



The University of
Nottingham

UNITED KINGDOM · CHINA · MALAYSIA



Annual Energy Report 2015/16

<http://www.nottingham.ac.uk/sustainability>



2015/16 Energy Report

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Executive Summary

Almost all indicators were positive this year, with both cost and energy use reductions achieved. Of particular note was the reduction in electricity use of 3.4% - reversing the usual trend of modest rises each year.

The additional cost reductions of £370,000 delivered this year mean that energy and water costs have been reduced by almost a million pounds over the last two years

Contained within the figures are some significant deviations from last year; firstly a significant fall in steam used for cooling at the Medical School was seen as the investment in high-efficiency electric chillers paid off. Secondly the increase in gas usage at Sutton Bonington was expected due to the introduction of the new CHP units – this resulted in reductions in imported electricity

Key statistics:-

Energy and water costs, excluding taxes, fell 3% to £10.7 million in 2015/16

Energy consumption was down by 1.7%, with gas down 0.6% and electricity down an impressive 3.4%.

Water usage decreased marginally to 859,124 cubic metres.

Other observations:-

Utility costs/m² down 7.5% to £18.62

Energy consumption/m² down 3.0% to 311kWh/m²

Energy costs/student down 6.9% to £358

Energy consumption/student down 2.4% to 5,968kWh

External factors:-

The University continues to grow and floor area rose by 1.4% in '15/16 compared to '14/15. The weather was milder, and indicated a decrease in gas usage of 4.6% in a like for like situation (see section 3.A on P.19).

The University has published an annual report showing trends in our energy and water usage every year since 1998. With the increasing attention on carbon emissions, some elements of this report have now been subsumed within the University's Carbon Management Plan (CMP) Annual Report 2015/16 which has been published and is available on the University's website¹. However, we will continue to produce the Energy and Water Report to allow direct comparison on the key areas of utility consumption and costs with earlier years.

Note that most figures relate to the University's financial year of August 1st 2015 to July 31st 2016, with the baseline for comparison being the previous (2014/15) financial year. Utilities continue to be procured via Notice Ltd, which is a wholly owned subsidiary of the University of Nottingham.

¹www.nottingham.ac.uk/sustainability

Section 1 – Total Energy Report

1.A. - Energy and Water Costs Summary

Overall energy and water costs reduced by 3% to £10.7 million from '14/15. This was principally down to continuing falls in gas prices in the first half of the year, combined with reductions in both gas and electricity consumption.

The overall savings of around £400,000 came principally from the sites where capital investments were made through our carbon reduction plan. These were a Combined Heat and Power (CHP) plant at Sutton Bonington, and new high-efficiency chillers plus controls at the Medical School.

Section 1.K shows that our energy costs per kWh continue to be the lowest in the Russell Group (2014/15 data).

Energy and Water Costs				Change
	2013/14	2014/15	2015/16	'14/15 to '15/16
University Park	£ 5,995,749	£ 5,865,817	£ 5,886,335	0%
Sutton Bonington	£ 1,765,681	£ 1,823,916	£ 1,647,709	-10%
Jubilee Campus	£ 1,131,350	£ 1,133,034	£ 1,135,665	0%
Others	£ 672,626	£ 651,144	£ 657,604	1%
Medical School	£ 2,098,000	£ 1,609,500	£ 1,382,354	-14%
Total	£ 11,663,406	£11,083,411	£10,709,666	-3%

Figure 1.A.1 Table of energy and water costs for last 3 years split by campus.

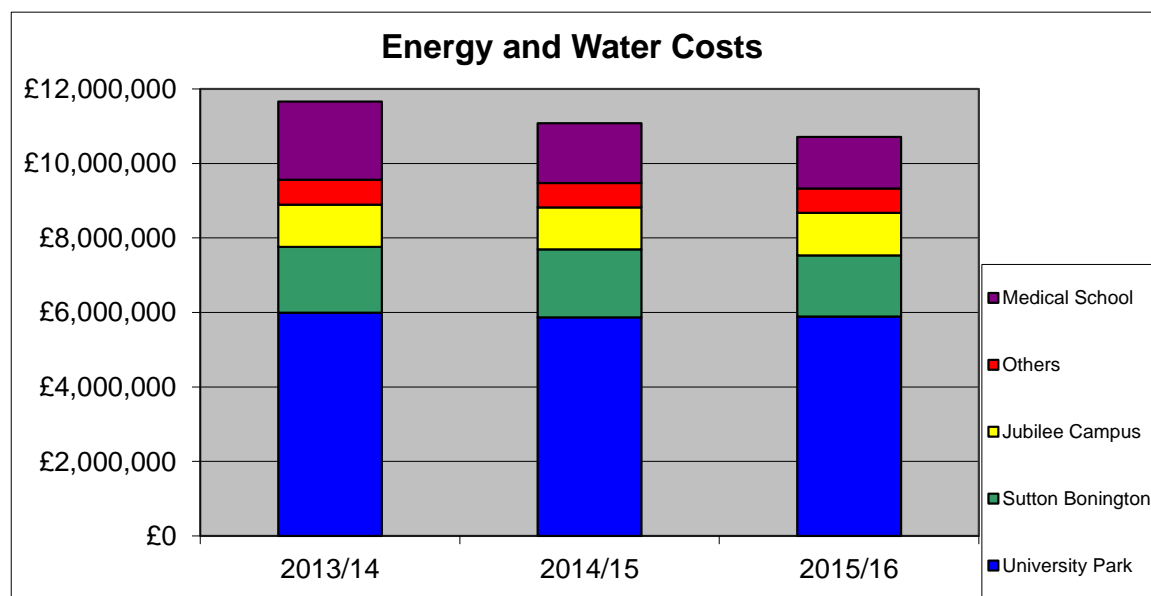


Figure 1.A.2 Graph of net energy and water costs for the last 3 years split by campus.

Note that these figures exclude VAT and Climate Change Levy, which are discussed on page 4.

1.B. – Utility costs per square metre for each Campus

Campus Costs	Floor Area	Cost/sq.m/annum			
		Electricity	Heating	Water	Total
University Park	336,034	£11.35	£3.61	£2.56	£17.52
Sutton Bonington	77,293	£11.15	£5.30	£4.86	£21.32
Jubilee Campus	80,255	£9.28	£2.34	£2.53	£14.15
Others	70,830	£5.69	£2.35	£1.24	£9.28
Medical School	77,644	£7.92	£8.61	£1.28	£17.80
Total	642,056	£10.03	£4.12	£2.53	£16.68

Figure 1.B.1 Table of energy costs per square metre, split by campus.

The overall floor area increased by 1.4% from 2014/15. Note that the Medical School costs were £27.77/square metre in 2012/13, meaning that we have seen a reduction of £10/square metre over the three years.

Note that if taxes (VAT and CCL, see below) are taken into account, our average utility costs are now £18.62 per square metre per annum, down 7.5% from '14/15.

1.C - Climate Change Levy (CCL) and VAT

VAT costs paid by Notice Ltd on energy bills reduced significantly to £0.96 million in 2015/16, and CCL also reduced to £288,000, meaning that our energy taxes were down by 25% year on year as a result of falling costs and consumption.

The Climate Change Levy (CCL) was introduced in April 2001. On April 1st 2016 the rates rose 1.04% to 0.195p/kWh on gas and 0.9% to 0.559p/kWh on the electricity costs of all non-residential properties.

If the taxes were included in the total expenditure on utilities the totals can be seen below:-

	2015/16				2014/15	%
	Electricity	Fossil Fuels	Water	Totals	Totals	Diff
Utility Costs	£ 6,437,971	£ 2,644,252	£ 1,627,443	£10,709,666	£11,083,411	-3.4%
Climate Change Levy	£ 211,013	£ 77,425	-	£ 288,438	£360,721	-20.0%
Value Added Tax	£ 690,908	£ 266,435	-	£ 957,343	£1,305,219	-26.7%
Total	£ 7,339,892	£ 2,988,113	£ 1,627,443	£11,955,448	£12,749,351	-6.2%

Figure 1.C.1 Table of energy and water costs including Climate Change Levy and Value Added Tax.

1.D - 2015/2016 Net Costs Broken Down by Campus and Utilities

Energy and Water Costs				
2015/16	Electricity	Fossil Fuels	Water	Total
University Park	£ 3,813,419	£ 1,211,403	£ 861,513	£ 5,886,335
Sutton Bonington	£ 861,973	£ 409,787	£ 375,948	£ 1,647,709
Jubilee Campus	£ 744,672	£ 188,003	£ 202,990	£ 1,135,665
Others	£ 403,326	£ 166,642	£ 87,636	£ 657,604
Medical School	£ 614,580	£ 668,417	£ 99,357	£ 1,382,354
Total	£ 6,437,971	£ 2,644,252	£ 1,627,443	£ 10,709,666

Figure 1.D.1 Table of energy and water costs split by campus and by utility

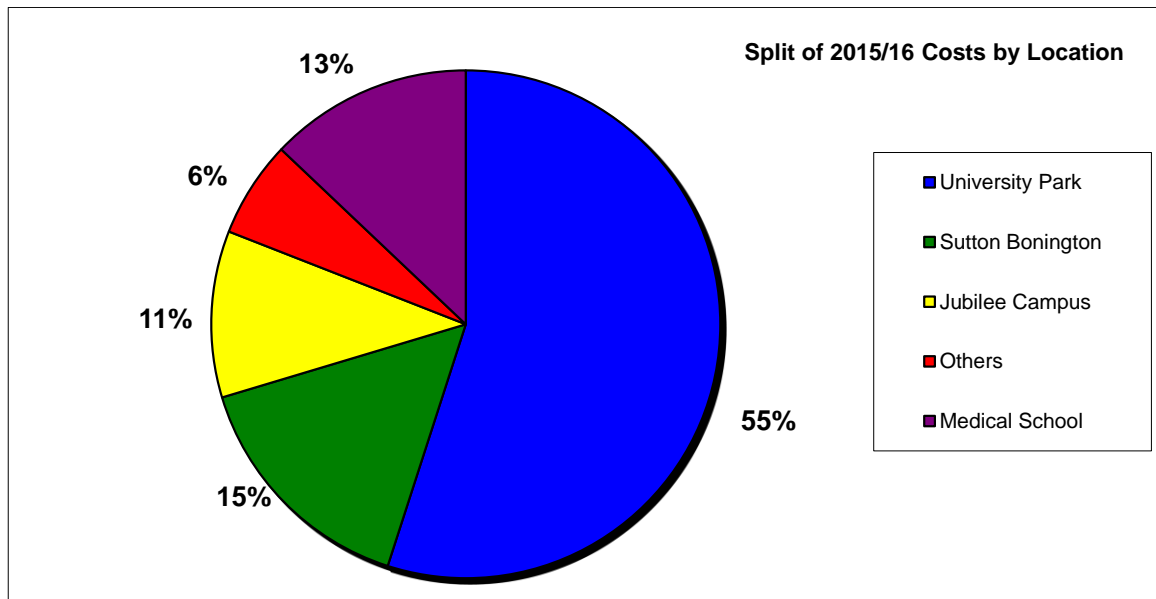


Figure 1.D.2 Chart of energy and water costs split by campus

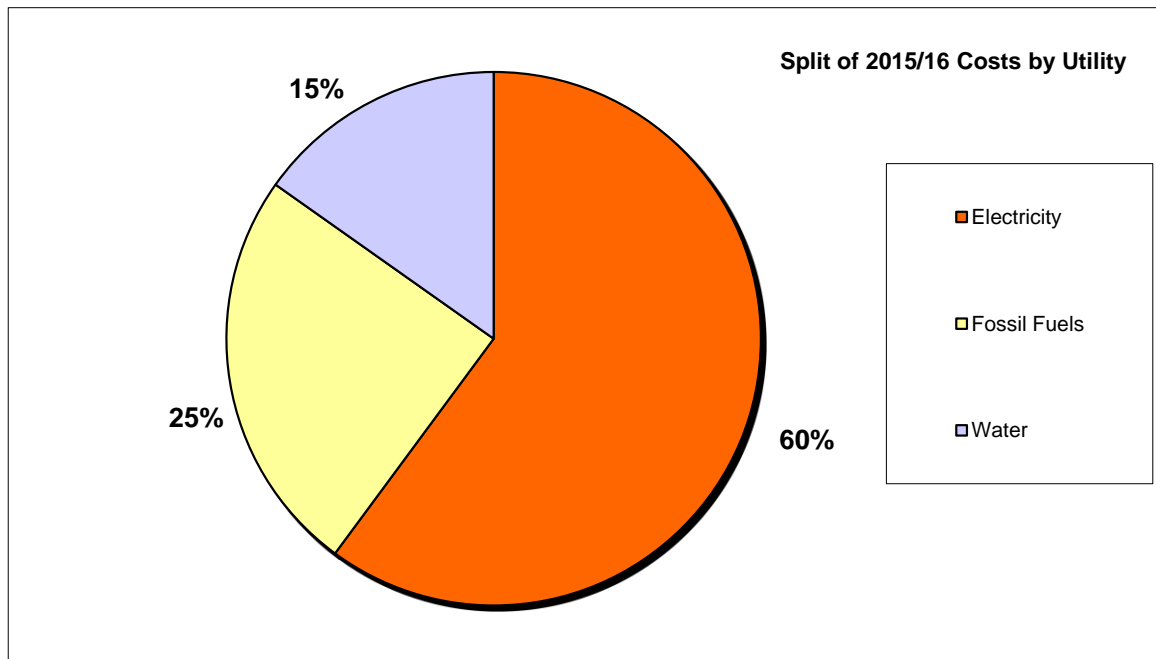


Figure 1.D.3 Chart of energy and water costs split by utility type

1.E - Energy Use Summary

Energy consumption, i.e. the total of gas and electricity, decreased by 1.7% year on year even though floor area was up by 1.4% and student numbers by 0.7%.

Electricity usage was down by an impressive 3.4%, but gas consumption was down by only 0.6%, when the weather *should* have caused a decrease of 4.6%.

