Warwickshire County Council

Building Energy Consumption & Emissions Review

April 2019 to March 2020

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

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

Version History

Date	Document Version	Document Revision History	Document Author / Reviser / Approver
August 2020	Draft 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
November 2020	Draft 2	Changes to budget table, and other minor amendments	Dr Jacky Lawrence, Energy Manager
November 2020	Draft 3	Additional info on site investigations	Julie Burton, Environmental Management Systems Manager

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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 2019/20 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

2020 is the 10th 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 3rd party operation.

Headline Overview:		
	CO_2	**Total Carbon Emissions in tonnes (t CO_2) is DOWN** *Even though energy consumption has gone up, emissions have continued to fall. This is due to the lowering of emissions in the production of electricity. As more electricity is produced through green technologies this trend seems set to continue. However, costs also seem set to rise as the financial burden of building the green infrastructure needed is passed on to the consumer.*
	Energy	**Total Energy Consumption (gas + electricity kWh) is UP**
	Gas	**Average cost per square metre (£/m²) is UP**
	Electricity	**Average cost per square metre (£/m²) is UP**
	Water	**Average cost per square metre (£/m²)**
	Renewables	**Zero Carbon Generation (kWh) is UP** *From 2016 WCC insured that every unit of electricity procured was matched by a Renewable Energy Guarantee of Origin (REGO). This certificate guarantees that electricity is generated from a renewable source.*

The data in this report provides a basis for more detailed investigations wherever it provokes questions about unexpected patterns of energy consumption. Both higher than average and lower than average energy consumption needs 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_2 Emissions

Introduction

The UK declared a climate emergency in 2019 and is committed to bringing all greenhouse gas emissions to net zero by 2050. Net zero means any emissions will need to be balanced by schemes to offset an equivalent amount of greenhouse gases from the atmosphere such as planting trees or using technology like carbon capture and storage. The UK will host the 26th Climate Change Conference or the Parties (COP26) at the Scottish Event Campus in Glasgow on 1 -12 November 2021.

Warwickshire County Council declared a climate emergency in July 2019.

WCC's corporate energy target is to achieve at least an average annual 2.5% reduction in total CO_2 emissions from the corporate property estate per £million gross revenue expenditure.

WCC maintains a robust energy, cost and CO_2 reporting system for the WCC estate to assess actions and progress towards meeting targets.

In this section:

1. **Reporting on Carbon Emissions**
   Information on carbon emissions from corporate properties
2. **Carbon Dioxide Emissions Data**
   Year on Year comparison table showing total tonnes of CO_2, floor area and property numbers for each utility.
3. **Emission Factors**
   Details on how CO_2 is calculated.
4. **CO_2 Equivalents**
   Giving our emissions context.
5. **CO_2 Tonnes per £million of Gross Revenue Expenditure**
   Our annual CO_2 emissions expressed in terms of what the Carbon Reduction Commitment reporting metric was.

CO_2 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, 2018/19 and 2019/2020 energy data sets were collected in the same way as if it had formed part of the required CRC Evidence Pack.

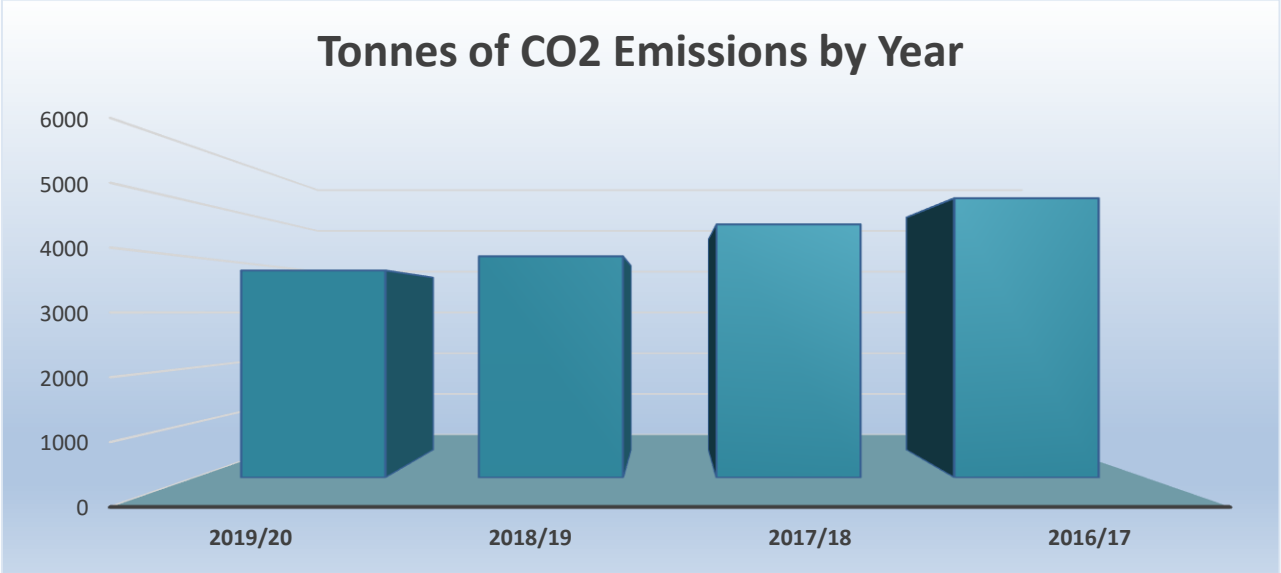
We maintain this structure as it provides a useful management tool for energy efficiency and it also ensures continuity of reporting.

Carbon Dioxide Emissions Data 2019/20

Includes:	Year	Fuel kWh	No of properties	GIA (m^2)	Emissions ($t CO_2$)	
Corporate Buildings Only	**2019/20**				**3,761**	
		Gas	71	102,645	2,196	
		Electricity	93	110,547	1,565	
	2018/19				**4,019**	
		Gas	67	92,040	1,950	
		Electricity	85	107,722	2,069	
	2017/18				**4,598**	
		Gas	65	92,015	2,063	
		Electricity	83	100,842	2,535	
	2016/17				**5,073**	*
		Gas	67	93,127	1,935	
		Electricity	87	101,431	3,138	
	2015/167				**5,604**	
		Gas	64	90,119	1,969	
		Electricity	84	103,024	3,635	

* From the 1st October 2016 WCC buys Pure Green Tariff Electricity.
(This trend continued in 2017, 2018, 2019 and 2020.)

Carbon Dioxide Emissions Data 2019/20



Carbon Dioxide Emission Factors

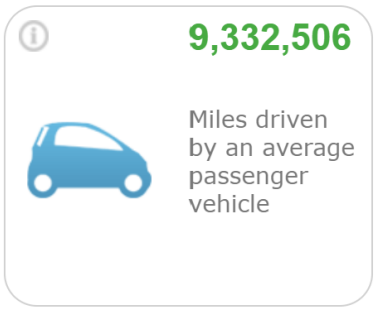
Emissions Factors:
To convert kilowatt hours of Gas and Electricity into CO_2, the following conversion factors are used: Natural Gas: 0.18387 kg CO_2 / kWh Electricity: 0.2331 kg CO_2 / kWh (including transmission and distribution losses) More information about Emissions Factors, how they are calculated and what assumptions are made, are available here: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020

Carbon Dioxide Equivalents

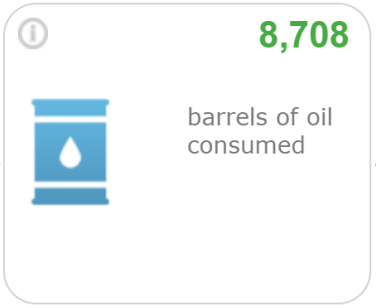
Equivalents
What does 3,761 tonnes of carbon dioxide look like? The graphics below give context by illustrating equivalents for 3,761 tonnes of CO_2. More information about these equivalents, how they are calculated and what assumptions are made, are available here: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Equivalency Results How are they calculated?

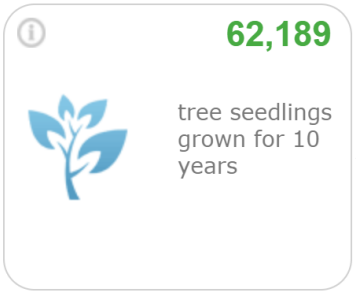
Greenhouse gas emissions from



CO_2 emissions from



Carbon sequestered by



Carbon Dioxide Tonnes per £million 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_2/£million value, the better the performance. WCC will continue to report on this metric even though the CRC has ended.

For financial year 2019/20 **WCC's Gross Revenue Expenditure was:**	**635**	**(£millions)**

Year:	tonnes CO_2/£million Gross Revenue Expenditure	% change since 2014/15:	Year on Year Change
2019/20	5.92	-55%	-8%
2018/19	6.98	-47%	-4%
2017/18	7.50	-43%	-8%
2016/17	8.52	-35%	-8%
2015/16	9.60	-27%	-27%

There have 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 having an effective building energy management system, better property insulation & lighting systems, inefficient properties being disposed of through property rationalisation and investment in other energy efficiency and renewable energy generation projects.

Moving forward it will become increasingly more difficult to find carbon reductions without substantial investment in renewable energy generation and decarbonising heat.

