Education Children and Families Committee

10.00am, Tuesday, 11 December 2018

Energy in Schools Annual Report

Item number	7.3
Report number	
Executive/routine	Routine
Wards	
Council Commitments	18

Executive Summary

This report presents an overview of 2017/18 energy use and associated carbon emissions and expenditure across the Council's School Estate. The report follows on from the Energy in Schools Report in December 2017. The report provides detail on active projects to reduce energy and carbon emissions across the school estate. It also outlines current progress on ISO50001 accreditation.

Following on from the completion of the Council's Knowledge Transfer Project with Edinburgh Napier University, the report highlights the key outcomes from the project. This includes an outline of long term carbon reduction targets and a vision for future reduction of carbon emissions across the Council's estate. A key element of this is the consideration of adopting Passivhaus or similar approach to design standards for all new buildings including schools.

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Report

Energy in Schools Annual Report

1. Recommendations

1.1 That Committee

1.1.1 Notes the content of this report and the work undertaken to date on defining energy and carbon efficient strategies, and the significant progress made on key energy efficiency projects;

1.1.2 Notes the potential for carbon and cost savings achievable through Passivhaus buildings and agrees that the application of Passivhaus Standards or similar approach should be considered for all future new build schools; and

1.1.3 Notes that an annual progress report will be submitted to Committee in 2019 on Energy in Schools.

2. Background

2.1 The Council spent £8.8m on energy across operational buildings in 2017/18, which is an increase of over 3% on 2016/17 spend.

2.2 Electricity and gas prices are continuing to rise placing pressure on energy budgets and highlighting the requirement to manage energy across Council buildings effectively.

2.3 Carbon is increasingly becoming a factor in the specification of technologies for both new builds and retrofit. It is important that the Council has a clear vision for carbon reduction across the Council estate that takes account of both carbon reduction and best value.

2.4 There are several legislative drivers for carbon reduction across the Council's school estate. These include the Carbon Reduction Commitment Energy Efficiency Scheme and the Energy Performance in Buildings Directive.

2.5 The Carbon Reduction Commitment will cease at the end of March 2019. It is important that the Council continues to maintain the data management standards put in place to deliver the Carbon Reduction Commitment. This will be achieved by seeking ISO50001 accreditation, the merits of which are detailed later in this report.

2.6 Energy Performance Certificates (EPCs) were initially produced for the school estate in 2008/09 to meet legislative requirements under the Energy Performance in

Buildings Directive. EPCs are valid for 10 years and many are now approaching expiry. The Council has awarded a contract for the renewal of EPCs across the Council estate and will refresh EPCs to ensure continued compliance.

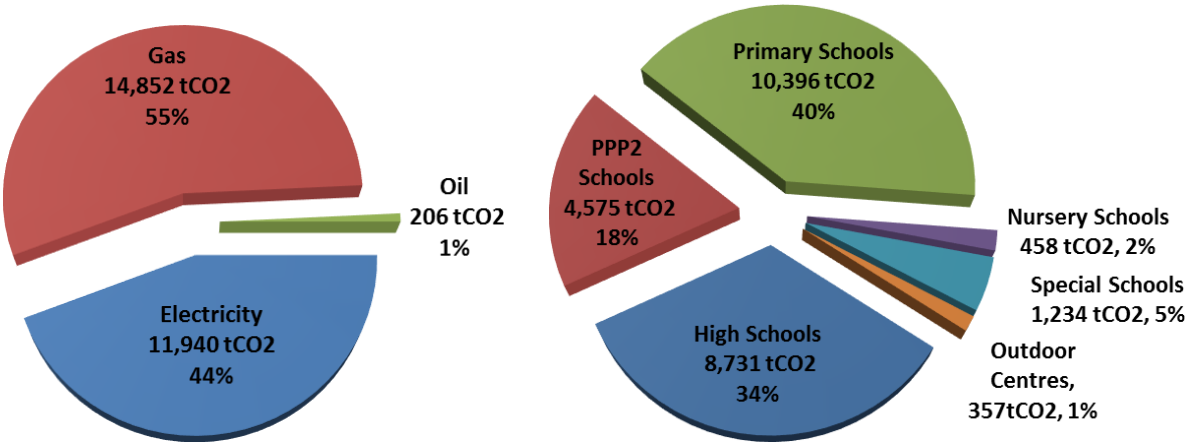
3. Main report

Consumption Monitoring

3.1 This section of the report gives an overview of energy consumption, and associated carbon emissions across the school estate in 2017/18. The data includes details on the Council's PPP2 estate, where the Council pays directly for energy consumed, but excludes details from Edinburgh Partnership schools (PPP1), as energy costs are factored into the unitary charge.