The stand-out performance was achieved at the Medical School where capital projects have begun to show significant returns on investment. These have included new high-efficiency chillers, reduction of air infiltration to the voids, and fabric measures such as double glazing.

Energy Consumption	MWh	MWh	MWh	Change
	2013/14	2014/15	2015/16	'14/15 to '15/16
University Park	102,959	105,667	108,945	3.1%
Sutton Bonington	31,205	32,294	32,292	0.0%
Jubilee Campus	16,165	16,917	17,143	1.3%
Others	12,420	12,834	12,933	0.8%
Medical School	34,987	35,289	28,221	-20.0%
Total	197,736	203,001	199,535	-1.7%

Figure 1.E.1 Table of energy usage for the last 3 years split by campus.

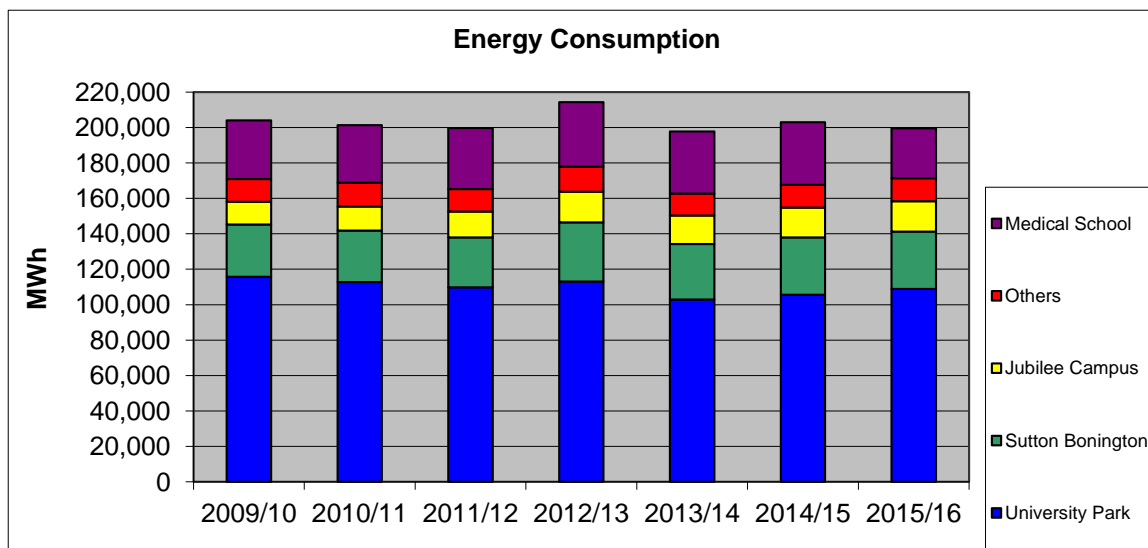


Figure 1.E.2 Graph of energy consumption for the last 7 years split by campus

1.F - Energy Use Breakdown by Campus and Utilities

Energy Consumption 2015/2016	MWh	MWh	MWh
	Electricity	Fossil Fuels	Total
University Park	46,127	62,819	108,945
Sutton Bonington	10,099	22,192	32,292
Jubilee Campus	8,544	8,599	17,143
Others	4,583	8,350	12,933
Medical School	9,988	18,233	28,221
Total	79,342	120,193	199,535

Figure 1.F.1 Table of energy consumption split by campus and by utility

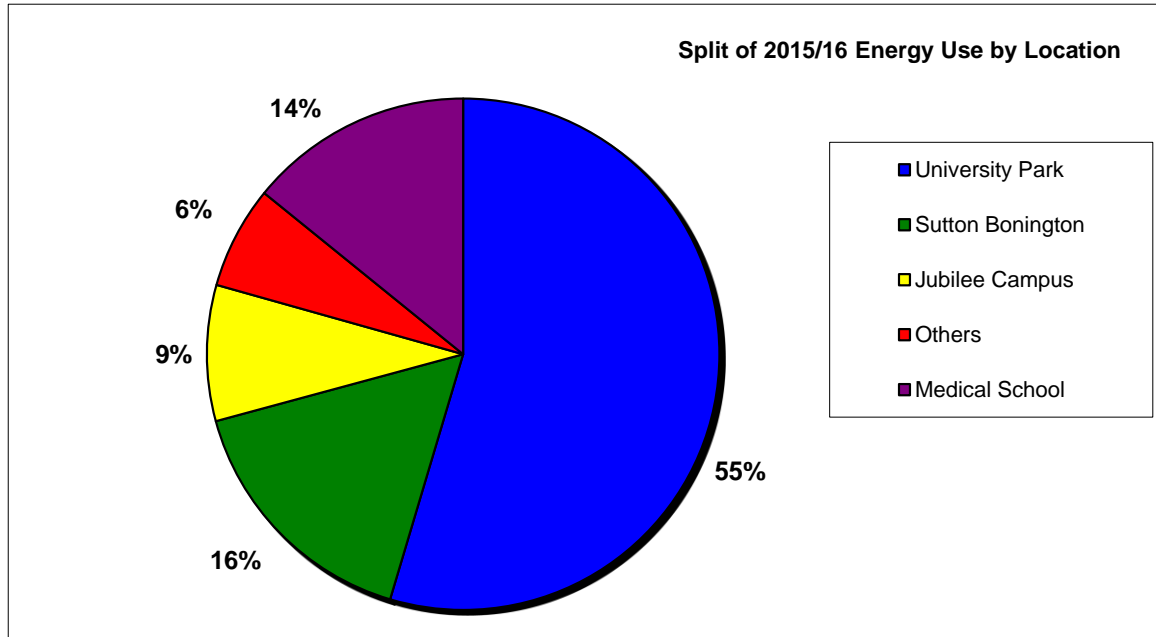


Figure 1.F.2 Pie chart of energy consumption split by campus

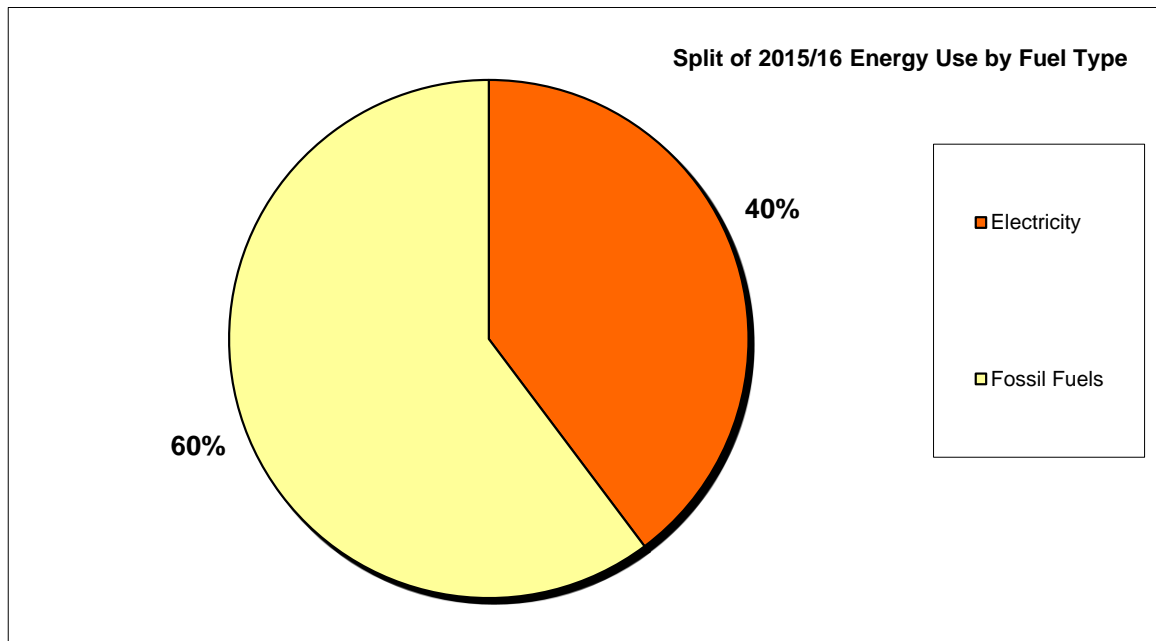


Figure 1.F.3 Pie chart of energy consumption split by utility type.

1.G - Energy Usage and Cost Comparison with Gross Premises Area

	2012/13	2013/14	2014/15	2015/16	Change
Floor Area (sq.m.)	626,560	629,510	633,307	642,056	1.4%
Annual Energy Usage (MWh)	214,315	197,736	203,001	199,535	-1.7%
Energy Usage Per sq. m. (kWh/m2)	342	314	321	311	-3.0%

Figure 1.G.1 Table of last four years energy usage and floor area.

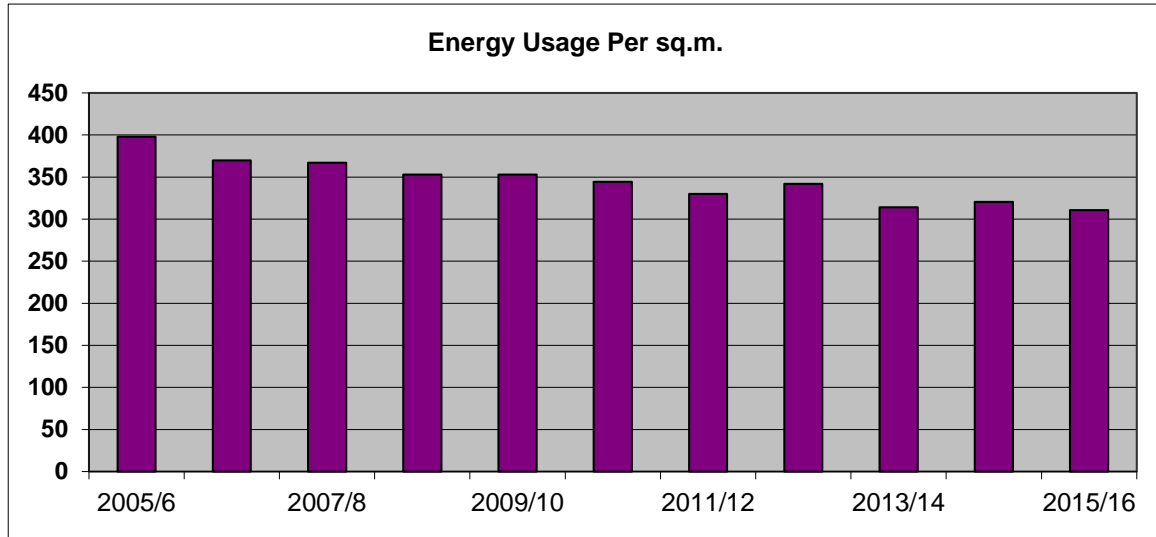


Figure 1.G.2 Graph of energy usage per unit floor area since 2005/6.

	2012/13	2013/14	2014/15	2015/16	Change
Floor Area (sq.m.)	626,560	629,510	633,307	642,056	1.4%
Gross Energy and Water Costs	£13,661,000	£13,354,000	£12,749,351	£11,955,448	-6.2%
Utility Cost Per sq. m.	£ 21.80	£ 21.21	£ 20.13	£ 18.62	-7.5%

Figure 1.G.3 Table of last four year gross energy and water costs and floor area (excluding taxes).

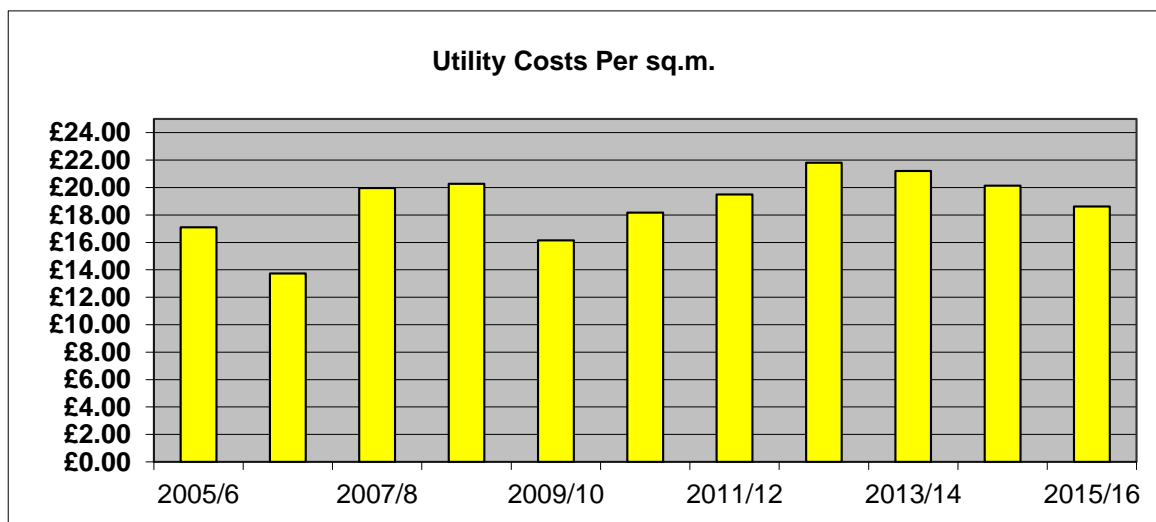


Figure 1.G.4 Graph of energy and water costs normalised by floor area since 2005/6.

Note that the figures here are for all University floor space, including research, commercial, the hotel and conference centres.

1.H - Energy Usage and Cost per UK Student

	2012/13	2013/14	2014/15	2015/16	Change
UK Student Numbers	33,944	33,369	33,197	33,435	0.7%
Annual Energy (MWh)	214,315	197,736	203,001	199,535	-1.7%
Energy / Student (kWh)	6,314	5,926	6,115	5,968	-2.4%

Figure 1.H.1 Table of last four years energy usage and all student numbers.