Reducing our CO_2 emissions by 55% from 2014/15 levels is a fantastic achievement. However, efforts to further reduce our carbon emissions will need to be maintained. Costed opportunity energy surveys will be undertaken to identify further required investment opportunities. WCC will work with partners such as the Midlands Energy Hub and others and seek to access any available government funding to enable further reductions carbon emissions.

Combined Energy Consumption (Electricity & Gas)

Introduction

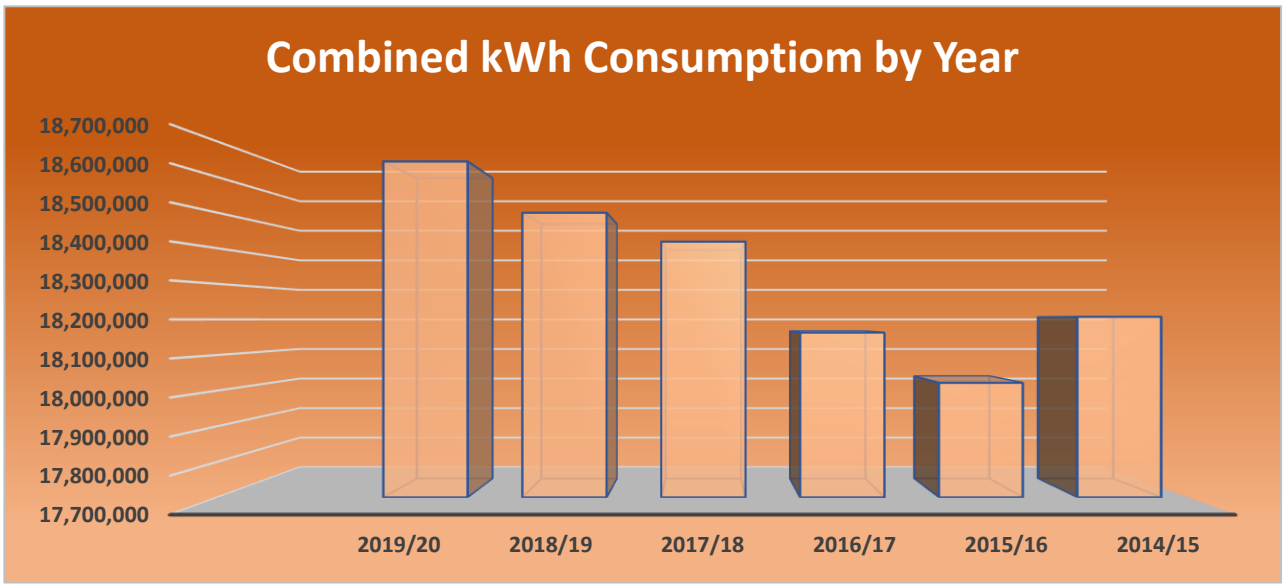
This section details the combined electricity & gas consumption in kWh for WCC's buildings. It also identifies the largest contributing properties to the headline CO_2 figures from the previous section.

What's in this section:

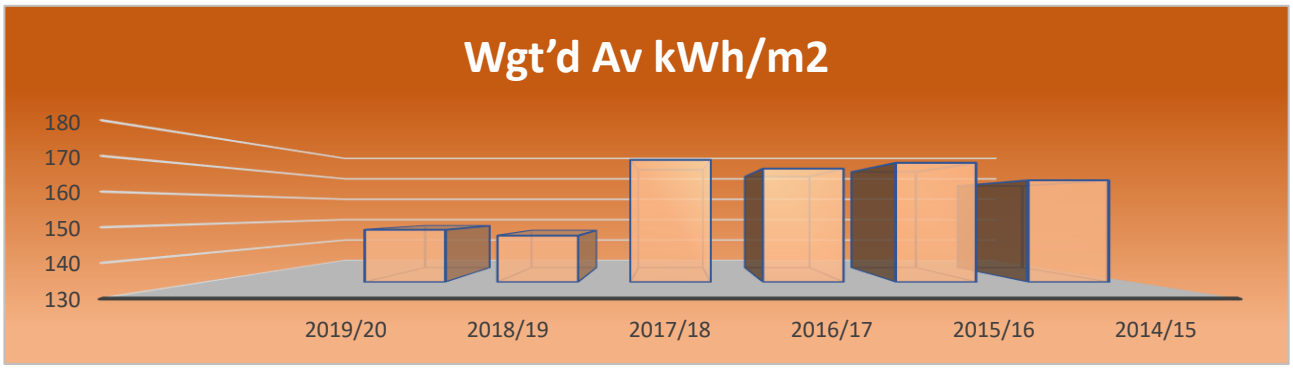
1. **Combined Consumption Data**
   Year on Year comparison table showing total kilowatt hours, floor area, property numbers and a weighted average cost per m² for each utility.
2. **Highest Consumers**
   Chart showing the 20 highest consuming properties for the current year expressed in tonnes of CO_2.
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 £/m²	Wgt'd Av kWh/m²
2019/2020	100	126,138	18,643,473	£6.93	148
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 m²	**kWh per m²**



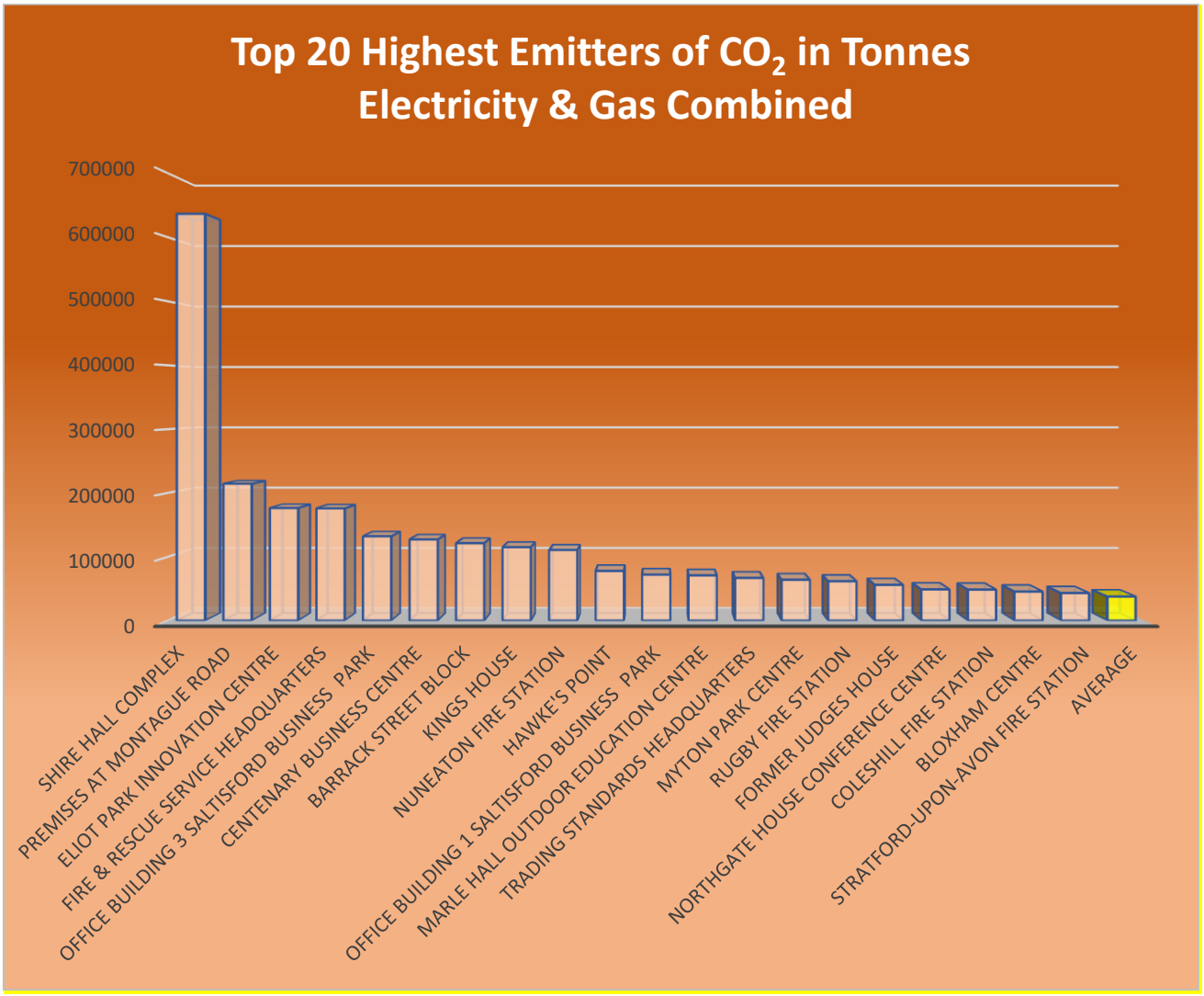
Consumption of kWh (energy) has increased slightly by 144,000 kWh which is equivalent to about 236 extra barrels of oil for the year. When we divide the energy being consumed by the total Gross Internal floor Area (GIA) we can see that the weighted average has also increased by 2 kWh per m^2.



Combined Consumption Detail – 2019/20

Current Year Highest Emitters of Carbo 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 on the right in yellow.

