supply) was divided by the Rolling Mega litres per Year (annual consumption).

## Calculating Representative Average Utility Costs per Unit

### Weighted Average Costs per Unit

This approach results in values of:

- **Gas: 3.43 pence per kWh**
- **Electricity: 15.05 pence/kWh**  
(including billing factors such as standing charge and feed in tariff recovery charge, but not VAT.)
- **Water: 0.603 pence/litre of fresh water (estimate)**  
(including billing factors such as surface water drainage and sewerage, but not VAT.)

### Budget spent in 2018/19

The total spent in energy in 2018-19 amounted to around £1,893,768.

Electricity	£ 962,271
Gas	£ 345,596
Solid Fuel (Biomass)	£ 10,556
Fuel Oil	£ 5,098
Water Supply	£ 309,830
Renewable Energy Charges	£1,671
<b>Total</b>	<b>£ 1,635,022</b>



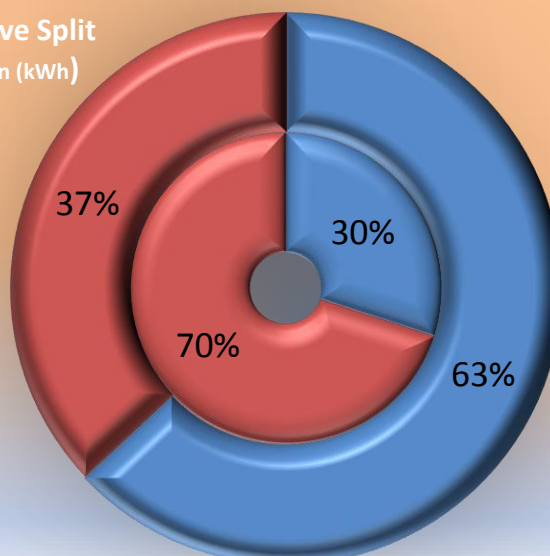
## Utility costs

### WCC Consumption vs Cost Comparative Split

Inner Ring - Cost (£) / Outer Ring - Consumption (kWh)

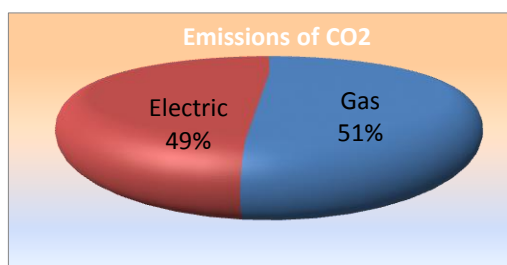
■ Gas

■ Electricity



### Comparative Costs

Even though WCC uses more gas than electricity in its energy consumption, gas only accounts for 30% of the cost for energy consumed whereas electricity accounts for 70%. Electricity accounts for only 37% of energy consumption but contributes 49% of emissions.



Using CRC Energy Efficiency Scheme emission factors to calculate CO<sub>2</sub> emissions from gas and electricity consumption we can see that the split for emissions is 51% Gas and 49% Electricity.

WCC procures its electricity from TG&P's Pure Green Fuel Mix. Energy produced under this scheme is matched by Renewable Energy Guarantees of Origin (REGOs). According to the Greenhouse Gas (GHG) Emissions Protocol:

Corporate Standards Scope 2 guidance WCC could report this consumption as having zero emissions, but the grid average emission factor is used in this report.

In order to reduce WCC's CO<sub>2</sub> emissions the focus should go to reducing fossil fuel consumption especially for heating.

This adds weight to the argument of WCC becoming more self-sufficient in its electricity generation and meeting its renewable target of 20%. With strategic investment, it is foreseeable that more of WCC's electricity will be generated from zero carbon generation which will result in lower costs and emissions.

## Utility costs

### WCC's Energy Contracts with ESPO

ESPO's Energy procurement is undertaken in accordance with a price risk strategy developed in consultation with the Governance Panel, a stakeholder group comprising of representatives from the main member authorities and other key stakeholders.