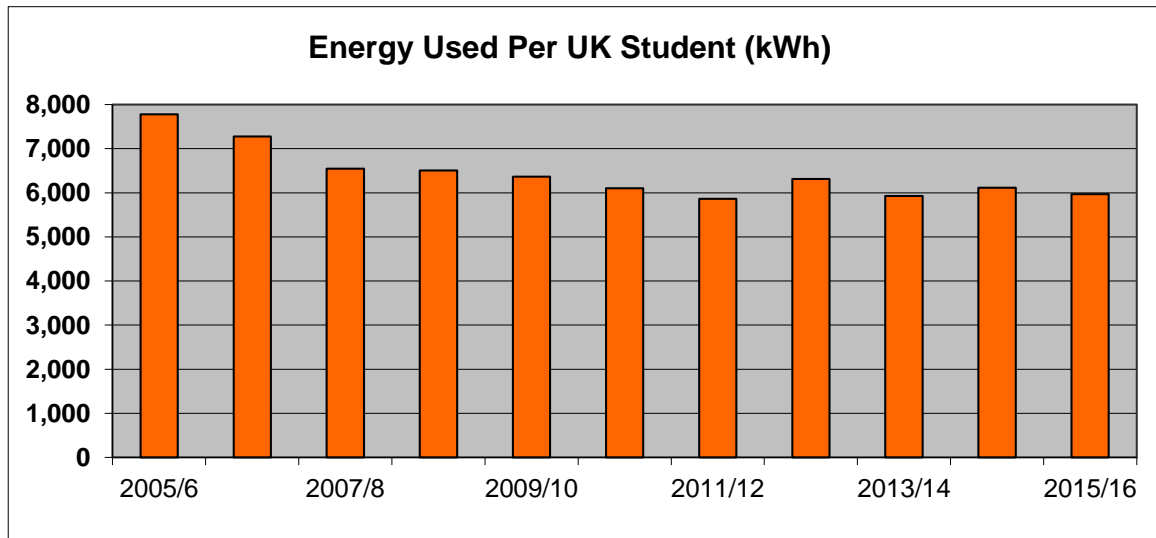


Figure 1.H.2 Graph of energy usage per UK student since 2005/6.

	2012/13	2013/14	2014/15	2015/16	Change
UK Student Numbers	33,944	33,369	33,197	33,435	0.7%
Energy and Water Costs	£13,661,000	£13,354,000	£12,749,351	£11,955,448	-6.2%
Utility Costs / Student	£ 402.46	£ 400.19	£ 384.05	£ 357.57	-6.9%

Figure 1.H.3 Table of last four years gross energy and water costs and full-time student numbers.

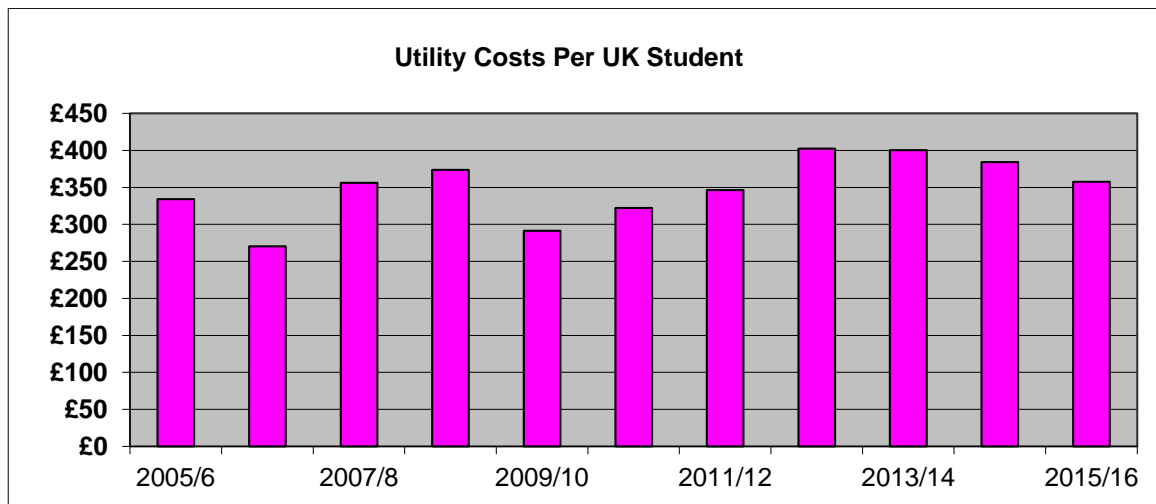


Figure 1.H.4 Graph of gross energy and water costs per UK student since 2005/6.

Note: The statistics on student numbers exclude students not currently studying in Nottingham.

1.I - Utility Costs as a Proportion of University Expenditure

%age of Expenditure (£ 000)	2012/13	2013/14	2014/15	2015/16	Change
Utility Costs inc. taxes	£ 13,661	£ 13,354	£ 12,749	£ 11,955	-6.2%
University Expenditure	£ 539,400	£ 545,900	£ 566,900	£ 566,900	0.0%
Percentage	2.53%	2.45%	2.25%	2.11%	-6.2%

Figure 1.I.1 Table of last four years gross energy and water costs (including taxes) and total University expenditure.

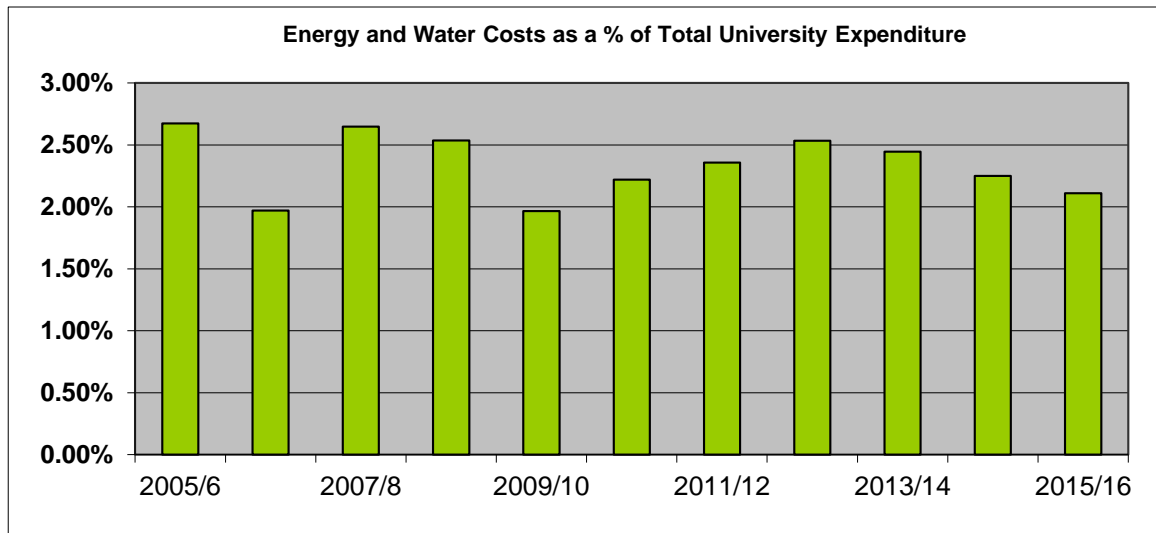


Figure 1.I.2 Graph gross energy and water costs normalised by total University turnover since 2005/6.

1.J – The Carbon Reduction Commitment Energy Efficiency Scheme

Costs from the CRC Energy Efficiency Scheme are not included in the other figures in this report, because the scheme operates on an April to March year, costs are not levied on utility bills, and the Scheme operates on a slightly different subset of properties. However, the results of the fifth full year of the scheme (April 2015 to March 2015) are listed below.

Under the Scheme, our emissions were reported as 52,177 Tonnes of CO₂ (down 4.1% from 54,434 in the previous year). Each tonne of CO₂ emitted needs to be covered by an 'allowance', which costs £16.10 if pre-ordered or £17.20 if bought to comply. 135,000 allowances were pre-ordered in June 2016 at a cost of £2,173,500 in order to cover the majority of our emissions out to the scheme's end in 2018/19.

Note that the cost of 52,177 allowances (£840,050), averaged out across our total energy consumption, equates to 0.421p/kWh.

1.K – Energy Costs Comparison to Russell Group Universities – 2014/15

The statistics in the next four tables provide a range of comparators to other major Universities, as reported in the HESA Estate Management Return for 2014/15. Note that this is the most recent year where data is available for comparison, but runs one year behind the other information presented in this report.

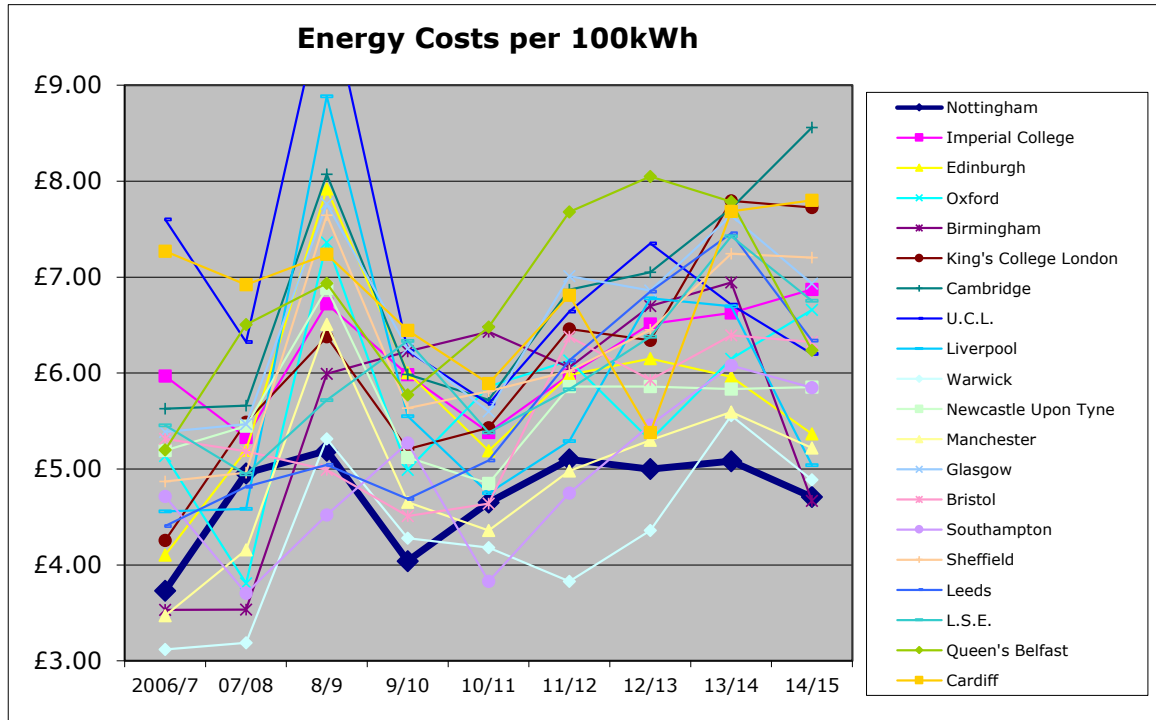


Figure 1.K.1 Graph of Russell Group Energy Costs per 100kWh.

The graph above indicates that our energy prices are still very competitive, and the graph below shows our costs per square metre remain low.