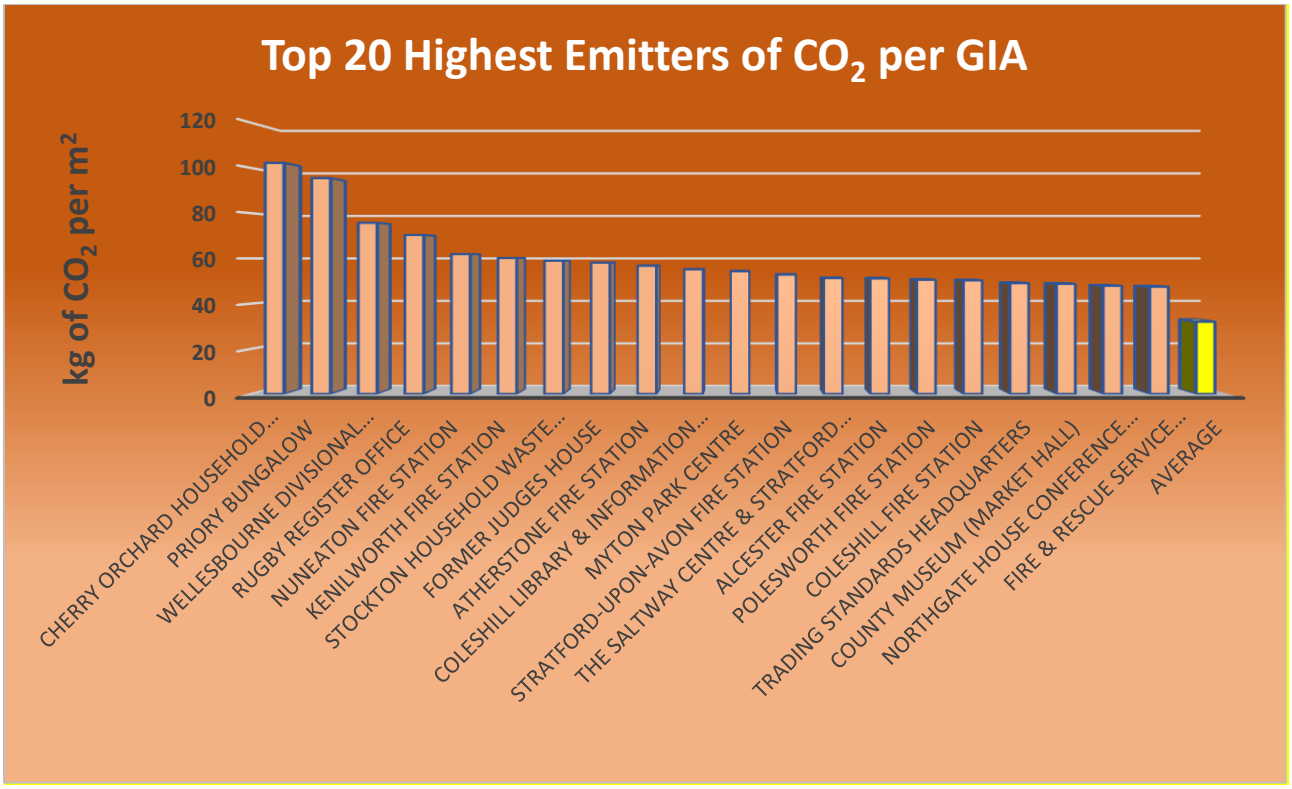


Although it is useful to know which properties emit the most Carbon Dioxide, it does not tell us the full picture. In very simple terms it tells us that the bigger the property the more it consumes and the more CO_2 it produces i.e. Shire Hall Complex is the biggest property and biggest producer of Carbon 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. Using this calculation Shire Hall does not appear in the top twenty of emitters. (see below)

Combined Consumption Detail – 2019/20

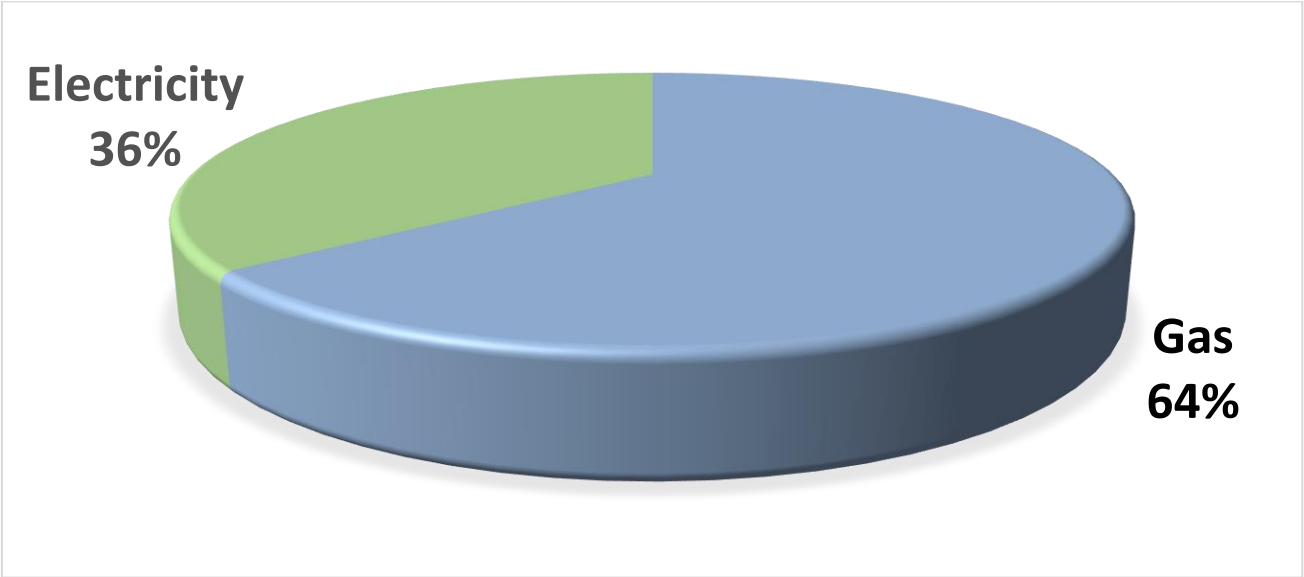
Highest Emitters of Carbon Dioxide per m^2 of GIA:

The graph below shows the 20 highest emitters of Carbon Dioxide (in kg) per m^2 of the buildings GIA. 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 shown on the right in yellow.



Four Highest Emitters of CO_2 per Gross Internal Area (GIA)	
Cherry Orchard Household Waste Recycling Centre	102 kg of CO_2 per m^2
Priory Bungalow	96 kg of CO_2 per m^2
Wellesbourne Divisional Highways Depot	76 kg of CO_2 per m^2
Rugby Registry Office	70 kg of CO_2 per m^2

Combined Consumption Detail – 2019/20



Weighted average cost per square metre (£/m²)

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 £/m² is not the same as simply adding the average costs for gas plus the average cost for electricity, and is calculated as:

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

Gas Consumption

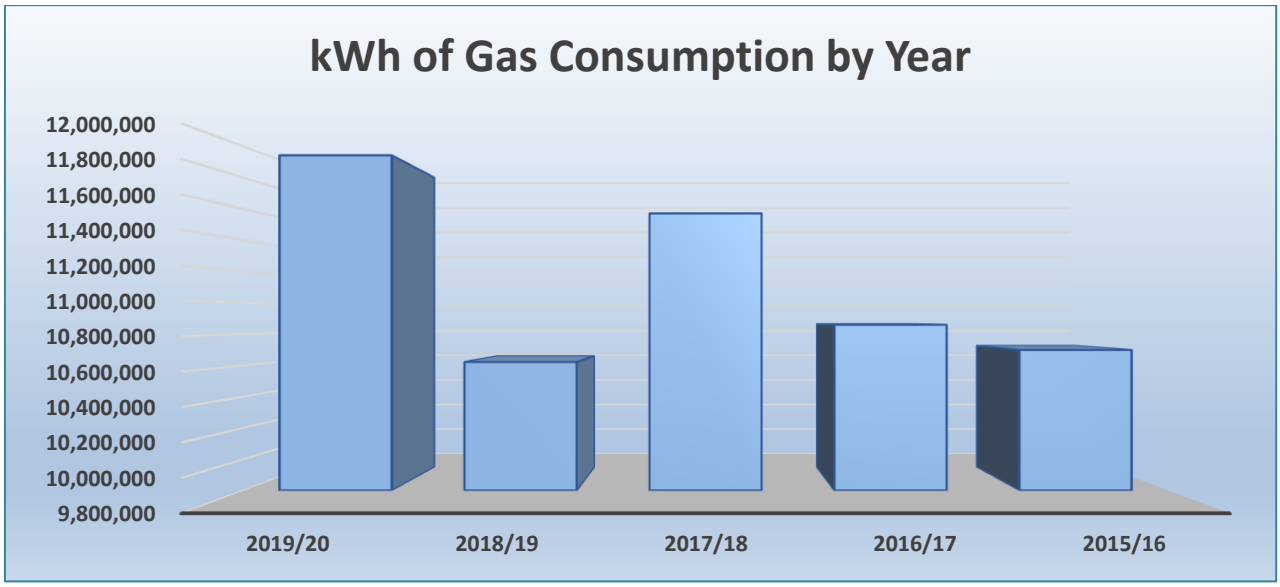
Introduction

This section provides a more detailed insight for the gas consumption figures measured in kilowatt hours, (kWh) that comprise the headline CO_2 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 m² 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 2019/20

Includes:	Year	No of properties	wgt'd Av £/m²	GIA (m²)	Total kWh
Corporate Buildings Only	2019/20	71	£4.51	102,645	11,942,414
	2018/19	67	£4.43 *	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



*£2.88 reported last year was a data error.