#### ESPO Price Risk Strategy – Pricing in Advance (PIA)

ESPO run a flexible procurement model for the supply of both gas and electricity, which requires small volumes to be bought periodically against wholesale market rates. Buying upfront at a fixed price aids budget security, but carries the risk that energy costs will be locked in when it might not be the opportune time to do so. The strategy of purchasing over a number of transactions, rather than all of the volume at once, spreads the risk over a longer period to achieve best blend of cost avoidance and cost certainty.

During next year, despite the wholesale price reductions secured by ESPO for the charging period, WCC expects to see prices rise in line with estimated 3<sup>rd</sup> party charge increases of between 0-5% for gas and electricity (dependent on volumes and standing charges). High demand users within the peak charging periods may see higher cost increases.

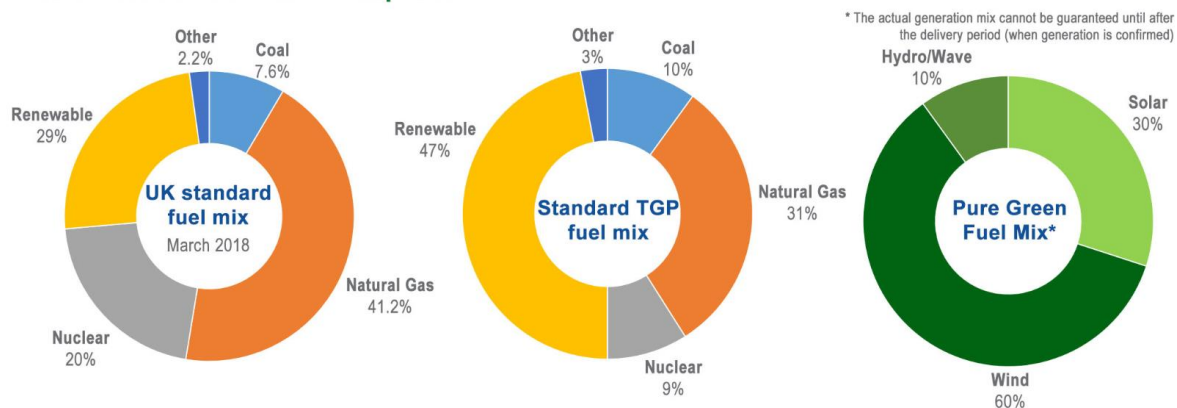
### WCC's Electricity is 100% Renewable Energy from October 2016

In October 2016, WCC signed a new contract with ESPO for electricity procurement. Total Gas & Power supplies electricity for this contract.

Through this contract WCC procured 'Pure Green Energy' for an extra 0.02p/kWh (this charge is reviewed annually and subject to change and will be 0.05p/kWh for 19/2020). Pure Energy comes from 100% renewable sources (solar, wind, and hydro/wave but doesn't include biomass).