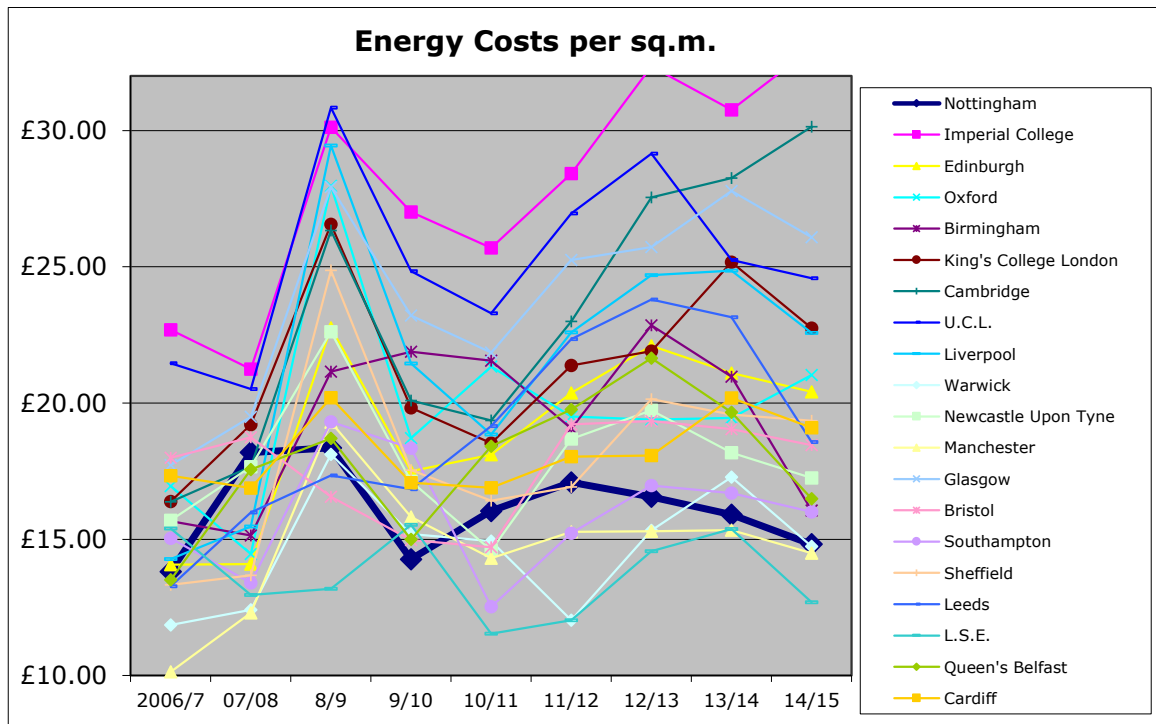


Figure 1.K.2 Graph of Russell Group Energy Costs square metre

1.L – Energy Efficiency Comparison to Russell Group Universities – 2014/15

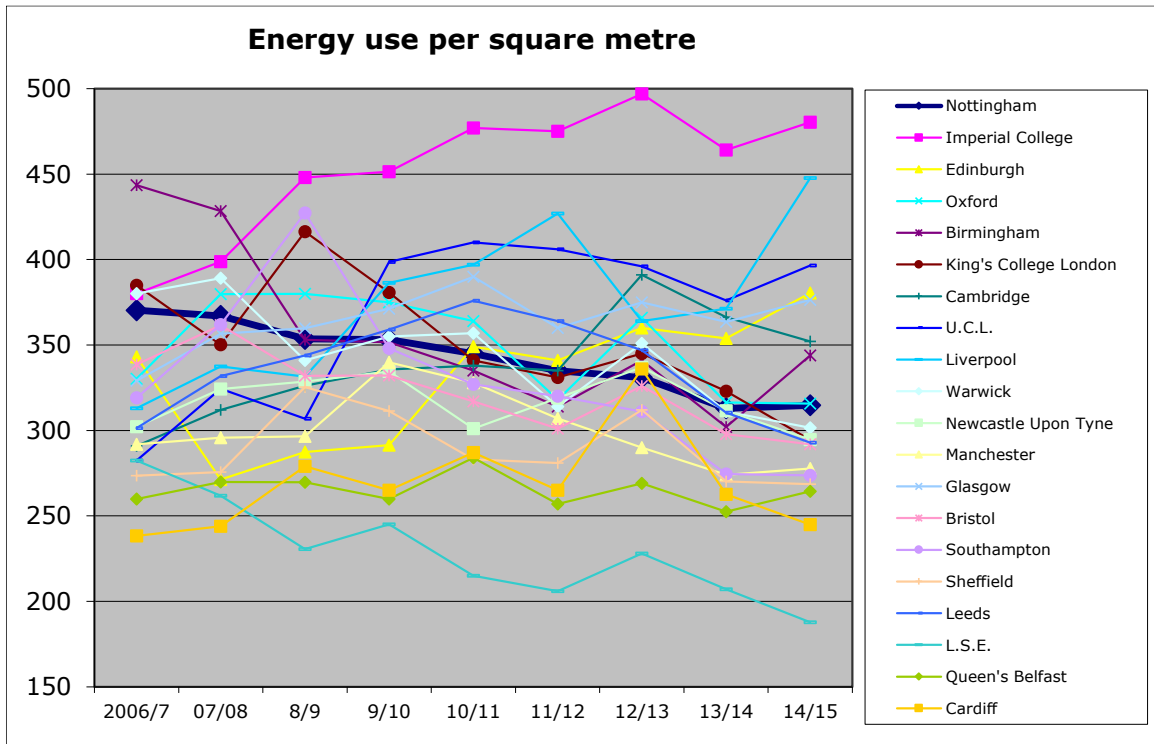


Figure 1.L.1 Graph of Russell Group Energy use per square metre.

The graphs on this page indicate that Nottingham's energy consumption per square metre and energy use per student are better than average within the Russell Group.

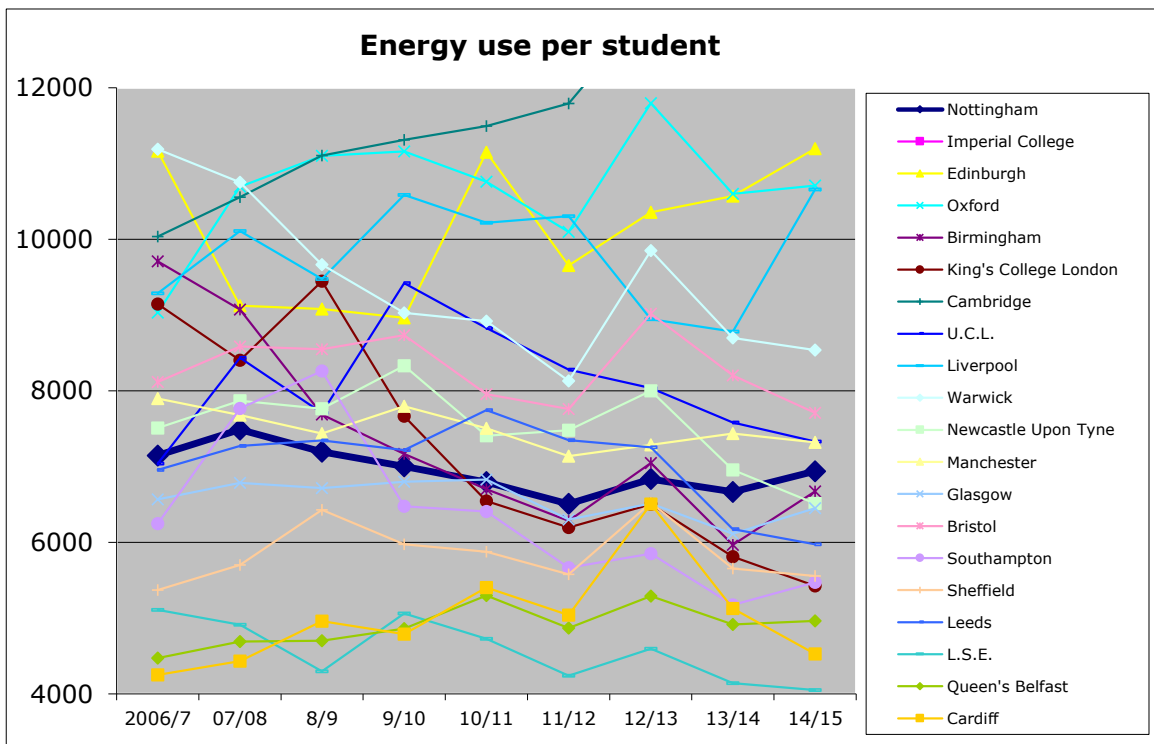


Figure 1.L.1 Graph of Russell Group Energy use per student (note Imperial is off the top of the scale at around 16,000kWh/student).

Section 2 – Electricity, Gas and Water data

2.A - Electricity Consumption

Encouragingly, electricity consumption was down 3.4%, despite the size of the estate increasing by 1.4%. This was predominantly due to the introduction of two new CHP electricity generating units at Sutton Bonington. These 'combined heat and power' units burn gas to produce electricity, and have also helped reduce our emissions of carbon dioxide.

Additionally the performance at the Medical School was impressive given that new electrically-driven chillers have been added to the site. Savings made elsewhere such as on pumping energy to the now decommissioned cooling towers have more than offset the expected increase.

Electricity Consumption	MWh	MWh	MWh	Change
	2013/14	2014/15	2015/16	'14/15 to '15/16
University Park	46,041	46,102	46,127	0.1%
Sutton Bonington	13,280	13,251	10,099	-23.8%
Jubilee Campus	8,118	8,316	8,544	2.7%
Others	4,640	4,480	4,583	2.3%
Medical School	9,624	9,994	9,988	-0.1%
Total	81,704	82,143	79,342	-3.4%

Figure 2.A.1 Table of electricity usage for the last 3 years split by campus.

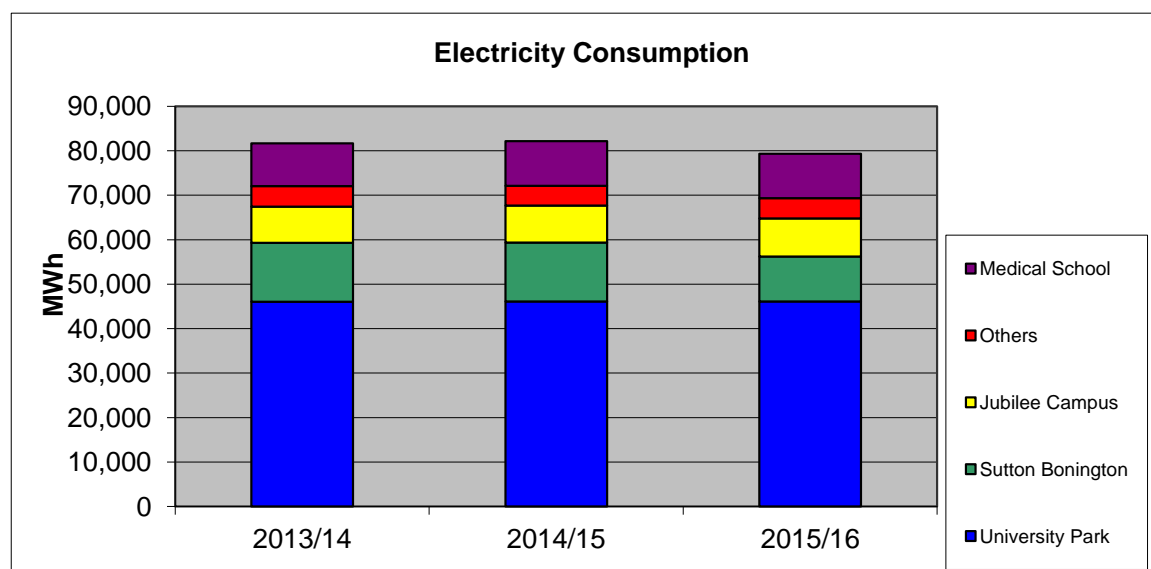


Figure 2.A.2 Graph of electricity usage for the last 3 years split by campus.

See Appendix A for a detailed breakdown of consumption on an account by account basis.

2.B - Electricity Costs

Annual baseload electricity prices went on another roller coaster ride, falling from £43/MWh in August 2015 to about £34/MWh by January 2016 before rising steadily back up to £44/MWh in July 2016. Note that these prices are historically rather low for electrical energy, equating to 4.3p/kWh, 3.4p/kWh, and 4.4p/kWh respectively. Actual delivered energy prices – including standing charges – were 8.3p/kWh, meaning that only half of the bill is now energy related.

What has changed significantly over the last few years is the rise in standing charges. For example the Renewables Obligation charge now accounts for 1.558p/kWh or £1.24 million in additional charges, and the feed in tariff charge is now at 0.631p/kWh (£0.50 million overall costs).

We are currently in the final year of a three-year flexible framework contract with Engie for the larger sites, which ends in March 2017, and will procure a new framework contract thereafter.

The University's 'sub-100kW' sites (representing the smaller properties) was retendered in January 2016, and the contract was won by Southern Electric for two years, commencing May 2016. This was a low point for electricity prices and the average price achieved was 10.28p/kWh, a reduction of 18.3% on the previous average.

Electricity Costs				Change
	2013/14	2014/15	2015/16	'14/15 to '15/16
University Park	£ 3,571,109	£ 3,679,990	£ 3,813,419	4%
Sutton Bonington	£ 1,045,379	£ 1,075,835	£ 861,973	-20%
Jubilee Campus	£ 665,583	£ 692,261	£ 744,672	8%
Others	£ 374,386	£ 378,596	£ 403,326	7%
Medical School	£ 651,000	£ 650,000	£ 614,580	-5%
Total	£ 6,307,457	£ 6,476,682	£ 6,437,971	-1%

Figure 2.B.1 Table of net electricity costs (excluding taxes) for the last 3 years split by campus.

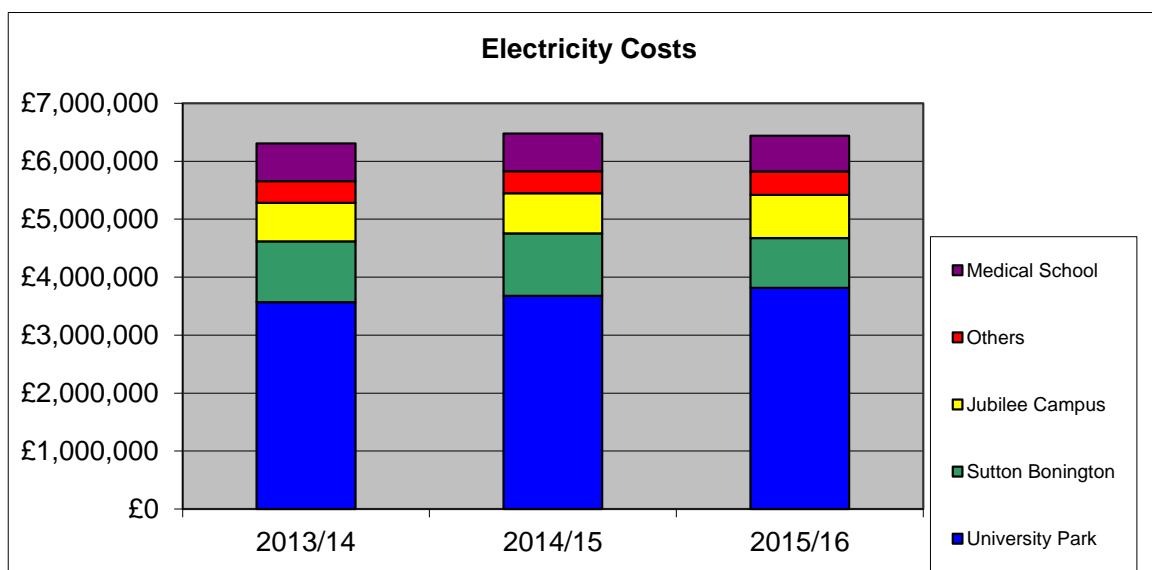


Figure 2.B.2 Graph of net electricity costs for the last 3 years split by campus.

2.C - Fossil Fuel Consumption

Consumption of fossil fuels fell by 0.6% year on year. Weather effects alone would have predicted a fall of 4.6%, and floor area increased by 1.4%, so a fall of just over 3% could have been predicted if all else remained equal.

Contained within the figures are some significant deviations from last year; firstly a significant fall in steam used for cooling at the Medical School was seen as the investment in high-efficiency electric chillers paid off. Secondly the increase in gas usage at Sutton Bonington was expected due to the introduction of the new CHP units – this resulted in reductions in imported electricity (see Section 2A). The increases at University Park are largely attributable to a 15% increase (3.7MWh) in gas usage at the Central Heating Station as system temperatures were raised to aid heat distribution, and the addition of the Temporary Sports Facility added 1.3MWh.