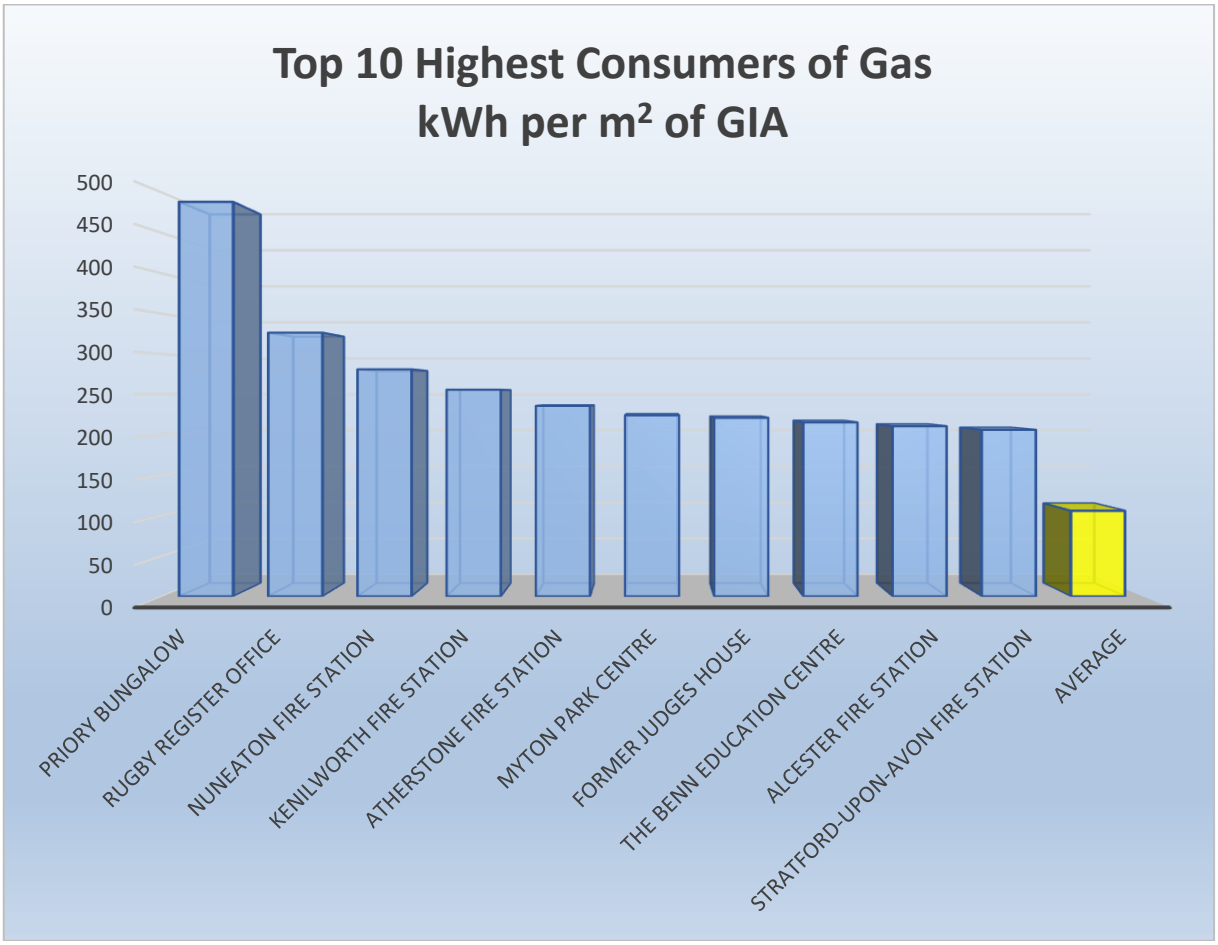
Gas Consumption Detail 2019/20

Gas Meter Statistics	
81	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.

To give context to these values, the average across all properties is shown on the right in yellow.



Electricity Consumption

Introduction

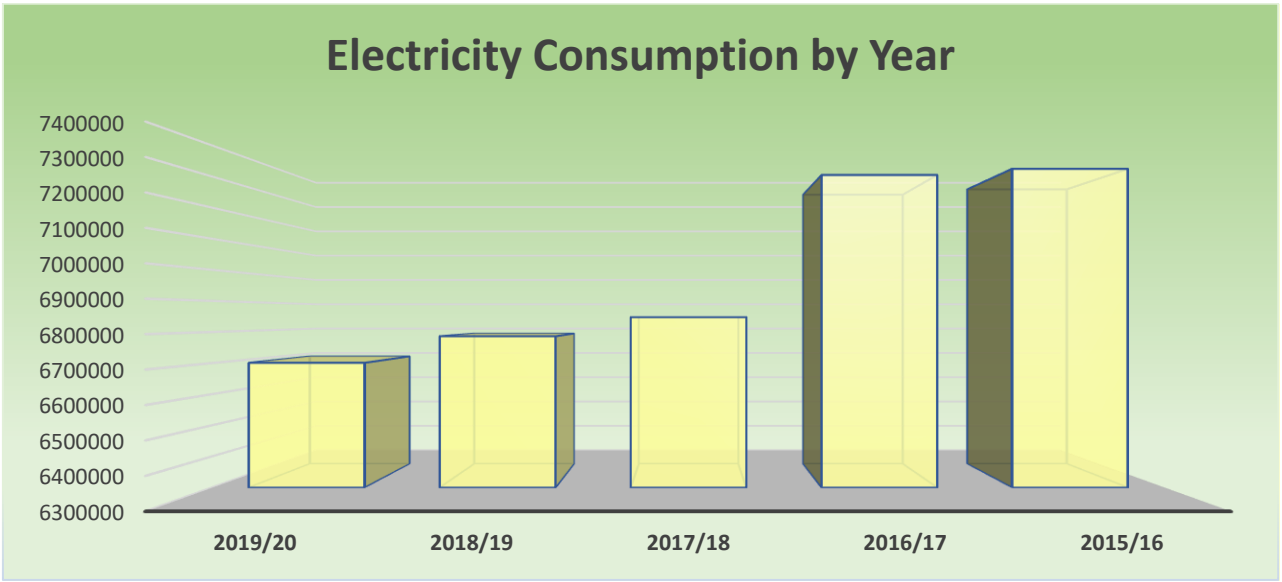
This section provides a more detailed breakdown for electricity consumption figures measured in kilowatt hours, (kWh) that comprise the headline CO_2 and combined consumption data above.

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^2.
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 2019/20

Includes:	Year	No of properties	wgt'd Av £/m²	GIA (m²)	Total kWh
Corporate Buildings	2019/20	93	£10.15	110,547	6,701,059
	2018/19	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