#### Pure green generation mix compared to standard fuel mix.

##### How does Pure Green compare?



# Appendix

## Appendix 1: Combined Electricity & Gas Consumption 2018/19

		2018/19				
Property Information		Combined Energy Consumption (Electricity Only, Gas Only and Outliers Removed)				TOTAL CO2 Emissions
Property List	UPRN	kWh used	kWh/m2	Cost £	wgt'd Av £/m2	kgCO2 / m2
Bedworth Library & Information Centre	1033	180,038	243	12,859	17.35	53.78
Warwickshire Fire & Rescue Service Training Centre	1037	142,553	223	11,597	18.12	50.13
Bedworth Fire Station	1050	100,748	193	6,280	12.05	41.06
Hatters Space Community Centre	1157	165,291	176	11,205	11.95	38.67
Nuneaton Library & Information Centre	1161	149,771	102	6,936	4.73	19.89
Nuneaton Fire Station	1184	533,318	298	25,616	14.33	59.93
The Hilary Road Centre	1188	190,987	177	13,580	12.55	39.18
Kings House	1242	576,766	199	42,071	14.52	44.74
Eliot Park Innovation Centre	1270	743,942	177	92,299	21.94	48.50
Camp Hill Education Sports & Social (CHESS)	1287	159,448	120	13,615	10.21	27.50
The Ratcliffe Youth & Community Centre	2017	50,515	218	3,111	13.41	44.90
Atherstone Library & Information Centre	2027	70,943	120	6,149	10.42	27.75
Atherstone Fire Station	2036	132,283	281	7,627	16.19	58.06
The Atherstone Centre	2048	154,314	316	6,980	14.30	62.21
Coleshill Fire Station	2080	225,966	235	11,508	11.95	47.49
Polesworth Fire Station	2171	64,998	252	4,289	16.63	53.47
Coleshill Library & Information Centre	2224	53,109	253	3,766	17.94	54.99
The Arden Centre	2239	76,717	175	5,883	13.43	37.35
Rugby Fire Station	3144	275,705	207	17,078	12.83	43.79
Fawsley House	3148	212,920	161	13,462	10.16	34.51
Bloxham Centre	3150	199,826	138	9,628	6.65	27.03
The Bridge	3152	58,144	151	3,602	9.36	31.76
Oakfield Park	3243	125,372	96	11,876	9.07	23.22
Sir Frank Whittle Business Centre	3260	162,784	61	10,849	4.07	13.26
Rugby Register Office	3261	49,964	307	2,497	15.32	59.37
Unit 5, 1 - 3 Upton Road	3288	11,311	49	1,197	5.23	12.36
Globe House (Alcester Area Office)	4004	119,373	193	8,911	14.42	43.54
Alcester Fire Station	4016	108,900	243	6,074	13.56	51.09
Bidford On Avon Fire Station	4055	28,481	82	1,897	5.45	17.55

Indicates a property that needs to be investigated further.



2018/19						
Property Information		Combined Energy Consumption (Electricity Only, Gas Only and Outliers Removed)				TOTAL CO2 Emissions
Property List	UPRN	kWh used	kWh/m2	Cost £	wgt'd Av £/m2	kgCO2 / m2
Henley-In-Arden Fire Station	4097	77,883	131	4,034	6.79	26.14
Shipston on Stour Library & Information Centre	4194	21,986	106	1,521	7.31	22.82
Shipston-On-Stour Fire Station	4199	40,509	167	2,751	11.32	36.12
Stratford-Upon-Avon Library & Information Centre	4234	176,257	147	10,841	9.07	31.39
The Saltway Centre & Stratford Family Centre	4255	158,095	218	11,494	15.83	47.00
Wellesbourne Library & Information Centre	4305	31,294	126	2,181	8.76	27.55
Wellesbourne Divisional Highways Depot	4308	191,791	211	18,334	20.24	106.49
Wellesbourne Fire Station	4367	80,140	247	4,412	13.62	50.25
Trading Standards Headquarters	5010	284,669	209	24,899	18.28	50.02
Budbrooke County Highways Head Office	5012	73,903	126	6,735	11.45	29.88
Kenilworth Fire Station	5058	77,786	289	4,786	17.79	59.85
The Pound Lane Former Teaching & Learning Centre	5097	218,928	157	13,398	9.62	33.38
Lillington Youth Club	5105	85,537	163	4,321	8.23	32.80
Leamington STEPS - 43 Rugby Road	5106	20,767	149	1,002	7.21	28.99
Lillington Library & Information Centre	5110	59,723	122	4,070	8.34	26.00
Fire & Rescue Service Headquarters	5124	909,797	246	60,021	16.20	54.14
Holly Walk House	5136	126,625	152	7,984	9.60	32.08
Shire Hall Complex (including 58 Block)	5187	3,127,949	214	276,945	18.96	52.55
Former Judges House	5190	282,467	293	17,477	18.15	62.56
Northgate House Conference Centre	5196	205,528	201	24,766	24.28	55.22
Premises At Montague Road	5199	1,357,725	200	64,773	9.54	39.94
St John's House Museum	5247	148,445	110	9,738	7.22	23.55
County Museum (Market Hall)	5248	203,439	244	15,336	18.39	55.35
County Record Office	5252	207,564	133	16,515	10.55	30.09
Priory House	5253	12,426	51	843	3.43	10.17
Priory Bungalow	5254	54,839	703	3,532	45.28	160.00
The Emscote Centre	5264	184,666	196	8,569	9.10	38.27
Myton Park Centre	5268	278,670	237	20,938	17.79	50.09
Former Parkfield Centre (Extra Care Housing)	5341	23,803	264	1,176	13.06	52.86
Office Building 1 Saltisford Business Park	5384-1	307,610	145	32,910	15.56	37.20
Office Building 2 Saltisford Business Park	5384-2	217,113	135	20,533	12.73	32.75
Marle Hall Outdoor Education Centre	6002	394,460	210	23,552	12.56	44.59