Fossil Fuel Consumption	MWh	MWh	MWh	Change
	2013/14	2014/15	2015/16	'14/15 to '15/16
University Park	56,918	59,566	62,819	5.5%
Sutton Bonington	17,924	19,043	22,192	16.5%
Jubilee Campus	8,046	8,601	8,599	0.0%
Others	7,780	8,354	8,350	-0.1%
Medical School (Steam)	25,363	25,295	18,233	-27.9%
Total	116,032	120,858	120,193	-0.6%

Figure 2.C.1 Table of fossil fuel usage for the last 3 years split by campus.

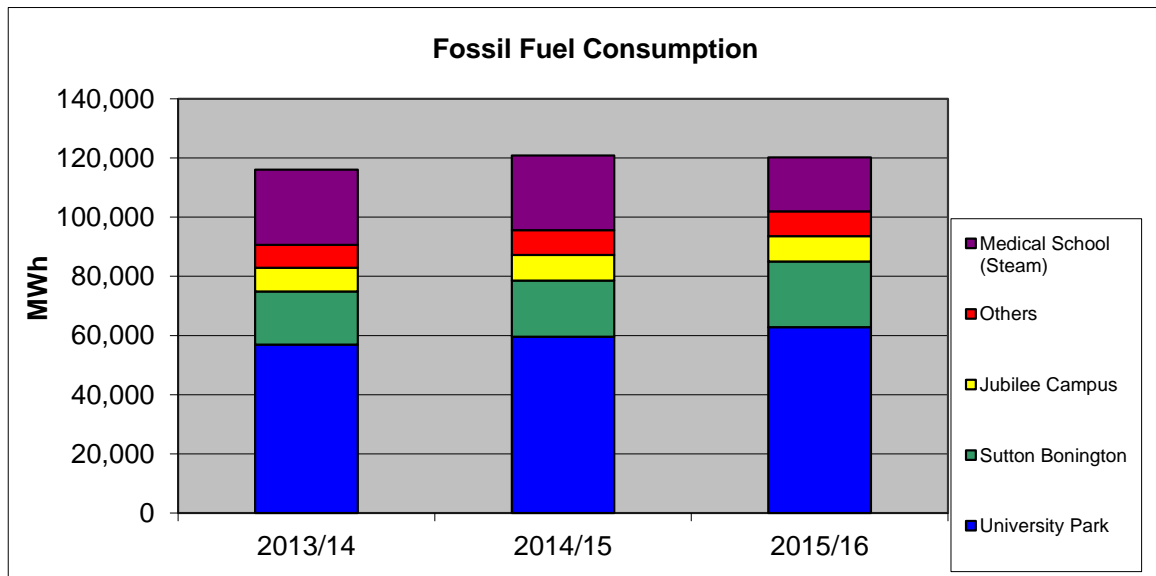


Figure 2.C.2 Graph of fossil fuel usage for the last 3 years split by campus.

See Appendix B for additional information showing a detailed breakdown of consumption on each account.

2.D - Fossil Fuel Costs

Annual gas prices varied even more than electricity prices over the year, dropping from 48p/Therm (1.64p/kWh) in August 2015 to 30p/Therm (1.02p/kWh) in January 2016, before shooting back up to 44p/Therm (1.50p/kWh) in July 2016. Variations for monthly and daily gas were much larger than this. Delivered gas averaged across the year cost around 1.9p/kWh, meaning that standing charges were around 0.7p/kWh, or around 37% of the total.

Our policy of using 'flexible' energy contracts, first adopted in October 2005, allowed us to take advantage of market falls and buy when prices were low. Engie remained as our gas supplier, in the final year of a three-year framework contract ending March 2017.

Fossil Fuel Costs				Change
	2013/14	2014/15	2015/16	'14/15 to '15/16
University Park	£ 1,483,859	£ 1,259,135	£ 1,211,403	-4%
Sutton Bonington	£ 469,169	£ 405,206	£ 409,787	1%
Jubilee Campus	£ 224,643	£ 197,220	£ 188,003	-5%
Others	£ 217,531	£ 188,306	£ 166,642	-12%
Medical School (Steam)	£ 1,343,000	£ 865,000	£ 668,417	-23%
Total	£ 3,738,202	£ 2,914,868	£ 2,644,252	-9%

Figure 2.D.1 Table of net fossil fuel costs (excluding VAT and CCL) for the last 3 years split by campus.

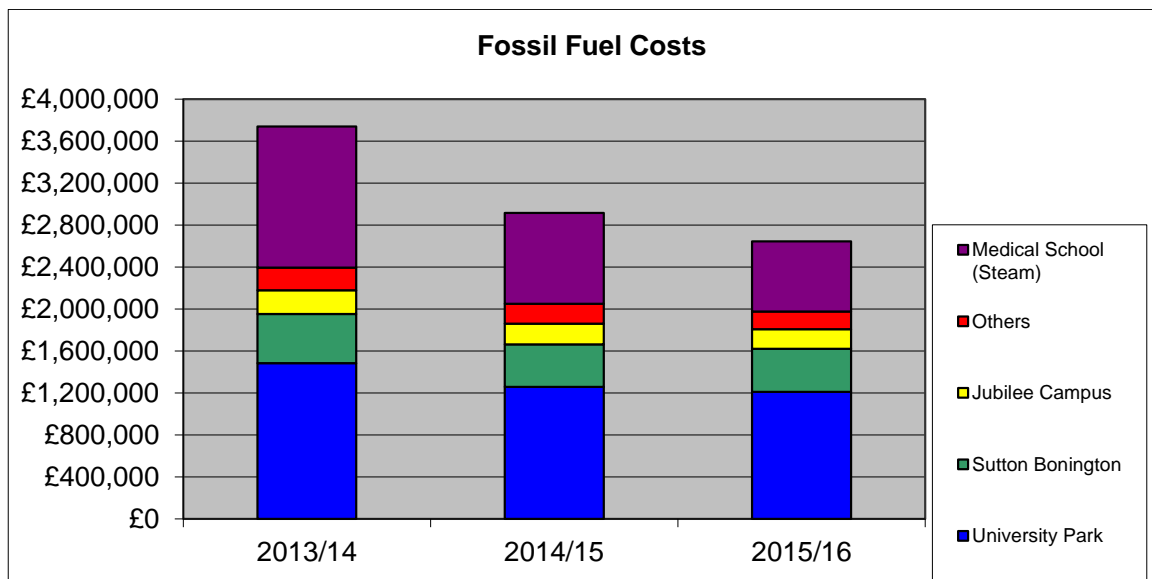


Figure 2.D.2 Graph of net fossil fuel costs for the last 3 years split by campus.

2.E - Water Consumption

Water consumption fell marginally to 859,124 cubic metres despite student numbers rising 0.7% and floor area increasing by 1.4%. Reductions were achieved at the Jubilee Campus, where a scheme was introduced to use borehole water to make up for evaporation losses from the ornamental lakes.

Opportunities to improve our own water distribution networks at University Park and Sutton Bonington have been identified following leakage detection work undertaken in 2016.

Water Consumption	cubic m.	cubic m.	cubic m.	Change
	2013/14	2014/15	2015/16	'14/15 to '15/16
University Park	543,286	499,793	504,856	1%
Sutton Bonington	153,525	208,402	217,745	4%
Jubilee Campus	87,061	88,593	71,607	-19%
Others	20,150	20,329	22,246	9%
Medical School	47,100	43,900	42,670	-3%
Total	851,121	861,016	859,124	0%

Figure 2.E.1 Table of water usage for the last 3 years split by campus.

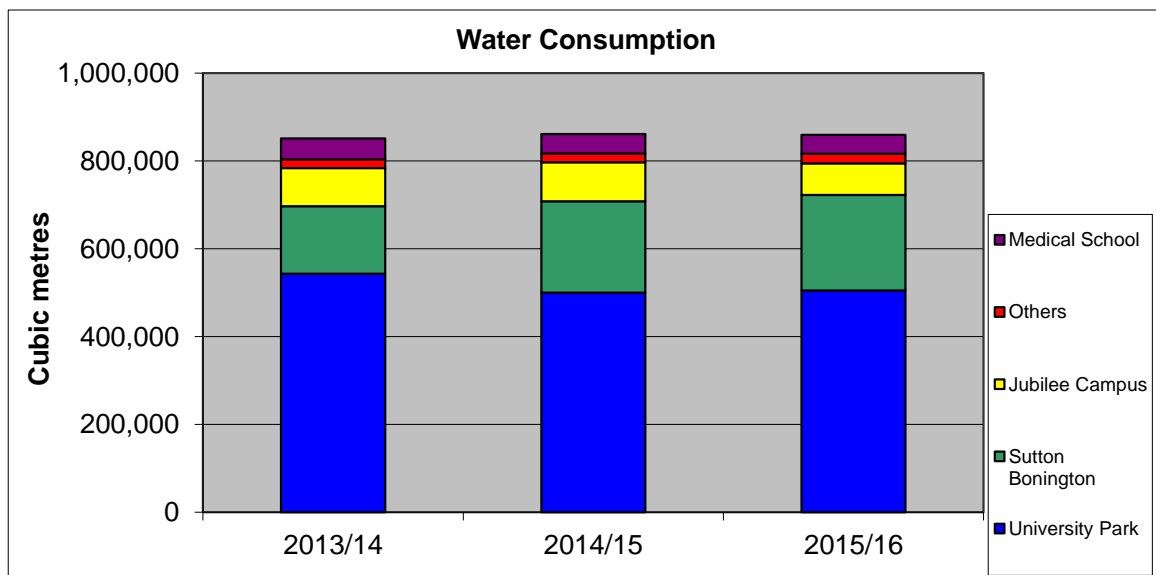


Figure 2.E.2 Graph of water usage for the last 3 years split by campus.

See Appendix C for a detailed breakdown of consumption on an account by account basis.

2.F - Water Costs

Severn Trent Water's annual price rises occur in April of each year, and in 2016 were 4.64% for summer water, 3.57% for winter water, and 6.4% for used water. However, for the bulk of the year (August to March), we were still benefiting from year on year price reductions of around 4% on most tariff elements.

The de-regulation of the water industry in 2017 will potentially allow large customers such as the University to approach alternative suppliers. In advance of this competitive market for business customers, Severn Trent have partnered with United Utilities to form a major new retail provider called WaterPlus. The University continues to evaluate its options in this regard.

Water Costs				Change
	2013/14	2014/15	2015/16	'14/15 to '15/16
University Park	£ 940,781	£ 926,692	£ 861,513	-7%
Sutton Bonington	£ 251,132	£ 342,875	£ 375,948	10%
Jubilee Campus	£ 241,124	£ 243,553	£ 202,990	-17%
Others	£ 80,709	£ 84,242	£ 87,636	4%
Medical School	£ 104,000	£ 94,500	£ 99,357	5%
Total	£ 1,617,747	£ 1,691,861	£ 1,627,443	-4%

Figure 2.F.1 Table of water costs for the last 3 years split by campus.

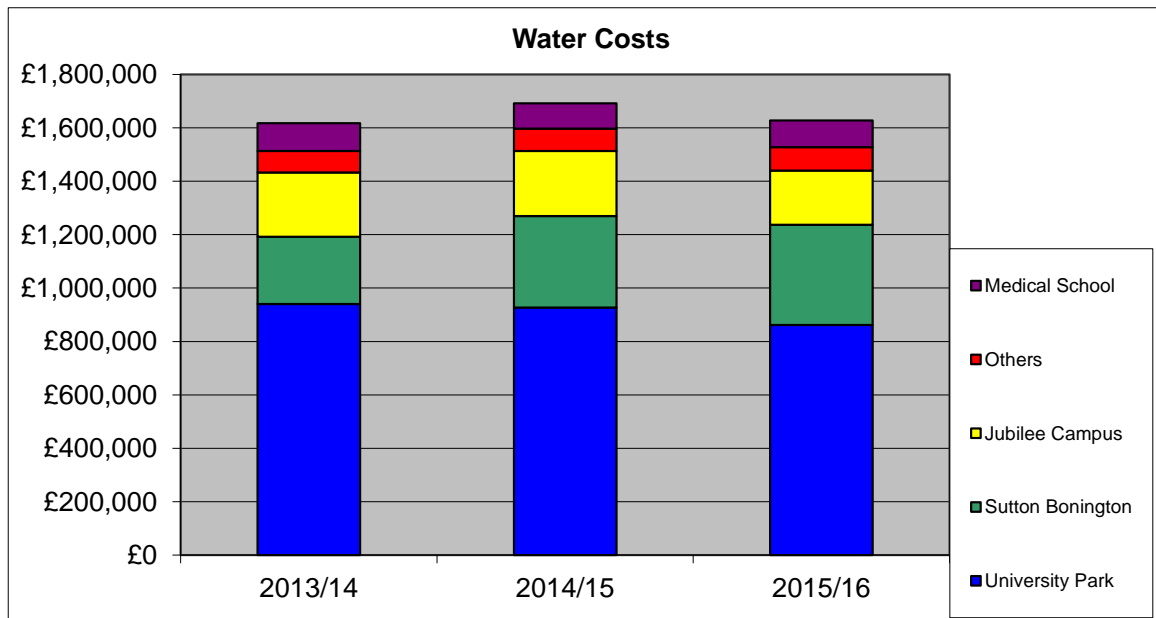


Figure 2.F.2 Graph of water costs for the last 3 years split by campus.

Section 3 – Environmental Considerations

3.A - Weather Data – Degree Days

The year 2015/16 was milder than 2014/15, with a theoretical reduction of 4.6% of heating fuels being necessary. Although the Spring was chilly, the winter was generally mild and November and December were unusually warm.

Degree days are determined by comparing the mean daily temperature to a set temperature, in this case 15.5 Celsius. For instance, a day where the outside temperature averaged 5.0C would be counted as 10.5 degree days. The values are summated over a calendar month and the total provides a reasonably accurate guide as to the relative heating load that should be required. For the purposes of this report, 75% of the change in degree days has been used, as production of domestic hot water typically accounts for about 25% of usage.