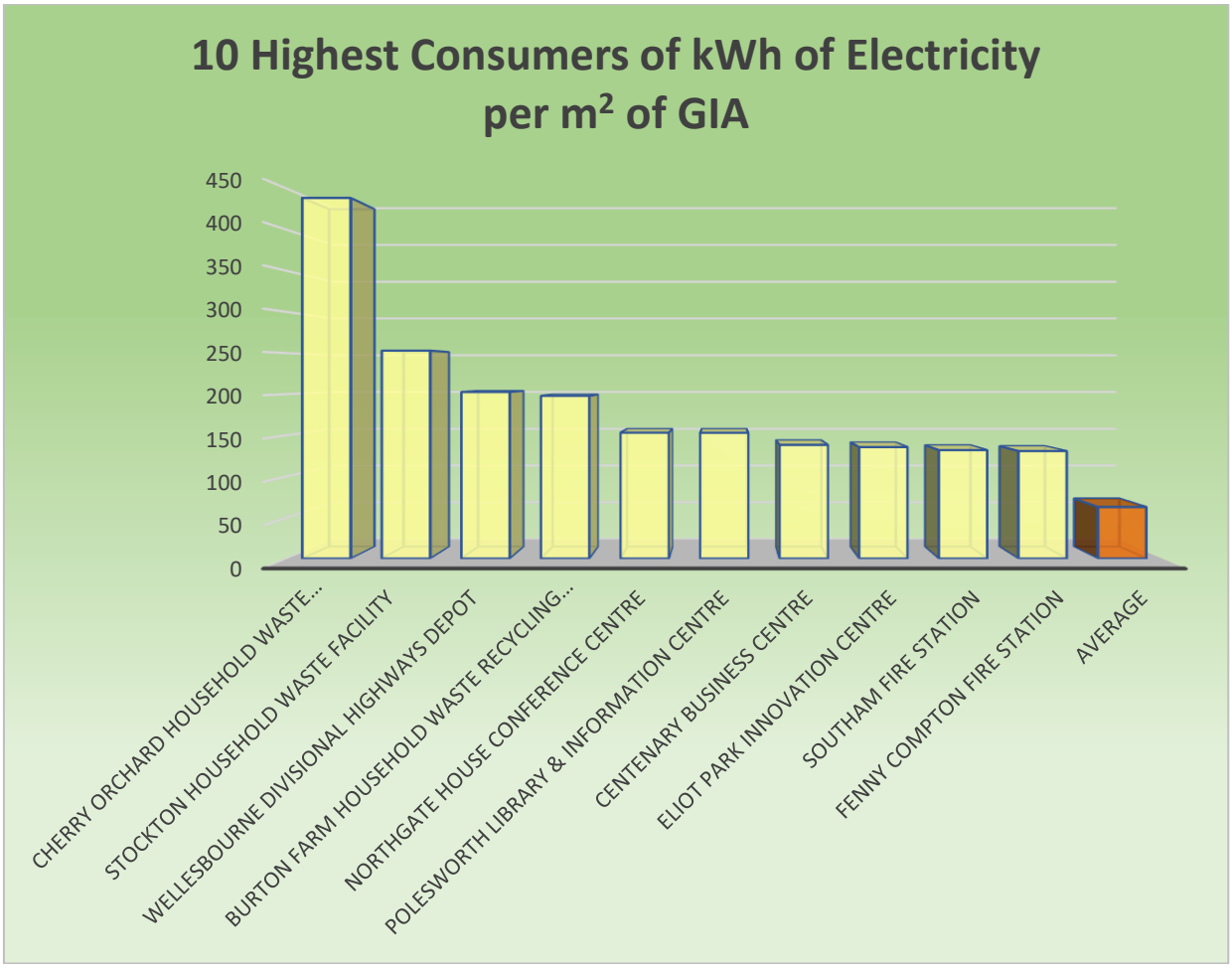


Electricity consumption continues to fall year on year due to property rationalisation, better procurement decisions, improvements in building fabric, energy efficiency projects and behaviour changes.

Electricity Consumption Detail 2019/20

Electricity Meter Statistics:	
146	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. *To give context to these values, the average across all properties is shown on the right in orange.*



Water Consumption

Introduction

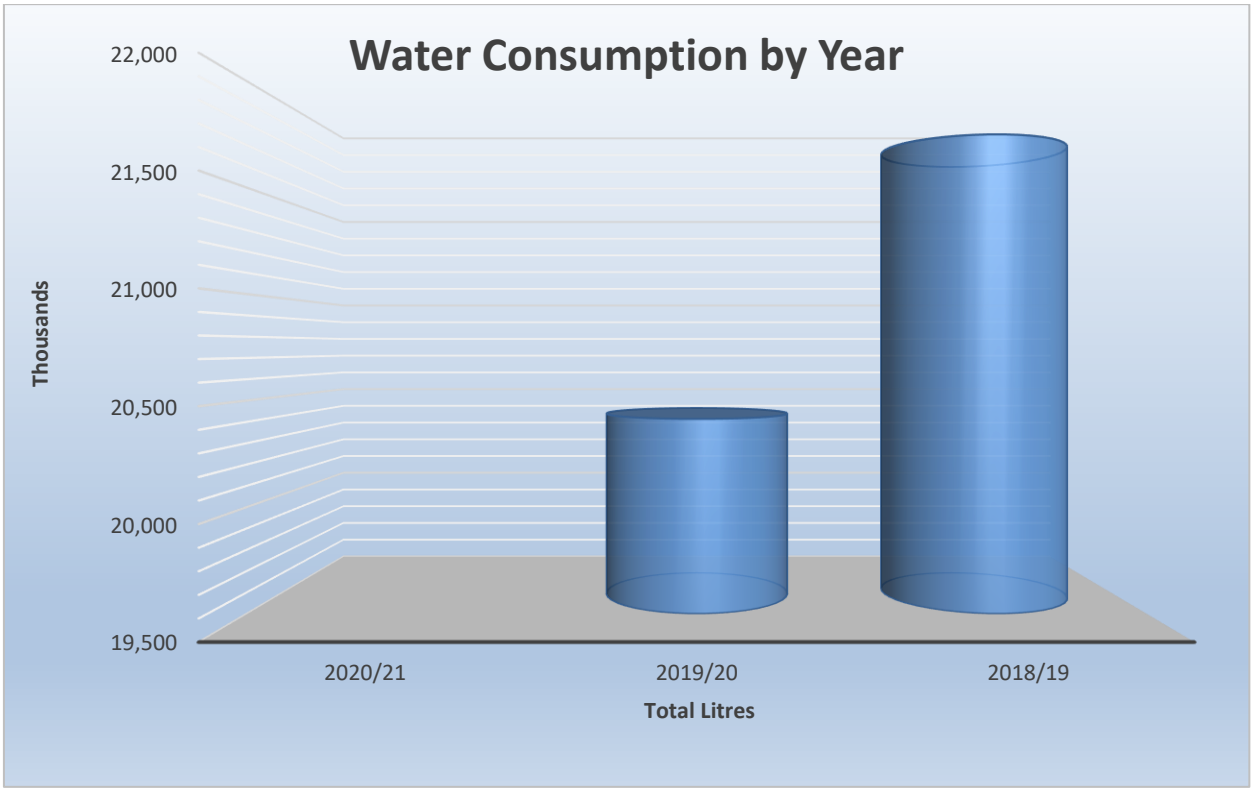
Commercial water use is measured in litres and is split into three main elements: the fresh water consumed, sewerage and surface water drainage. This section provides a breakdown for the metered water consumption for the buildings WCC operates.

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 m².

Water Metered Consumption Data 2019/20

Includes:	Year	No of Properties	Wgt'd Av £/m^2	GIA (m^2)	Total Litres
Corporate Buildings	2020/21	n/a	n/a	n/a	n/a
	2019/20	57	1.82	69,093	20,414,000
	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 & Emissions 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^2 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^3 & m^3 units).

Past legislation:

- In 2010/11 and 2011/12 WCC was allowed to report on a total of only 93% of its total CO_2 emissions from electricity, gas and heating oil consumption. WCC were permitted to exclude some residual CO_2 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_2 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

	Gas kWh/m2	Electricity kWh/m2	Combined kWh/m2
Typical Practice	**210**	**46**	**256**
Atherstone Library & Information Centre	84	42	126
Bedworth Library & Information Centre	151	75	226
Bulkington Community Library	101	n/a	101
Coleshill Library & Information Centre	202	77	279
Kenilworth Library & Information Centre	76	n/a	76
Lillington Library & Information Centre	78	21	99
Nuneaton Library & Information Centre	94	10	104
Polesworth Library & Information Centre	n/a	153	153
Shipston on Stour Library & Information Centre	70	34	104
Stratford-Upon-Avon Library & Information Cen	132	35	167
Wellesbourne Library & Information Centre	103	30	133
Whitnash Library & Information Centre	n/a	104	104
Wolston Library & Information Centre	n/a	103	103
Good Practice	**113**	**32**	**145**

- Gas use for all libraries is better than Typical Practice[1].

- With the exception of Bedworth, Coleshill and Stratford Libraries the remainder show Good Practice with their gas usage.

- For the majority of Libraries electricity use is better than Typical Practice. Polesworth, Whitnash and Wolston Libraries have no gas for heating and subsequently show higher use of electricity. Coleshill Library shows higher than Good and Typical practice for electricity and when we look at the combined kWh/m^2 consumption again shows it to be higher than Typical so will need to investigated.

- When looking at combined usage, all Libraries are operating better than Typical Practice, except for Coleshill Library. This will need further investigation to find ways of moving them towards Typical Practice.

[1] CIBSE TM46

WCC Building Performance by category

Offices & Conference Centres

	Gas kWh/m2	Electricity kWh/m2	Combined kWh/m2
Typical Practice	**178**	**226**	**404**
Budbrooke County Highways Head Office	72	49.77	122.22
County Record Office	91	40.74	131.78
Former Judges House	221	75.00	295.98
Globe House	99	62.70	161.74
Kings House	133	65.25	198.24
Northgate House Conference Centre	66	153.15	219.29
Office Building 1 Saltisford Business Park	69	91.79	160.31
Office Building 2 Saltisford Business Park	55	62.84	118.13
Office Building 3 Saltisford Business Park	44	92.32	136.57
Premises At Montague Road	172	n/a	171.79
Rugby Register Office	326	44.40	370.82
The Saltway Centre & Stratford Family Centre	203	60.21	262.75
Good Practice	**97**	**128**	**225**

- For all Offices & Conference Centres electricity usage is better than Good Practice except for Northgate House which is still showing better than Typical Practice.

- The majority are showing Good Practice for gas use apart from Rugby Register Office, Former Judges House and The Saltway Centre. Rugby Register Office, Former Judges House and The Saltway Centre are also above Typical Practice for gas usage. However, they also show low electrical use which mitigates for this anomaly.

- Looking at Combined kWh/m^2 all properties are better than Typical Practice and nine out of the twelve are better than Good Practice.

- Rugby Registered Office, The Former Judges House and The Saltway Centre will need further investigation to see where improvements in energy use can be made.