## Appendix 2: Energy Consumption for properties without Gas data 2018/19

Property List	UPRN	Energy Consumption (Properties with No Gas)				
		kWh used	kWh/m2	Cost £	wgt'd Av £/m2	Emissions kgCO2
119 Hillcrest Road (Extra Care Housing site)	1193	127,959	43.25	1,942	6.58	3,889
Burton Farm Household Waste Recycling Centre	4235	34,262	184.21	5,469	29.40	10,444
Cherry Orchard Household Waste Recycling Centre	5043	18,761	469.03	3,143	78.58	5,719
Coleshill Motorway/Divisional Highways Depot	2098	126,048	59.04	19,470	9.12	38,422
Fenny Compton Fire Station	4074	22,627	145.05	3,506	22.47	6,897
Freeway Centre - WEST local Provider Services	1147	38	0.03	12	0.01	12
Hammond Business Centre	1095	3,927	2.58	654	0.43	1,197
Hartshill Hayes Country Park	2129	6,046	62.33	899	9.27	1,843
Henley-In-Arden Highways Sub-Depot	4099	55,716	84.04	8,374	12.63	16,983
Kingsbury Water Park	2143	110,414	54.02	16,731	8.19	33,656
Kingsbury Water Park Outdoor Education Centre	2232	12,126	32.6	1,902	5.11	3,696
Leamington Household Waste Recycling Centre	5111	36,494	46.08	5,722	7.22	11,124
Lillington Community and Childrens Centre	5389	27,001	45.84	4,011	6.81	8,230
Lower House Farm Household Waste Recycling Centre	2233	65,969	23.33	9,724	3.44	20,109
Myton Sports Ground and Pavillion	5182	9,224	44.99	1,293	6.31	2,812
Nueaton Gypsy Caravan Site	1165	9,691	9.82	1,350	1.37	2,954
Nueaton Training Centre	1128	8,376	36.9	1,269	5.59	2,553
Polesworth Library & Information Centre	2168	24,081	115.22	3,863	18.48	7,340
Pooley County Park	2214	38,880	156.77	5,925	23.89	11,851
Ryton Pools Country Park	3205	54,799	80.94	8,533	12.60	16,704
Shipston-On-Stour Highways Sub-Depot / Household	4204	41,803	62.49	6,574	9.83	12,742
Southam Fire Station	4185	26,035	154.97	4,099	24.40	7,936
Stockton Household Waste Facility	4208	7,342	271.93	1,065	39.46	2,238
Stratford Upon Avon The Greenway	4130	834	4.88	236	1.38	254
Stratford Upon Avon The Greenway	4130	834	4.88	236	1.38	254
The Shortwoods Frmr CSS Centre (Extra Care Hsg)	2109	7,783	7.20	1,106	1.02	2,373
Whitnash Library & Information Centre	5293	27,452	103.98	4,224	16.00	8,368
Wolston Library & Information Centre	3225	17,112	109.69	2,672	17.13	5,216

### Appendix 3: Energy Consumption for properties without Electricity Data 2018/19

		Energy Consumption (Properties with no electricity data)				
Property List	UPRN	kWh used	kWh/m2	Cost £	wgt'd Av £/m2	Emissions kgCO2
Barrack Street Block	5197	635,414	110.20	£ 22,542.91	£ 3.91	116,675
Hunters Lane Household Waste Recycling Centre	3119	31,957	141.40	£ 927.53	£ 4.10	5,868
Kenilworth Library & Information Centre	5042	76,304	80.75	£ 2,569.27	£ 2.72	14,011
Stratford Upon Avon Park and Ride	4388	141,304	1250.47	£ 4,787.26	£ 42.37	25,946
The Benn Education Centre	3109	129,042	157.56	£ 3,959.16	£ 4.83	23,695
Wellesbourne C F M Workshops	4309	141,822	182.29	£ 4,519.78	£ 5.81	26,041