2015/16	Deg. Days 20 Yr Avg	Deg. Days 2013/14	Deg. Days 2014/15	Deg. Days 2015/16	'13/14to'14/15 Change
Aug	34	21	46	30	-34.8%
Sep	74	80	49	101	106.1%
Oct	159	107	104	145	39.4%
Nov	266	276	219	187	-14.6%
Dec	339	278	322	178	-44.7%
Jan	353	307	343	304	-11.4%
Feb	304	261	324	305	-5.9%
Mar	279	248	285	306	7.4%
Apr	212	158	186	250	34.4%
May	134	110	145	118	-18.6%
Jun	70	43	70	50	-28.6%
Jul	34	18	38	26	-31.6%
Total	2,258	1,907	2,131	2,000	-6.1%
			Weather modifier (75%)		-4.6%

Figure 3.A.1 Table showing last 3 years monthly degree days and average degree days

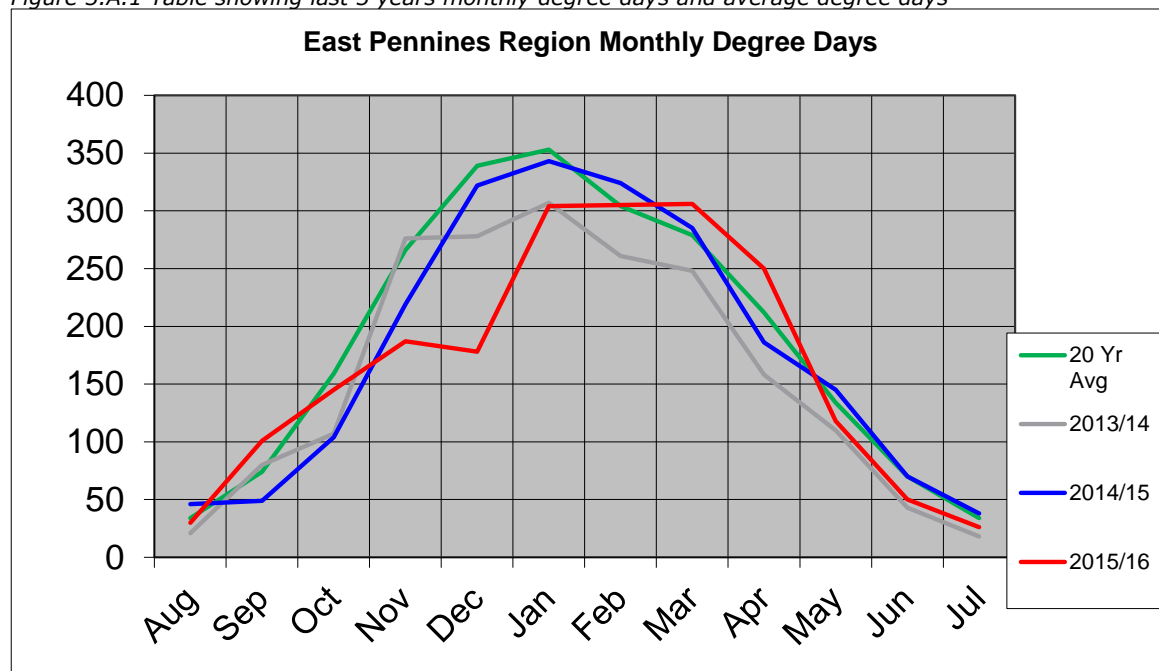


Figure 3.A.2 Graph showing last three years monthly degree days and average degree days

3.B – Changes since Base Year (2009/10)

The table below shows that new buildings constructed since 2009/10 account for 14.7% of our energy usage.

	Units	University Total '15/16	New Buildings	% due to new build
2.A Electricity Consumption	MWh	79,342	9,710	13.9%
2.C Fossil Fuel Consumption	MWh	120,193	10,735	9.8%
1.E Energy Use Total	MWh	199,535	20,446	11.4%
2.E Water Consumption	cu.m.	859,124	57,298	7.1%
1.A Energy & Water Costs	£	£10,709,666	£464,216	4.5%
1.G Floor Area	m ²	642,056	82,211	14.7%

Figure 3.B.1 Table showing effect of new buildings on key parameters.

A full breakdown of energy consumption in new buildings on a building-by-building basis is shown on the next page in Appendix 4A.

3.C University Renewable Energy Generation

Building	Type	Annual Production (kWh)
Dearing	PV	7,472
Business Sch North	PV	13,602
Computer Sciences	PV	6,524
Derby Hall	PV	47,204
Lincoln Hall	PV	50,446
Si Yuan Chinese Studies	PV	8,274
Aerospace Technology	PV	10,706
Environmental Education Centre	PV	20,734
Sustainable Research Building	PV	7,001
Riverside Sports Pavilion A	PV	17,600
The Barn	PV	6,000
Veterinary School	PV	123,705
Total		319,268
Si Yuan Chinese Studies	Solar thermal	2,117
Geospatial	Biomass	61,030
BioEnergy	Biomass	133,930
Total		197,077

Figure 3.B.2 Table showing University renewable energy generation.

Note that the biomass production is included in the rest of the report as the fuel is ordered in externally; solar generation is effectively hidden from the rest of the report as it takes place within the relevant buildings. A true figure for energy used in buildings should add back in the solar PV and solar thermal figure.

3.D – Comparison with Overseas Campuses (2014/15)

It appears that the overseas campuses have markedly different footprints to the UK; reflecting their unique characteristics. Data has been provided by Estates Office staff at the campuses and will now be monitored going forwards to determine trends.

	UK	China	Malaysia
Floor Area (m ²)	633,307	66,487	35,127
Electricity (MWh)	82,143	5,100	12,215
Gas (MWh)	120,858	0	0
Total Energy (MWh)	203,001	5,100	12,215
Water (m ³)	861,016	71,005	129,295

Figure 3.D.1 Table comparing UK energy and water usage with the overseas campuses.

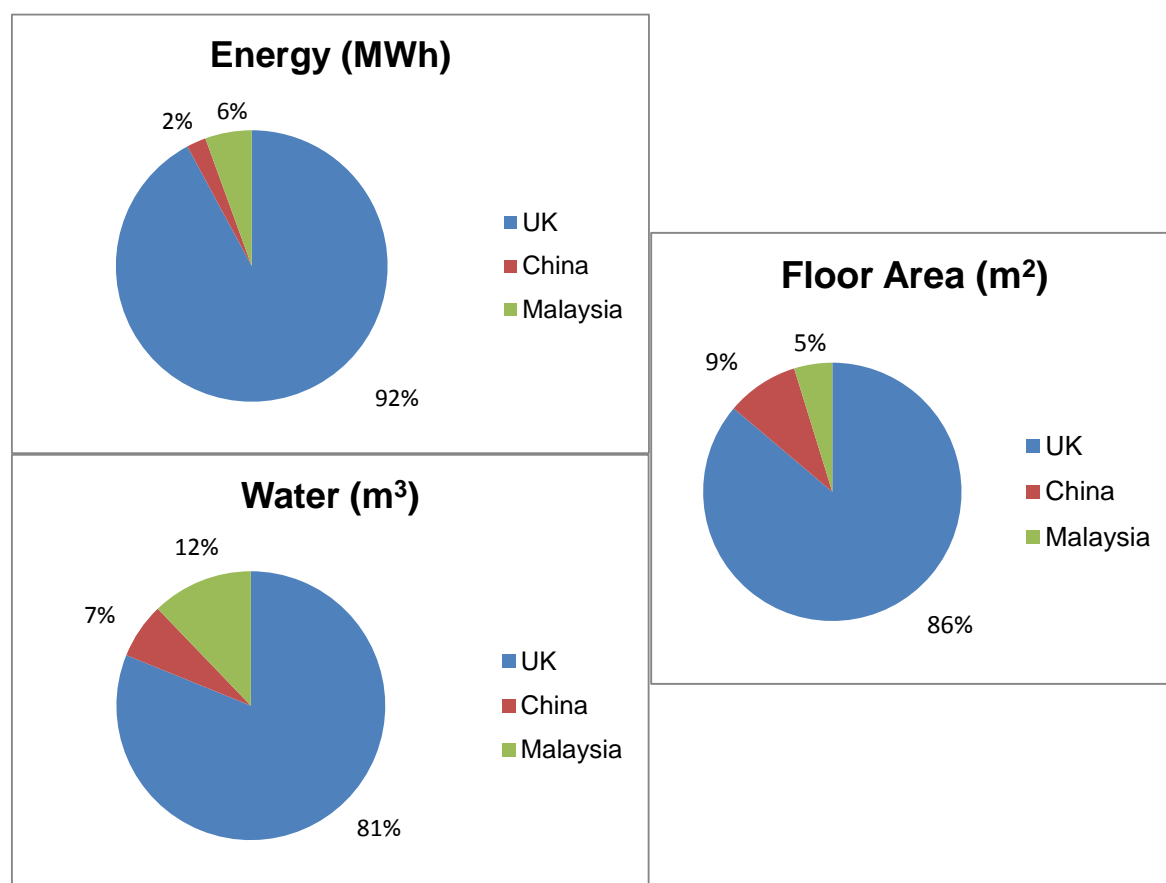


Figure 3.D.2 Graphs comparing Energy, water and floor area on University of Nottingham Campuses.

Energy and Water Efficiency

	UK	China	Malaysia
Electricity (kWh)/m ²	130	77	348
Water (m ³)/m ²	1.36	1.07	3.68

Figure 3.D.3 Table showing overseas campuses energy and water usage per square metre.

Section 4 – Appendices

4.A - Appendix A – Buildings constructed since 2009/10

New Sites	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	Floor Area	
Main Campus	Elec kWh	Gas kWh	Water m3	Elec CO2	Gas CO2	Cost £		
Engineering Science Learning Centri	1661	396,637	670,000	2,174	213	124	£50,406	3,511
Humanities	1671	440,333	13,904	1,426	237	3	£40,566	4,303
(2) Orchard Hotel	1681	1,230,925	1,450,184	13,886	662	268	£159,243	9,509
George Green Library extn	1281	350,000	500,000	500	188	92	£59,917	4,377
Temporary Sports Pavilion OIL	2165	500,000	1,304,189	1,000	269	331	£87,785	5,244
Mathematical Sciences	1561	402,245	625,000	1,164	216	116	£48,092	4,674
New eco-houses		50,000	9,881	200	27	2	£5,120	526
Totals	3,370,140	4,573,158	20,350	1,811	936	£451,129	32,144	
New Sites	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	Floor Area	
Sutton Bonington	Elec kWh	Gas kWh	Water m3	Elec CO2	Gas CO2	Cost £		
Bio-energy and Brewing Sciences	5781	540,696	445,051	3,750	291	82	£67,477	3,493
Bio-energy BIOMASS	5781		161,178	0	0	6	£4,000	0
Gateway Building	5771	886,424	458,705	4,345	476	85	£94,606	3,253
Gustafson Glasshouse		57,765	448,543	400	31	83	£17,147	400
Future Crop Glasshouses	5445	98,875	227,393	400	53	42	£14,174	312
The Barn	5075	422,933	426,900	1,621	227	79	£40,512	3,797
Totals	2,006,693	2,167,770	10,516	1,079	377	£197,404	11,255	
New Sites	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	Floor Area	
Jubilee Campus	Elec kWh	Gas kWh	Water m3	Elec CO2	Gas CO2	Cost £		
(1) 6 Triumph Road	7405	69,498	44,694	166	37	8	£8,603	324
(1) 9 Triumph Road	7400	78,069	0	4,328	42	0	£18,889	399
(1) Institute of Mental Health	7370	266,905	310,875	1,435	143	58	£32,558	3,074
Yang Fujia (International House)	7320	400,000	457,925	759	215	85	£35,024	3,400
Starbuck's Café	7305	85,828	26,005	200	46	5	£8,423	151
The Amenities Building	7330	420,000	319,014	2,619	226	59	£48,650	2,365
Nottingham Geospatial Bulding	7350	340,744	91,449	1,704	183	17	£34,047	2,944
Geospatial BIOMASS	7350		71,220	0	0	3	£2,800	0
(1) Sir Colin Campbell Building	7340	700,000	287,177	1,347	376	53	£69,334	4,534
Energy Technologies Building	7360	943,578	522,420	5,560	507	97	£99,418	3,177
(1) Romax Building	7390	330,000	335,080	387	177	62	£35,823	2,950
Imperial Tobacco Site	7460	36,968	9,983	0	20	2	£3,104	0
Woolpack House	7480	46,572	63	0	25	0	£3,910	1,978
Gatehouse Lodge	7470	48,000	46,572	92	26	9	£1,174	439
Aerospace Technology Centre	7380	178,482	252,972	183	96	47	£20,363	1,934
Si Yuan Centre for Chinese Studies	7410	134,834	43,561	100	72	8	£13,170	2,078
Totals	4,079,478	2,819,010	18,880	2,193	511	£434,292	29,747	
New Sites	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	Floor Area	
Others	Elec kWh	Gas kWh	Water m3	Elec CO2	Gas CO2	Cost £		
Clinical Sciences City Hosp Ph2	3325	65,362	673,500	5,228	35	125	£7,339	2,000
Derby School of Nursing	3571	88,761	250,000	513	48	46	£10,100	1,996
522 Derby Road	7420	2,640	0	393	1	0	£928	950
Unit 4 Easter Park	6931	0	50,882	218	0	9	£4,360	1,188
Unit 2 Genesis Park		4,453	0	0	2	0	£554	0
Vaughan Parry Williams Pav.& hocl	6314	41,000	100,459	400	22	19	£6,643	823
Riverside Grove Farm Sports	6122	51,646	100,608	800	28	19	£5,852	2,108
Totals	253,862	1,175,449	7,552	136	217	£29,924	9,065	
New Sites	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	Floor Area	
Main Campus	Elec kWh	Gas kWh	Water m3	Elec CO2	Gas CO2	Cost £		
	3,370,140	4,573,158	20,350	1,811	936	451,129	32,144	
Sutton Bonington	2,006,693	2,167,770	10,516	1,079	377	197,404	11,255	
Jubilee Campus	4,079,478	2,819,010	18,880	2,193	511	434,292	29,747	
Others	253,862	1,175,449	7,552	136	217	29,924	9,065	
Totals	9,710,173	10,735,387	57,298	5,219	2,042	£464,216	82,211	

Note that some of the buildings listed above have not yet been operational for a full year.