WCC Building Performance by category

Museums

	Gas kWh/m2	Electricity kWh/m2	Combined kWh/m2
Typical Practice	**142**	**70**	**212**
County Museum (Market Hall)	174	71.84	245.74
Globe House	99	62.70	161.74
St John`s House Museum	105	26.16	131.18
Good Practice	**96**	**57**	**153**

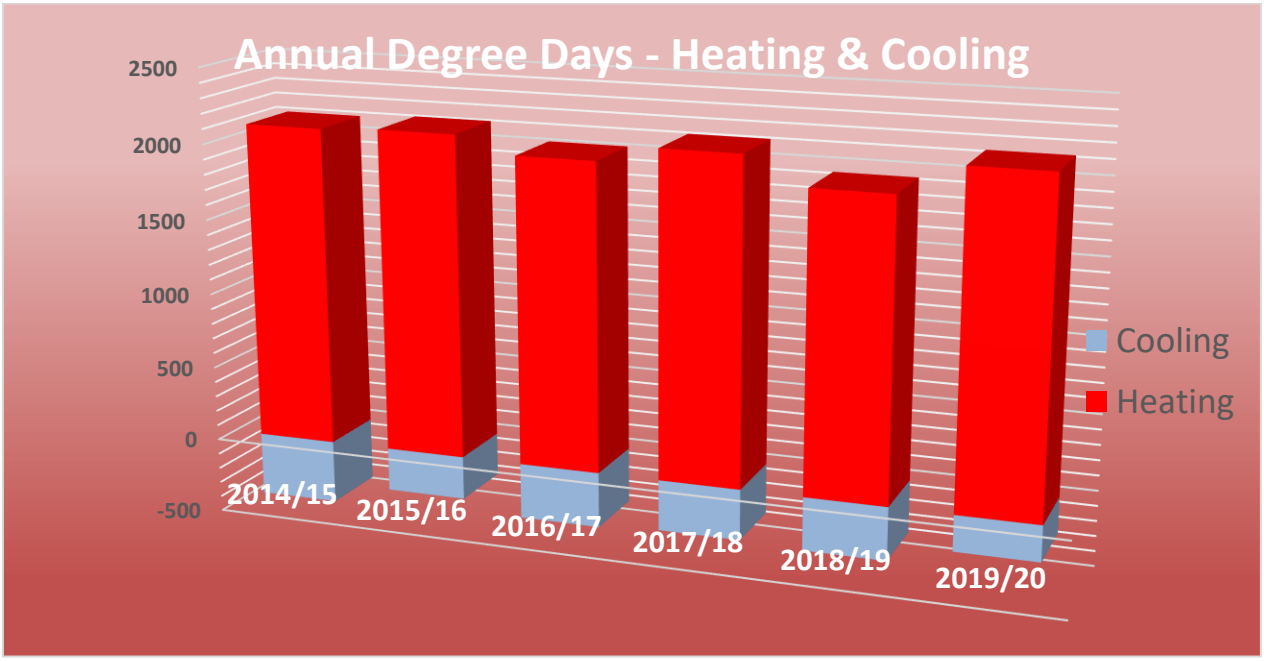
- St John's Museum combined use is better than Good Practice.
- Globe House's combined use is better than Typical Practice.
- County Museum combined use is higher than Typical and Good Practice. However, unlike St John's House and Globe House it operates a cafeteria during its opening hours, and this may account for its higher energy usage.

Summary

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

Gas investigation (G) **Top Four Gas Consumers per m^2**	**Electricity investigation (E)** **Top four Electricity Consumers per m^2**
Priory Bungalow	Cherry Orchard Household Waste Recycling Centre
Rugby Register Office	Stockton Household Waste Facility
Nuneaton Fire Station	Burton Farm Household Waste Recycling Centre
Kenilworth Fire Station	Wellesbourne Divisional Highways Depot
	Coleshill Library

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 ^{0} 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://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020

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	2019/20	284	211,273	156,064	54
	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 19/20, WCC's current generation from renewable sources is equivalent to 4% of the total electricity consumption.
WCC has planning permission for one GMS site and has discharged some of the planning conditions, but without the FiT the financial return is low so little further progress has been made.

Investigations into financially viable renewable energy projects post subsidy continue.

Display Energy Certificates (DECs) & Advisory Reports (ARs) 2019/20

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 m² 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 DECs & 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_2 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_2 emissions (best) and G the highest CO_2 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_2 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 m² + need a DEC every year
- Those buildings with a floor area of between 250 m² and 1,000 m² 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 1000m² 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

Corporate Properties - DEC Profile

17/18	18/19	19/20
0.0%	0.0%	0.0%
2.4%	7.1%	7.3%
42.9%	45.2%	46.3%
31.0%	33.3%	29.2%
19.0%	11.9%	14.6%
2.4%	2.4%	2.4%
0.0%	0.0%	0.0%

Property details can be found in the Appendix

DEC Rating

Performance measuring

WCC still does not boast an A rated property. We have moved more properties into B & C categories. There has been a decrease in the D category as some have moved up to C. However, some have moved from D to E increasing from 11.9% to 14.6%. One property remains in category F.

Going forward buildings in E & F categories will need to be investigated to see if it is financially viable to move them towards a category D or above. 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^2) 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^2) 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. Considering 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: 3.88 pence per kWh**
- **Electricity: 16.75 pence/kWh**

(including billing factors such as standing charge and feed in tariff recovery charge, but not VAT.)

- **Water: 0.6017 pence/litre of fresh water (estimate)**

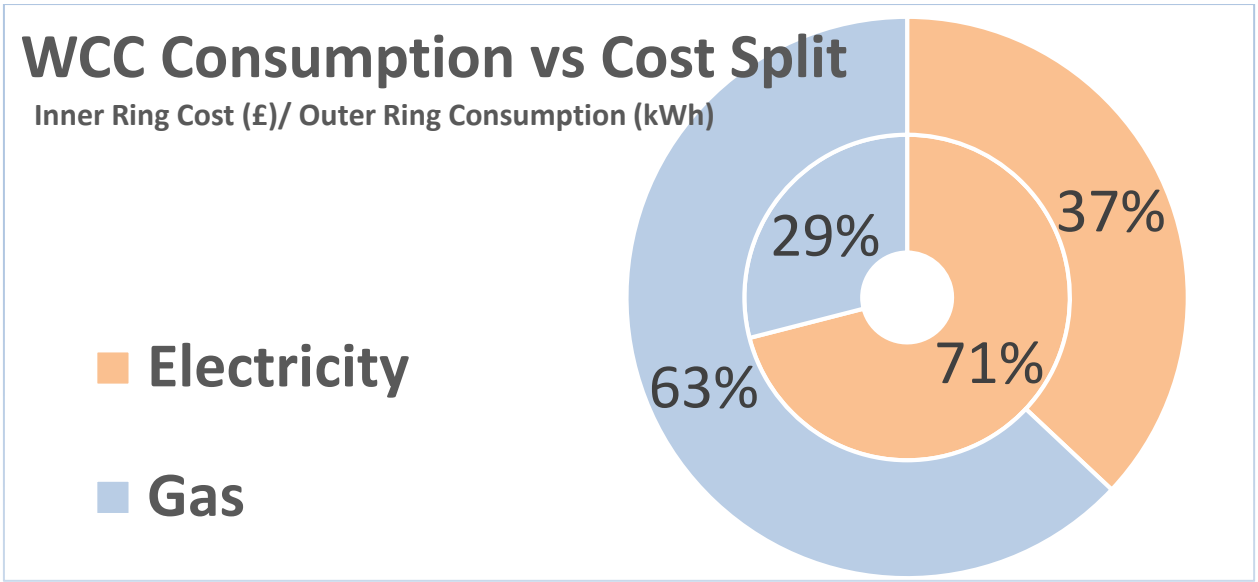
(including billing factors such as surface water drainage and sewerage, but not VAT.)

Budget spent in 2019/20

According to the Ledger, the total spend on energy in 2019/20 amounted to around £1,748,193.

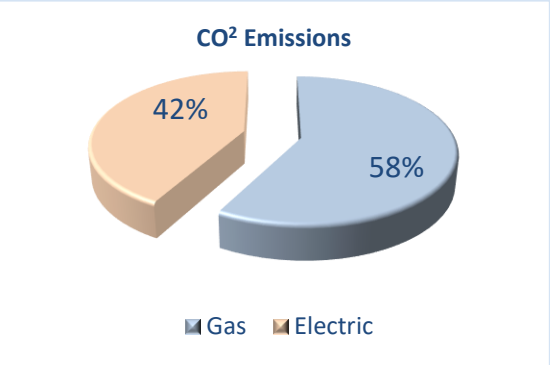
Electricity	£ 1,066,895
Gas	£ 413,942
Solid Fuel (Biomass)	£ 8,697
Fuel Oil	£ 5,471
Water Supply	£ 246,917
Renewable Energy Charges	£ 6,271
Total	**£ 1,748,193**

Utility costs



Comparative Costs

Even though WCC uses more gas than electricity in its energy consumption, gas only accounts for 29% of the cost for energy consumed. Electricity accounts for 71% of the cost but only accounts for 37% of energy consumption.



Using national emission factors to calculate CO_2 emissions for gas and electricity the split for emissions is 58% Gas and 42% Electricity. This is a swing of 7% from last year. An increase of 7% for gas and a 7% decrease for electricity.