## ***Appendix 4: List of investigations***

**The following sites will need to be investigated further:**

Gas Investigation
Priory Bungalow
The Atherstone Centre
Rugby Register Office
Nuneaton Fire Station
Electricity Investigation
Cherry Orchard Household Waste Recycling Centre
Stockton Household Waste Facility
Priory Bungalow
Wellesbourne Divisional Highways Depot
£/m <sup>2</sup> Investigation
Bedworth Library & Information Centre
Coleshill Library & Information Centre
Alcester Fire Station
Stratford Upon Avon Road Park & Ride
119 Hillcrest Road (Homestart North East Warwickshire)



## Appendix 5 - WCC Corporate Property Display Energy Certificate Profile

Code	Site Name	Grade	Rating	m <sup>2</sup>
1161	Nuneaton Library & Information Centre	B	32	1,468
4097	Henley-In-Arden Fire Station	B	50	594
1050	Bedworth Fire Station	C	51	521
5247	St John's House Museum	B	50	1,349
2027	Atherstone Library & Information Centre	C	58	590
3243	Oakfield Park	C	58	1,141
2080	Coleshill Fire Station	C	59	963
5042	Kenilworth Library & Information Centre	C	59	945
5136	Holly Walk House	C	59	832
4389	Winton House	This property is no longer the responsibility of WCC.		
5199	Premises At Montague Road	D	80	6,791
3152	The Bridge	C	62	385
2239	The Arden Centre	C	64	438
3148	Fawsley House	C	62	1,325
5268	Myton Park Centre	C	69	1,783
2232	Kingsbury Water Park Outdoor Education Centre	C	66	372
4234	Stratford-Upon-Avon Library & Information Centre	C	54	1,195
5199	Premises At Montague Road	D	80	6,791
3144	Rugby Fire Station	C	70	1,331
4245	Stratford-Upon-Avon Fire Station	C	70	815
5124	Fire & Rescue Service Headquarters	C	70	3,704
5252	County Record Office	C	62	1,565
5293	Whitnash Library & Information Centre	C	72	264
1188	The Hilary Road Centre	C	74	1,082
5110	Lillington Library & Information Centre	D	76	488
5384	Saltisford Office Park	D	81	8,182
5097	Pound Lane Training Centre	D	92	1,393
1242	Kings House	D	84	2,898
4004	Globe House	D	80	618
1033	Bedworth Library & Information Centre	D	83	741
1184	Nuneaton Fire Station	D	83	1,788
4255	The Saltway Centre & Stratford Family Centre	D	84	726
1287	Camp Hill Education Sports & Social (CHESS)	D	86	1,333
5384	Saltisford Office Park	C	68	8,182
5248	County Museum (Market Hall)	D	89	834
5010	Trading Standards Headquarters	D	100	1,362
1157	Hatters Space Community Centre	E	107	938
5187	Shire Hall Complex	E	102	14,655
5384	Saltisford Office Park	D	89	8,182
5196	Northgate House Conference Centre	E	124	1,020
5103	The Fordsfield Complex Needs Centre	E	117	635
1037	Warwickshire Fire & Rescue Training & Dev. Centre	E	125	6,040
1198	Ramsden Complex Needs Centre	F	142	623

## Historic Building Energy Review Reports

Similar reports for previous years can be found on the internet on the WCC Energy Performance web page:

<https://www.warwickshire.gov.uk/buildingenergyperformance>

- 2017/18 Building Energy Consumption Review
- 2016/17 Building Energy Consumption Review
- 2015/16 Building Energy Consumption Review
- 2014/15 Building Energy Consumption Review
- 2013/14 Building Energy Consumption Review
- 2012/13 Building Energy Consumption Review
- 2011/12 Building Energy Consumption Review
- 2010/11 Building Energy Consumption Review

Direct access to the last report from the link:

<https://apps.warwickshire.gov.uk/api/documents/WCCC-599-77>

These documents contain further information about energy management at WCC.

## Energy Web Pages

The following energy related web pages have been maintained.

Energy Strategy and Policy: <http://www.warwickshire.gov.uk/energystrategyandpolicy>