On these data tables, the following notes apply:-

- (1) University of Nottingham Innovation Park assets
- (2) East Midland Conference Centre Ltd assets

4.B - Appendix B – Electricity Data

Electricity Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change		
Main Campus		kWh	kWh	kWh	£	£	£		
	Main Campus Invoices	1000	46,099,177	46,076,439	0%	£3,810,229	£3,676,849	4%	
	Lenton Lodge	2251	19,000	16,318	16%	£1,900	£1,745	9%	Jul estd
	Lenton Eaves (UNSSC) (2)	1461	4,000	4,000	0%	£560	£600	-7%	Jul estd
	Lenton Eaves (UNSSC) (1)	1461	3,200	3,804	-16%	£480	£546	-12%	Jul estd
	Redcourt Lodge	2222	1,200	1,000	20%	£250	£250	0%	Jul estd
(2)	East Midlands Conference Centre	1481	1,340,400	1,375,113	-3%				Inc. in 'Main Campus HV'
(2)	Orchard Hotel	1681	1,230,900	1,385,954	-11%				Inc. in 'Main Campus HV'
(2)	Conference Centre Cottage	1482	82,117	7,894	-				Inc. in 'Main Campus HV'
	Total of 5 accounts	Totals	46,126,577	46,101,561	0%	£3,813,419	£3,679,990	4%	
Electricity Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change		
Sutton Bonington		kWh	kWh	kWh	£	£	£		
	Sutton Bonington Campus	6800	9,444,598	12,572,504	-25%	793,880	1,004,081	-21%	
	New Dairy	6500	550,834	560,000	-2%	54,840	57,000	-4%	
	Melton Lane Building A	5433	22,500	26,000	-13%	2,183	2,750	-21%	Jun & Jul estd
	St.Michael's House (Flats 1-5)	6841	22,144	25,385	-13%	2,489	2,866	-13%	
	Bunny Park Farm	6860	11,038	10,900	1%	1,310	1,190	10%	
	St.Michael's Flats Nos 8&9	6843	8,900	7,731	15%	1,300	1,201	8%	Jul estd
	Eviton House (68 College Road)	5891	7,900	6,275	26%	900	740	22%	Jul estd
	St.Michael's Flats Nos 6&7	6842	7,600	6,800	12%	1,150	1,050	10%	Jul estd
	St.Michael's Close (Flats 10-15)	6840	5,197	5,300	-2%	790	780	1%	
	24 College Road	6805	4,900	4,700	4%	660	640	3%	Jul estd
	Dairy Herdsman's House	6500	4,600	4,300	7%	630	584	8%	Jul estd
	44 College Road	6814	4,600	3,156	46%	650	481	35%	Jul estd
	40 College Road	6811	3,700	1,945	90%	540	292	85%	Jul estd
	45 College Road	6815	510	12,000	-96%	190	1,300	-85%	Jul estd
	50 College Road	6819	360	4,296	-92%	170	614	-72%	Jul estd
	Manor Farm Pump House Kingst	6910	0	0	-	145	121	20%	
	Manor Farm Soar Irrigation Pump	6910	0	0	-	145	143	1%	
	Total of 19 accounts	Totals	10,099,381	13,251,292	-24%	£861,973	£1,075,835	-20%	
Electricity Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change		
Jubilee Campus		kWh	kWh	kWh	£	£	£		
	Jubilee Campus Main HV Supply	7000	5,730,850	5,787,487	-1%	£482,323	£470,238	3%	
	New HV Supply 2012, E. of Tri.Rd	7000	1,453,466	1,344,398	8%	£121,860	£109,640	11%	
	Newark & Southwell Halls	7000	622,540	643,308	-3%	£56,220	£56,676	-1%	
	Jubilee Sports Centre + Starbucks	7301	447,444	385,032	16%	£43,515	£36,559	19%	
(1)	9 Triumph Road (ex Dairy Crest Site)		87,939	78,069	13%	£11,497	£10,668	8%	
(1)	6 Triumph Rd (ex Dairy Crest, opp 9 Triu		95,680	69,498	38%	£10,281	£7,480	37%	
	Gatehouse Lodge	7470	48,000	0	-	£4,700	£0	-	New site
	Imperial Tobacco Site	7460	36,968	0	-	£10,517	£0	-	New site
	Charnock Ave Sports Pavilion	7201	10,500	8,000	31%	£1,260	£1,000	26%	Jul Estd
	Woolpack House	7480	11,000	0	-	£2,500	£0	-	Jul Estd
(1)	Sir Colin Campbell Building	7340	600,000	600,000	0%				Inc. in 'J.C. Main Supply'. Estd
(1)	Romax Building	7390	350,000	300,000	17%				Inc. in 'New supply 2012' Estd
(1)	Institute of Mental Health	7370	266,905	256,057	4%				Inc. in 'New supply 2012'
	Total of 7 accounts	Totals	8,544,388	8,315,792	3%	£744,672	£692,261	8%	
Electricity Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change		
Others		kWh	kWh	kWh	£	£	£		
	King's Meadow Campus	6901	2,081,177	2,044,010	2%	£168,679	£161,911	4%	
	Derby Medical School	3561	1,265,891	1,174,331	8%	£106,313	£96,135	11%	
	Clinical Sciences (City Hospital) Ph	3325	1,024,440	1,034,534	-1%	£103,899	£95,504	9%	Jul estd
	Clinical Sciences (City Hospital) Ph	3325	65,362	85,194	-23%	£6,629	£7,865	-16%	Jul estd
	Highfields Sports Ground	6311	58,822	52,233	13%	£6,211	£5,742	8%	
	Riverside New Changing Rooms	6122	51,646	37,530	38%	£6,248	£5,300	18%	
	Grove Farm - Changing Rooms	6122	10,000	16,000	-38%	£1,000	£1,650	-39%	Mar-Jul estd
	Grove Farm - Old Farmhouse	6121	5,500	6,400	-14%	£700	£800	-13%	Jul estd
	Highfields Hockey Pitch	6311	5,314	0	-	£1,687	£0	-	New supply
	Boat House	6321	5,300	5,500	-4%	£680	£700	-3%	Jul estd
	Unit 2 Genesis Park		4,453	0	-	£554	£0	-	
	Grove Farm	6123	2,912	3,100	-6%	£429	£450	-5%	Jul estd
	522 Derby Road (ex. Mansells)	7420	2,640	21,437	-88%	£298	£2,538	-88%	
	Total of 11 accounts		4,583,456	4,480,270	2%	£403,326	£378,596	7%	
Electricity Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change		
Medical School		kWh	kWh	kWh	£	£	£		
	Medical School		7,683,562	7,899,389	-3%	£576,180	£520,000	11%	New recharges, Jul Estd
	Embedded units (Q.M.C.)		2,143,183	2,095,000	2%	£21,206	£130,000	-84%	New recharges, Jul Estd
	New chillers supply, 2016		161,400	0	-	£17,194	£0	-	
	Totals		9,988,145	9,994,389	0%	£614,580	£650,000	-5%	

4.C - Appendix C – Fossil Fuel Data

Gas Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change	
Main Campus		kWh	kWh	kWh	£	£	£	
Central Heating Station	1000	27,912,053	24,244,342	15%	£490,036	£505,518	-3%	
Rutland Hall & Sherwood Hall	2191	2,425,662	2,398,730	1%	£47,249	£50,954	-7%	
Hugh Stewart Hall	2181	2,196,705	2,094,014	5%	£43,472	£44,393	-2%	
Bio-Molecular Sciences Phase 2	1353	2,063,272	1,908,472	8%	£36,391	£38,124	-5%	
Cripps Hall	2171	2,010,358	2,281,797	-12%	£39,847	£48,353	-18%	
Derby Hall	2121	1,897,009	1,925,003	-1%	£36,060	£40,785	-12%	
Swimming Pool	1571	1,670,622	1,738,178	-4%	£33,120	£37,312	-11%	
Bio-Molecular Sciences Phase 1	1353	1,567,167	1,671,199	-6%	£30,016	£35,872	-16%	
(2) Orchard Hotel	1681	1,450,184	1,402,163	3%	£26,258	£29,582	-11%	Operated by De Vere
Lenton & Wortley Hall	2141	1,382,633	1,468,401	-6%	£28,415	£31,313	-9%	
Temporary Sports Centre OIL	2165	1,304,189	0	-	£43,907	£0	-	Deliveries
Willoughby Hall	2211	1,302,536	1,390,446	-6%	£28,631	£29,531	-3%	
Lincoln Hall	2150	1,196,223	1,367,164	-13%	£24,704	£28,979	-15%	
(2) Jesse Boot Conference Centre	1481	1,161,742	1,447,085	-20%	£23,117	£30,749	-25%	Operated by De Vere
Florence Boot Hall	2131	1,115,044	1,085,098	3%	£22,652	£22,995	-1%	
Nightingale Hall	2161	1,098,601	1,131,037	-3%	£22,644	£24,036	-6%	
Science area, MRI, etc.	1271	1,026,734	1,125,101	-9%	£21,887	£24,066	-9%	
Ancaster Hall	2101	824,890	835,595	-1%	£17,443	£17,769	-2%	
Cavendish Hall	2111	820,220	879,682	-7%	£17,105	£18,765	-9%	
Boots Science Building	1581	818,964	891,016	-8%	£15,819	£18,787	-16%	
Arts Centre & School of Music	1501	595,304	610,409	-2%	£12,653	£13,018	-3%	
Institute of Hearing Research	1401	590,944	626,628	-6%	£10,775	£13,485	-20%	
Trent Building (part), Highfield Hou	1101	542,903	585,367	-7%	£11,940	£12,339	-3%	
Portland Building Kitchen	1111	520,767	509,686	2%	£9,436	£11,030	-14%	
D.H.Lawrence Lakeside Pavilion	1631	500,600	549,912	-9%	£10,003	£12,009	-17%	
Lenton Firs - Built Environment	1431	489,142	484,634	1%	£10,986	£10,203	8%	
Wolfson Building	1421	466,836	423,585	10%	£9,015	£9,009	0%	
Staff Club Lenton Mount, Hemsley	1181	337,094	417,447	-19%	£6,897	£8,843	-22%	
Innovative Technology Research C	1641	330,858	342,656	-3%	£6,543	£7,630	-14%	
Portland Building new extn.	1111	265,410	262,206	1%	£5,534	£5,544	0%	
Lenton Hurst	2411	259,554	288,422	-10%	£5,666	£6,132	-8%	
Redcourt	2221	258,551	276,321	-6%	£5,401	£5,876	-8%	
Cripps Health Centre	1231	213,517	208,458	2%	£4,555	£4,431	3%	
Manufacturing Engineering (MMME)	1371	201,069	155,019	30%	£4,117	£3,261	26%	
Lenton Grove (History)	1211	168,609	171,725	-2%	£3,655	£3,609	1%	
Environmental Education Centre (E	1439	159,616	90,475	76%	£3,134	£2,582	21%	
Lenton Eaves (UNSSC)	1461	140,634	131,883	7%	£2,987	£3,339	-11%	
Lenton Fields (China House)	2163	136,093	107,285	27%	£2,784	£2,577	8%	
Cripps Hall Kitchen	2171	114,091	92,690	23%	£2,466	£1,993	24%	
Rutland Hall Extension	2195	103,876	120,282	-14%	£2,340	£2,587	-10%	
Sustainable Research Building	1436	99,126	89,767	10%	£2,205	£2,340	-6%	
Lincoln Hall Kitchen	2150	98,803	99,536	-1%	£2,268	£2,111	7%	
Orchards	1161	95,875	123,098	-22%	£2,319	£2,600	-11%	
Cavendish Hall Extension 1994 (H	2115	95,279	113,718	-16%	£2,202	£2,442	-10%	
Paton House (Built Env.)	1441	92,025	98,410	-6%	£2,142	£2,094	2%	
Lenton Close Annexe (Cripps Hall)	2175	86,166	110,268	-22%	£2,059	£2,338	-12%	
Sherwood Hall kitchen	2200	82,137	78,990	4%	£1,884	£1,685	12%	
Lenton Lodge	2251	65,319	67,794	-4%	£1,676	£1,428	17%	
Warden's House Sherwood Hall	2207	53,544	54,809	-2%	£1,330	£1,163	14%	
Centre for 3D Design	1223	48,886	49,938	-2%	£1,262	£1,594	-21%	
(2) J.Boot C.C. Annexe (Cottage)	1482	48,227	50,832	-5%	£1,271	£1,076	18%	
Rutland Hall kitchen	2191	45,299	54,370	-17%	£1,428	£1,164	23%	
Cavendish Hall kitchen	2111	36,478	40,769	-11%	£1,025	£882	16%	
Paton Cottage (Stables Annx, Pat	1442	34,042	32,385	5%	£900	£692	30%	
Lenton Firs Lodge West	2241	33,758	30,323	11%	£918	£641	43%	
Lenton & Wortley Hall kitchen	2141	32,190	39,577	-19%	£1,358	£849	60%	
Warden's House Florence Boot Ha	2133	30,625	26,672	15%	£783	£569	38%	
Former Warden's House, Cavendis	2113	30,285	32,492	-7%	£872	£693	26%	
Warden's House Rutland Hall	2194	27,061	33,520	-19%	£791	£707	12%	
David Ross Sports Village		25,741	0	-	£609	£0	-	
5A Wortley Hall Close (Eco-House)	2296	21,890	23,099	-5%	£657	£729	-10%	
1 Nightingale Close (Nigh.Hall War	2321	15,217	20,371	-25%	£471	£431	9%	Closed from May 16
Humanities	1671	13,904	15,798	-12%	£592	£892	-34%	
Green Close (New Eco-houses)		9,881	9,123	8%	£442	£543	-19%	
Redcourt Lodge	2222	9,235	8,047	15%	£229	£313	-27%	
Sherwood Hall Laundry	2200	7,674	7,643	0%	£287	£163	76%	
Warden's House Ancaster Hall	2105	2,508	4,868	-48%	£197	£99	100%	
Clifton Building 1 (North) - DEMOL	1351	0	0	-	£350	£0	-	Meter removed Feb'16
Fitness Centre, Main Campus	1221	-12,731	101,696	-	-£157	£2,902	-	
Sports Centre, Main Campus	1221	-49,940	408,059	-	-£627	£8,618	-	
Total of 70 accounts	Totals	62,818,786	59,565,581	5%	£1,211,403	£1,259,135	-4%	