As electricity is produced using greener and greener technologies its grid emissions factor for CO_2 will fall. Gas emission factor will remain roughly the same and this will continue.

WCC procures its electricity through an ESPO framework from TG&P's Pure Green Fuel Mix. Energy produced under this scheme is matched by Renewable Energy Guarantees of Origin (REGOs). WCC could report its scope 2 electricity consumption emissions as zero emissions, but the grid average emission factor is used in this report. In order to reduce WCC's CO_2 emissions the focus should go to reducing fossil fuel consumption especially for heating. However, replacing gas heating will be expensive and needs careful consideration about the best system to replace it with.

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.

The impact of covid-19 and the lockdowns have meant that the way the UK uses electricity has varied considerably compared to previous years. A consequence of the closures in all areas of the economy is that the energy profile of when and how much energy is used has changed. This has resulted in extra challenges for the industry in maintaining accurate electricity availability at peak times, managing the fixed costs of the network and sustaining commitments to support the provision of renewable energy.

These challenges have come at a cost to the market as a whole and are now being reflected in electricity bills being seen by end users. These non-commodity charges are set by industry bodies and regulated by Ofgem. They need to be applied by all suppliers and now make up over half of the value of the final electricity invoice.

As a result of the falling demand for energy, ESPO secured large amounts of electricity requirements at reduced rates when market prices were suppressed. This means that for 20/21 electricity purchased in advance was over 10% cheaper than the previous period.

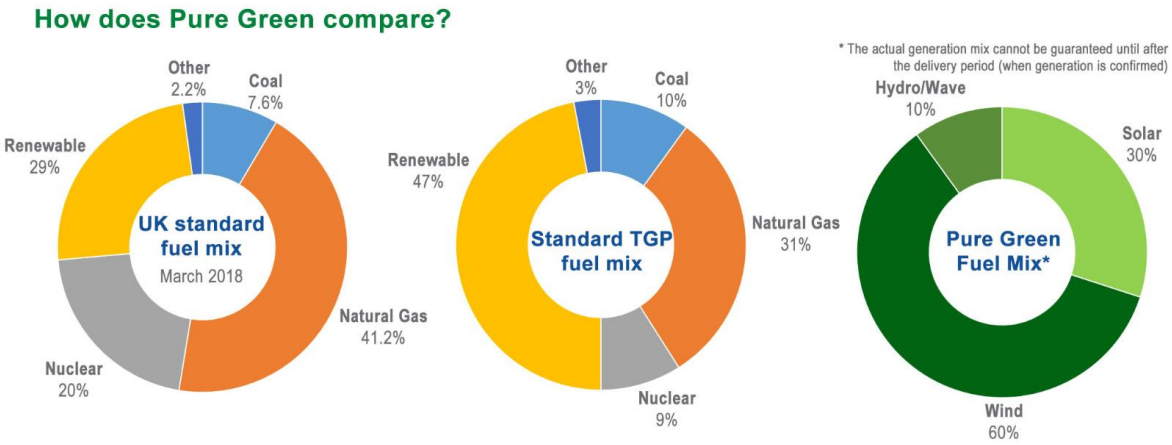
Unfortunately, the savings made in securing the electricity will be offset by the increases in non-commodity costs. Across the ESPO portfolio these will amount to an increase of around 1.5%.

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

The new contract with ESPO for electricity procurement runs from 1st October 2020 to end of September 2024.. Total Gas & Power supplies electricity for this contract.

Through this contract WCC procured 'Pure Green Energy' for an extra 0.05p/kWh for 2019/20 and the premium will be an extra 0.075p/kWh for 2020/2021 (this charge is reviewed annually and subject to change). 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.



Appendix

Appendix 1: Combined Electricity & Gas Consumption 2019/20

		2019-20		
Name	UPRN	kWh/ m2	wgt'd Av £/m2	Total CO2 (tonnes)
119 Hillcrest Road	1193	35	£2.84	2
Alcester Fire Station	4016	264	£8.80	23
Atherstone Fire Station	2036	293	£9.59	27
Atherstone Library & Information Centre	2027	126	£5.50	15
Barrack Street Block	5197	114	£2.35	121
Bedworth Fire Station	1050	200	£6.82	20
Bedworth Library & Information Centre	1033	226	£9.39	33
Bidford On Avon Fire Station	4055	94	£3.56	6
Bloxham Centre	3150	164	£4.72	45
Budbrooke County Highways Head Office	5012	122	£5.88	15
Burton Farm Household Waste Recycling Centre	4235	198	£17.30	9
Bulkington Community Library	1077	101	£2.16	5
Camp Hill Education Sports & Social (CHESS)	1287	144	£5.88	38
Centenary Business Centre	1097	173	£11.94	127
Cherry Orchard Household Waste Recycling Centre	5043	439	£39.21	4
Coleshill Fire Station	2080	259	£8.71	48
Coleshill Library & Information Centre	2224	279	£11.04	12
Coleshill Motorway/Divisional Highways Depot	2098	79	£6.75	39
County Museum (Market Hall)	5248	246	£9.46	41
County Record Office	5252	132	£5.43	41
Dunchurch Highways Sub-Depot	3037	32	£1.64	14
Eliot Park Innovation Centre	1270	192	£12.54	176
Fawsley House	3148	148	£5.34	39
Fenny Compton Fire Station	4074	131	£11.27	5
Fire & Rescue Service Headquarters	5124	238	£9.23	176
Former Judges House	5190	296	£10.44	56
Former Parkfield Centre (Extra Care Housing)	5341	88	£7.41	2
Freeway Centre - WEST Local Provider Services	1147	1	£0.09	0
Globe House	4004	162	£7.35	20
Hammond Business Centre	1095	4	£0.36	1
Hartshill Hayes Country Park	2129	76	£6.01	2

Hatters Space Community Centre	1157	180	£6.68	33
Hawke's Point	5417	76	£2.56	78
Henley-In-Arden Fire Station	4097	164	£4.40	18
Henley-In-Arden Highways Sub-Depot	4099	112	£9.27	17
Holly Walk House	5136	112	£4.24	18
Hunters Lane Household Waste Recycling Centre	3119	123	£2.16	5
Kenilworth Fire Station	5058	312	£10.66	16
Kenilworth Library & Information Centre	5042	76	£1.52	13
Kings House	1242	198	£8.10	115
Kingsbury Water Park	2143	57	£4.57	27
Kingsbury Water Park Outdoor Education Centre	2232	27	£2.27	2
Leamington Household Waste Recycling Centre	5111	50	£5.12	9
Leamington STEPS - 43 Rugby Road	5106	102	£3.62	3
Lillington Community and Children`s Centre	5389	42	£3.50	6
Lillington Library & Information Centre	5110	99	£3.72	9
Lillington Youth Club	5105	177	£4.90	18
Lower House Farm Household Waste Recycling Centre	2233	23	£1.87	15
Marle Hall Outdoor Education Centre	6002	192	£7.16	71
Myton Park Centre	5268	280	£8.87	64
Myton Sports Ground and Pavillion	5182	56	£4.75	3
Northgate House Conference Centre	5196	219	£13.89	49
Nuneaton Fire Station	1184	325	£8.89	111
Nuneaton Gypsy Caravan Site	1165	10	£0.76	2
Nuneaton Library & Information Centre	1161	104	£2.63	29
Nuneaton Training Centre	1128	31	£2.62	2
Oakfield Park	3243	99	£4.87	27
Office Building 1 Saltisford Business Park	5384-1	160	£9.18	72
Office Building 2 Saltisford Business Park	5384-2	118	£6.72	40
Office Building 3 Saltisford Business Park	5384-3	137	£8.63	132
Polesworth Fire Station	2171	260	£9.11	13
Polesworth Library & Information Centre	2168	153	£13.09	7
Pooley Country Park	2214	97	£8.09	6
Premises At Montague Road	5199	172	£3.35	215
Priory Bungalow	5254	513	£12.29	7
Priory House	5253	63	£2.06	3
Rugby Fire Station	3144	239	£7.65	62
Rugby Register Office	3261	371	£10.11	11
Ryton Pools Country Park	3205	107	£9.04	17
Shipston on Stour Library & Information Centre	4194	104	£4.57	4
Shipston-On-Stour Fire Station	4199	212	£7.33	10

Shipston-On-Stour Highways Sub-Depot / Household	4204	39	£3.52	6
Shire Hall Complex	5187	210	£10.16	637
Sir Frank Whittle Business Centre	3260	62	£2.20	32
Site for Extra Care Homes [Former Manor Park 1127]	1322	4	£0.41	5
Southam Fire Station	4185	132	£11.33	5
St John`s House Museum	5247	131	£4.27	34
Stockton Household Waste Facility	4208	253	£20.30	2
Stratford Upon Avon The Greenway	4130	5	£0.71	0
Stratford-Upon-Avon Fire Station	4245	270	£9.35	43
Stratford-Upon-Avon Library & Information Centre	4234	167	£5.48	39
The Arden Centre	2239	189	£7.76	16
The Benn Education Centre	3109	215	£3.55	32
The Bridge	3152	168	£4.92	12
The Emscote Centre	5264	217	£5.71	39
The Hilary Road Centre	1188	199	£7.56	43
The Old Clink	5245	131	£4.50	9
The Pound Lane Former Teaching & Learning Centre	5097	143	£4.98	39
The Ratcliffe Youth & Community Centre	2017	222	£6.97	10
The Saltway Centre & Stratford Family Centre	4255	263	£9.23	37
The Shortwoods Frmr CSS Centre (Extra Care Hsg)	2109	7	£0.53	2
Trading Standards Headquarters	5010	242	£10.67	67
Unit 5, 1 - 3 Upton Road	3288	54	£3.01	3
Warwickshire Fire & Rescue Service Training Centre	1037	236	£9.50	30
Wellesbourne C F M Workshops	4309	199	£3.60	28
Wellesbourne Divisional Highways Depot	4308	358	£19.80	34
Wellesbourne Fire Station	4367	236	£7.44	15
Wellesbourne Library & Information Centre	4305	133	£4.43	6
Whitnash Library & Information Centre	5293	104	£8.58	6
Wolston Library & Information Centre	3225	103	£9.17	4

Name	UPRN	kWh/ m2	wgt'd Av £/m2	Total CO2 (tonnes)

Appendix 2: List of investigations

The following sites will need to be investigated further:

Gas Investigation
Priory Bungalow [5254]
Rugby Register Office [3261]
Nuneaton Fire Station [1184]
Kenilworth Fire Station [5058]
Electricity Investigation
Cherry Orchard Household Waste Recycling Centre [5043]
Stockton Household Waste Facility [4208]
Burton Farm Household Waste Recycling Centre [4235]
Wellesbourne Divisional Highways Depot [4308]
Coleshill Library [2224]
£/m^2 Investigation
Cherry Orchard Household Waste Recycling Centre [5043]
Stockton Household Waste Facility [4208]
Wellesbourne Divisional Highways Depot [4308]
Burton Farm Household Waste Recycling Centre [4235]
Northgate House Conference Centre [5196]

Comments on Sites Identified for Further Investigations

Gas - Priory Bungalow [5254]

- **General** - The Conservation Unit, Priory Bungalow, is a grade II listed building. It is a separate historic building forming part of the County Records Office complex. The Bungalow is a series of rooms that probably date back to the Tudor period, but much altered internally over the years. The bungalow consists of six rooms. The building is cold in winter and generally in a poor condition - including the windows and external brickwork (cracked and some mortar missing).
- **Heating** – unique archives are kept in the building and the heating is run at around 18 degrees centigrade constantly. A valve on one of the radiators was stuck at high in October 2019 - this was resolved. In November 2019 the heating timer was faulty. A pilot project looking a fine control of heating, cooling and humidity has improved performance considerably.
- **Glazing** – Most of the windows are leaded, single glazed with old rippled and sometimes cracked glass with stone mullions and transoms (Mullions are vertical elements; transoms lie horizontally). The draughty windows can let in dust, ants, bees and wasps in summer and the cold air in winter. Mending and draught stripping windows and doors where possible would improve their thermal performance.
- **Building fabric –** a mixture of natural stone and brickwork with no evidence of any internal or external wall insulation. There may be no insulation in the loft. Introducing or improving loft insulation for both flat and pitched roof areas should be considered. Any damaged or missing roof tiles should be replaced – if light can be seen in the roof space, cold air will be getting in.
- **Drainage** – some of the guttering has been in poor condition – more heat is lost through a wall that is damp due to leaking gutters. Preventing draughts and dealing with causes of any damp should always be the first steps towards making buildings more efficient.

Gas - Rugby Register Office [3261]

- **General** - the building is generally in a poor condition with external brickwork missing mortar and damp.
- **Heating** – the building is not linked to the WCC Building Energy Management System. In 17/18 thermostats were replaced and the timer was reported as faulty. The thermostat was changed from 25 degrees centigrade to 20 degrees centigrade. Staff on site advised that although the extension timer in the marriage room worked the heat in the remaining part of the building cannot be controlled separately. A data logger was removed from the gas heating system in May 2019 with instructions that the data be provided to the Building Surveyor. The time clock was adjusted to the correct time and the faulty extension timer replaced. It had been stuck in the 'On' position, forcing the heating to be on 24 hours a day. In the 2017 condition survey the boiler was noted as D2 'life expired'.
- **Glazing** – the window to the ceremony room was replaced in 16/17.
- **Building Fabric** - a roof leak was reported and attended to in June. Projects to attend to the damp-proof course and to replace doors and windows were raised in (2017/2018). It is not known if these have been completed.

Gas - Nuneaton Fire Station [1184]

- **General** - this is a whole-time station which housed a community group - this will generally lead to a high energy usage.
- **Heating** - Internal audit in 2019 revealed poor behaviour (mainly from the community group) with external doors to eternal areas left open. Sept 2019 – the heating was repaired in garage which would increase gas consumption.
- **Building Fabric** - Continued problems with appliance bay doors (several orders over this period) Noted as being locked at fully open in Feb 2020.

Gas - Kenilworth Fire Station [5058]

- **General** - although a retained station the building is often occupied daily.
- **Heating -** Order raised to repair bay door (June 2019) but it is unknown if the heating was on.
- **Building Fabric** – there is some concern regarding the condition of brickwork and timber - but nothing of serious note.
- **Environmental Management** – this has been added to the internal audit programme for further investigation.

Electric / £/sqm - Cherry Orchard HWRC [5043], Stockton HWRC, [4208] Burton Farm HWRC [4235]

- **Heating -** Small offices used by HWRC staff who would be dressed for cold conditions when heating is required. There is the tendency not to shut doors due to constant traffic/use in and out of the building. The heating may be left on all week in part time sites which would be a fire risk.

Electric / £/sqm - Wellesbourne Divisional Highways Depot [4308]

- **General** - the Age UK re-use shop is also on this site. Refurbishment external repairs were undertaken to the Age UK part of the site in 2019. The buildings are generally 'unloved' and would require large investment to make them energy efficient.
- **Heating** – The re-use shop has the door open which appears to be custom and practice on most sites. Buildings are single skinned.
- **Environmental Management** – a nonconformity regarding energy was raised in 2019. In one of the welfare facilities rooms for contractors the electric heating had been turned up full and left on although no workers were on site – the temperature in the room was excessively hot. It is not unusual to find the doors to Balfour Beatty's welfare accommodation left open. This had been chased with both the Highways Contract Manager and Balfour management. FM have now equipped all welfare facilities doors with automatic closers which should help to overcome this issue.

Electric – Coleshill Library [2224]

- No investigations undertaken at the time of writing this report.

£/sqm- Northgate House [5196]-

- **Heating** – the heating and / or cooling are on constantly – there is no dead band, it would be useful to investigate solutions. Room 3 is very damp requiring excessive heating.
- **Glazing** -the windows are old and single glazed.
- **Building Fabric** – there are reports of damp throughout various parts of the building. The external brickwork is poor in some areas.
- **Lighting** – it would be useful to investigate the potential for more efficient lighting in the restaurant area.
- **Catering** – the building includes a commercial kitchen and a staff restaurant which would contribute to high energy usage.

Appendix 3 - WCC Corporate Property Display Energy Certificate Profile

Site Name	Site Code	Category
Bedworth Library & Information Centre	1033	D
Warwickshire Fire & Rescue Training & Dev. Centre	1037	E
Bedworth Fire Station	1050	C
Stockingford Early Years Centre & Library (Maintd)	1122	C
Nuneaton Academy	1137	E
Hatters Space Community Centre	1157	E
Nuneaton Library & Information Centre	1161	B
The Hilary Road Centre	1188	C
Ramsden Complex Needs Centre	1198	F
Kings House	1242	D
Camp Hill Education Sports & Social (CHESS)	1287	D
Atherstone Library & Information Centre	2027	C
Coleshill Fire Station	2080	C
Kingsbury Outdoor Learning Centre	2232	C
The Arden Centre	2239	C
Fawsley House	3148	C
The Bridge	3152	C
Oakfield Park	3243	C
Globe House	4004	D
Alcester Academy	4006	D
Henley-In-Arden Fire Station	4097	B
Stratford-Upon-Avon Library & Information Centre	4234	C
Stratford-Upon-Avon Fire Station	4245	C
The Saltway Centre & Stratford Family Centre	4255	D
Winton House	4389	C
Trading Standards Headquarters	5010	E
Kenilworth Library & Information Centre	5042	C
Pound Lane Training Centre	5097	D
The Fordsfield Complex Needs Centre	5103	E
Lillington Library & Information Centre	5110	D
Holly Walk House	5136	C
Shire Hall Complex	5187	D
Northgate House Conference Centre	5196	E
St John`s House Museum	5247	B
County Museum (Market Hall)	5248	D
County Record Office	5252	C
Myton Park Centre	5268	C
Whitnash Library & Information Centre	5293	C
Saltisford Office Park 1	5384	D
Saltisford Office Park 2	5384	C
Saltisford Office Park 3	5384	D

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

- 2018/19 Building Energy Consumption & Emissions Review
- 2017/18 Building Energy Consumption Review
- 2016/17 Building Energy Consumption Review
- 2015/16 Building Energy Consumption Review
- 2014/15 Building Energy Consumption Review

Direct access to the last report from the link:
https://apps.warwickshire.gov.uk/api/documents/WCCC-599-80

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

Warwickshire Switch and Save
https://www.warwickshire.gov.uk/switchandsave