4.C - Appendix C – Fossil Fuel Data continued

Gas Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change	
Sutton Bonington		kWh	kWh	kWh	£	£	£	
Main Boilerhouse	6800	15,280,377	8,873,412	72%	£253,974	£180,631	41%	
Plant Sciences	5711	2,159,280	2,047,698	5%	£40,629	£45,742	-11%	
Veterinary School	5721	1,877,251	1,925,777	-3%	£35,663	£41,507	-14%	
Gateway Building (Bio-Sciences)	5771	458,705	497,536	-8%	£9,542	£11,945	-20%	
Gustafson Glasshouse		448,543	534,125	-16%	£10,025	£12,297	-18%	
Bio-Energy and Brewing Science	5781	445,051	733,971	-39%	£9,680	£14,973	-35%	
Sports Centre SB (New)	5951	275,142	258,644	6%	£5,944	£6,560	-9%	
TCRU Future Crop Glasshouses	5445	227,393	199,540	14%	£4,870	£5,114	-5%	
The Firs (Surgery No.2)	5233	171,351	158,407	8%	£4,011	£3,257	23%	
Eviton House (68 College Road)	5891	114,002	118,327	-4%	£2,773	£3,230	-14%	
The Elms (Environmental Science)	5161	101,814	111,532	-9%	£2,526	£3,299	-23%	
Bio-Energy BIOMASS	5781	161,178	86,990	85%	£7,197	£4,000	80%	Estd
Food Science Building HWS	5701	63,574	54,217	17%	£1,586	£1,125	41%	
Food Hall	5081	61,305	32,713	87%	£1,329	£682	95%	
St.Michael's Flats Nos 6&7	6842	54,423	43,969	24%	£1,232	£1,128	9%	
24 College Road	6805	48,141	4,142	-	£967	£129	-	
'Farm' Boilerhouse	6800	46,679	3,109,105	-98%	£10,886	£63,480	-83%	
Bonington Hall Laundry & Gym	5881	35,287	38,145	-7%	£1,001	£804	25%	
St.Michael's House Flat 4	6841	32,110	28,759	12%	£745	£715	4%	
St.Michael's House Flat 1	6841	27,514	23,121	19%	£672	£707	-5%	
St.Michael's House Flat 2	6841	23,429	27,670	-15%	£674	£544	24%	
52 College Road	6820	17,736	21,520	-18%	£563	£459	23%	
St.Michael's House Flat 3	6841	17,201	17,454	-1%	£434	£456	-5%	
St.Michael's House Flat 5	6841	14,982	17,715	-15%	£416	£486	-14%	
Bonington Hall Warden's House	5842	14,686	27,127	-46%	£794	£580	37%	
St.Michael's Flats Nos 8&9	6843	14,075	14,847	-5%	£367	£488	-25%	
North Laboratory	5091	794	856	-7%	£157	£29	439%	
South Laboratory	5051	149	30	-	£113	£9	-	
Main Building (Sutton Bonington)	5011	0	35,249	-100%	£878	£828	6%	
Sports Hall Sutton Bonington (Old)	5221	0	0	-	£138	£0	-	Acct closed
Total of 30 accounts	Totals	22,192,172	19,042,594	17%	£409,787	£405,206	1%	
Gas Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change	
Jubilee Campus		kWh	kWh	kWh	£	£	£	
Newark Hall	7130	1,133,015	1,218,806	-7%	£22,593	£26,766	-16%	
Computer Sciences (DCS) & The A	7040	677,589	841,861	-20%	£14,426	£18,497	-22%	
The Exchange (CTF)	7030	648,566	758,929	-15%	£13,422	£16,736	-20%	
Melton Hall	7110	571,024	626,638	-9%	£11,491	£13,729	-16%	
Southwell Hall	7120	551,637	585,970	-6%	£11,441	£13,065	-12%	
Business School South (New)	7080	536,318	636,191	-16%	£10,520	£14,149	-26%	
Energy Technologies Building	7360	522,420	427,895	22%	£9,798	£9,657	1%	
The Atrium Catering	7040	459,456	423,437	9%	£9,156	£9,134	0%	
YANG Fujia Building (International	7320	457,925	0	-	£8,265	£0	-	New supply
Dearing Building (FOE)	7050	449,514	503,790	-11%	£9,765	£11,053	-12%	
Jubilee Sports Centre	7301	339,669	398,173	-15%	£8,332	£10,616	-22%	
Business School North (SMF)	7020	337,787	392,232	-14%	£7,267	£8,711	-17%	
(1) Romax Building	7390	335,080	323,396	-	£7,011	£7,381	-	
The Amenities Building	7330	319,014	322,837	-1%	£6,311	£8,423	-25%	
(1) Institute of Mental Health	7370	310,875	326,345	-5%	£6,326	£7,429	-15%	
(1) Sir Colin Campbell Building (Gatew	7340	287,177	356,209	-19%	£5,800	£7,319	-21%	
Aerospace Technologies Building	7380	252,972	187,095	35%	£5,131	£5,030	2%	
The Nottingham Geospatial Buidin	7350	91,449	77,303	18%	£1,915	£2,208	-13%	
Geospatial BIOMASS	7350	71,220	54,730	30%	£3,330	£2,800	19%	Deliveries
Energy Technologies Bldg BIOFUEL	7360	75,000	0	-	£8,000	£0	-	Mar-Jul Estd
Gatehouse Lodge	7470	46,572	0	-	£2,824	£0	-	New site
(1) 6 Triumph Rd (ex Dairy Crest, opp 9 Triurr	7410	44,694	46,259	-3%	£1,147	£1,335	-14%	
Si Yuan Centre For Chinese Studie	7410	43,561	52,394	-17%	£1,332	£1,659	-20%	
Starbucks Cafe Jubilee		26,005	26,586	-2%	£711	£837	-15%	
Ingenuity Centre (TEC Building)		14,262	0	-	£790	£0	-	
Imperial Tobacco Site	7460	9,983	0	-	£316	£0	-	New site
Woolpack House (ex Romserve /	7480	63	0	-	£272	£0	-	
(1) Sir Colin Campbell Building (Gatew	7340	-13,777	13,815	-	£312	£687	-	
Total of 19 items		8,599,069	8,600,890	0%	£188,003	£197,220	-5%	
Gas Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change	
Others		kWh	kWh	kWh	£	£	£	
King's Meadow Campus	6901	5,363,441	5,281,033	2%	£102,560	£114,851	-11%	
Derby Medical School	3561	1,642,527	1,761,819	-7%	£32,044	£39,619	-19%	
Clinical Sciences (City Hospital) Ph	3325	673,500	782,203	-14%	£15,349	£16,090	-5%	Jul estd
Highfields Sports Ground	6311	156,768	160,320	-2%	£3,396	£3,900	-13%	
Grove Farm OIL		121,141	100,000	21%	£3,899	£5,000	-22%	Deliveries
Clinical Sciences (City Hospital) Ph	3325	112,121	88,644	26%	£2,555	£1,823	40%	Jul estd
Riverside Sports (Grove Farm)	6122	100,608	0	-	£2,143	£0	-	New site
Vaughan Parry Williams Pavilion	6314	100,459	76,613	31%	£2,509	£2,443	3%	
Unit 4, Easter Park	6931	50,882	60,998	-17%	£1,505	£1,852	-19%	
Boathouse KEROSENE		28,251	45,000	-37%	£641	£2,400	-73%	Deliveries
522 Derby Road (ex. Mansells)	7420	0	-2,459	-100%	£41	£328	-88%	
Total of 12 accounts		8,349,697	8,354,171	0%	£166,642	£188,306	-12%	
Steam Used		2015/16	2014/15	% change	2015/16	2014/15	% change	
Medical School		kWh	kWh	kWh	£	£	£	
Medical School		14,573,690	20,294,557	-28%	£653,972	£715,000	-9%	New charges
Embedded Units (Q.M.C.)		3,659,519	5,000,000	-27%	£14,445	£150,000	-90%	New charges
		18,233,209	25,294,557	-28%	£668,417	£865,000	-23%	

4.D - Appendix D – Water Data

Water Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change	
Main Campus		cubic m.	cubic m.	cubic m.	£	£	£	
	Main meter, South entrance	1000	473,980	469,985	1%	£0	£0	-
(2)	Orchard Hotel	1681	13,886	15,737	-12%	£0	£0	-
	Nightingale Hall	2161	9,320	4,759	96%	£0	£0	-
(2)	JBCC Banqueting Rooms	1481	2,717	3,132	-13%	£0	£0	-
	Lenton Grove (History)	1211	1,119	1,778	-37%	£0	£0	-
(2)	Jesse Boot Conference Centre	1481	1,101	983	12%	£0	£0	-
	Lenton Eaves (UNSSC)	1461	973	1,572	-38%	£0	£0	-
	Lenton Hurst	2411	538	363	48%	£0	£0	-
	Paton House (Built Env.)	1441	402	622	-35%	£0	£0	-
	Redcourt	2221	343	396	-13%	£0	£0	-
	Lenton Firs - Built Environment	1431	324	341	-5%	£0	£0	-
	5A Wortley Hall Close (Eco-House)	2296	91	77	19%	£0	£0	-
	Lenton Lodge	2251	62	50	26%	£0	£0	-
	Water & SWD charges	1000	0	0	-	£504,109	£505,162	0%
	TE & sewerage charges	1000	0	0	-	£357,404	£421,530	-15%
	Totals	504,856	499,793	1%	£861,513	£926,692	-7%	
Water Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change	
Sutton Bonington		cubic m.	cubic m.	cubic m.	£	£	£	
	Landcroft Lane meter	6800	198,019	195,947	1%	£0	£0	-
	College Road meter	6800	17,347	10,848	60%	£0	£0	-
	St.Michael's House (Flats 1-5)	6841	2,078	1,377	51%	£5,078	£3,431	48%
	Bunny Park Farm	6860	300	230	30%	£450	£400	13%
	Trough, Kegworth Road	6910	0	0	-	£39	£43	-9%
	SB water charges	6800	0	0	-	£181,252	£168,268	8%
	SB TE & sewerage charges	6800	0	0	-	£189,130	£170,734	11%
	Total of 7 items	217,745	208,402	4%	£375,948	£342,875	10%	
Water Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change	
New Campus		cubic m.	cubic m.	cubic m.	£	£	£	
	Jubilee Campus main meter	7000	36,163	45,602	-21%	£0	£0	-
(1)	Jubilee Campus ETB/IMH/ATC/Ror	7000	9,373	6,558	43%	£0	£12,531	-100%
	Southwell Hall	7120	8,071	9,589	-16%	£0	£0	-
(1)	9 Triumph Road (ex Dairy Crest Si		4,328	1,339	223%	£0	£0	-
	Jubilee Sports Centre	7301	3,991	3,373	18%	£0	£0	-
	Newark Hall	7130	2,994	14,840	-80%	£0	£0	-
	The Amenities Building	7330	2,619	2,518	4%	£0	£0	-
	The Nottingham Geospatial Buildin	7350	1,704	1,210	41%	£0	£0	-
(1)	Sir Colin Campbell Building (Gatew	7340	1,347	1,216	11%	£0	£0	-
	Yang Fulia Building (International H	7320	759	1,982	-62%	£0	£0	-
(1)	6 Triumph Rd (ex Dairy Crest, opp		166	363	-54%	£867	£1,387	-38%
	Gatehouse Lodge	7470	92	0	-	£450	£0	-
	Charnock Ave Sports Pavilion	7201	0	2	-100%	£41	£41	0%
(1)	9 Triumph Road costs inc SWD		0	0	-	£19,180	£11,944	61%
	Jubilee Campus costs inc SWD	7000	0	0	-	£182,452	£217,650	-16%
	Total of 14 items	71,607	88,593	-19%	£202,990	£243,553	-17%	
Water Invoices		2015/16	2014/15	% change	2015/16	2014/15	% change	
Others		cubic m.	cubic m.	cubic m.	£	£	£	
	King's Meadow Campus	6901	13,316	10,284	29%	£57,021	£50,575	13%
	Clinical Sciences (City Hospital) Ph	3325	5,228	6,550	-20%	£19,291	£22,794	-15%
	Boat House	6321	1,612	1,943	-17%	£3,932	£4,806	-18%
	Highfields Sports Ground	6311	1,415	653	117%	£3,461	£1,658	109%
	522 Derby Road (ex. Mansells)	7420	393	393	0%	£1,005	£1,003	0%
	Unit 4, Easter Park	6931	218	233	-6%	£2,638	£2,642	0%
	Clinical Sciences (City Hospital) Ph	3325	64	151	-58%	£236	£525	-55%
	Grove Farm - Changing Rooms	6122	0	122	-100%	£52	£238	-78%
	Totals	22,246	20,329	9%	£87,636	£84,242	4%	
Water Recharges		2015/16	2014/15	% change	2015/16	2014/15	% change	
Medical School		cubic m.	cubic m.	cubic m.	£	£	£	
	Medical School		39,802	41,000	-3%	£70,665	£68,000	4%
	Embedded Units		2,868	2,900	-1%	£28,692	£26,500	8%
	Totals	42,670	43,900	-3%	£99,357	£94,500	5%	



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