3.2 Further detail on energy consumption across the school estate and benchmarking by floor area for specific schools can be found in Appendix 1 and Appendix 2.

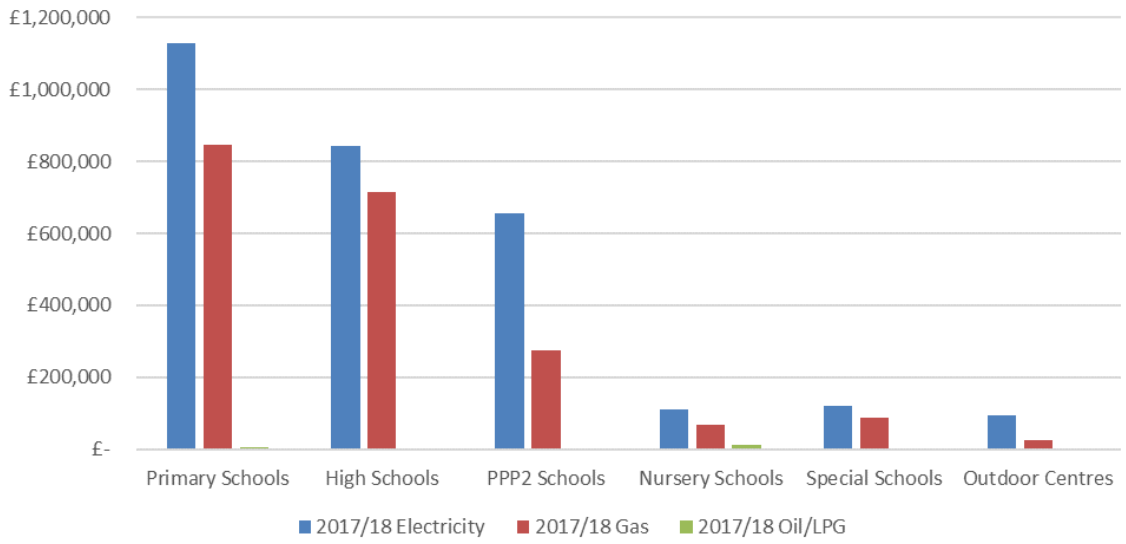
Graph 1: 2016/17 Carbon Emissions by Fuel and Property Type



3.3 The charts above provide a breakdown of energy related carbon emissions across the Council's school estate. In total, energy consumption in the school estate accounts for 26,998 tonnes of CO2 equivalent (CO2e). This is a decrease of 552 tonnes or 2% on 2016/17 emissions. The carbon emission factor for grid electricity has reduced by 14%, leading to a significant drop in emissions relating to electricity. However, 2017/18 was significantly colder than 2016/17 leading to increased demand for gas and corresponding increase in gas related carbon emissions.

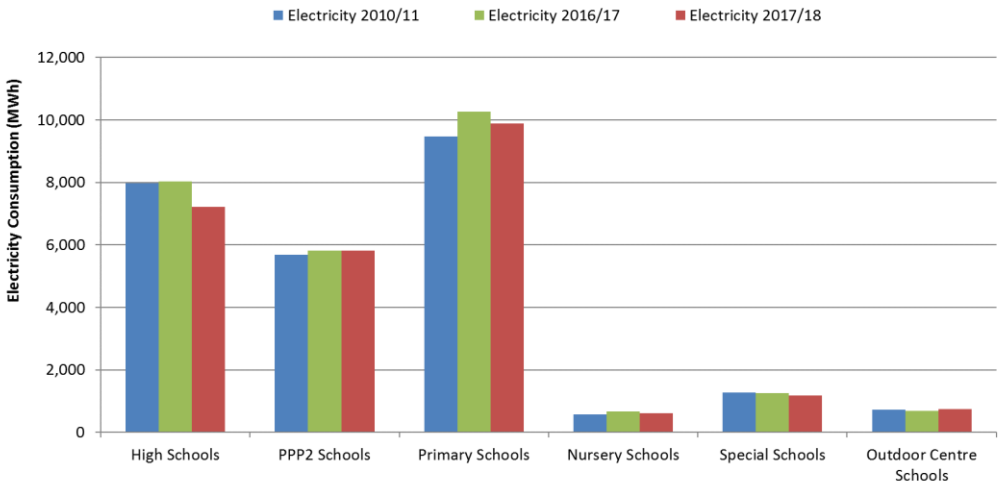
3.4 Schools accounted for just under £5m of energy spend in 2017/18. This is an increase of £0.3m or 6% on 2016/17 energy spend. An additional £0.45m was spent on the purchase of carbon allowances under the Carbon Reduction Commitment Energy Efficiency Scheme.

Graph 2: Annual Energy Spend (in 2017/18) by Property Group



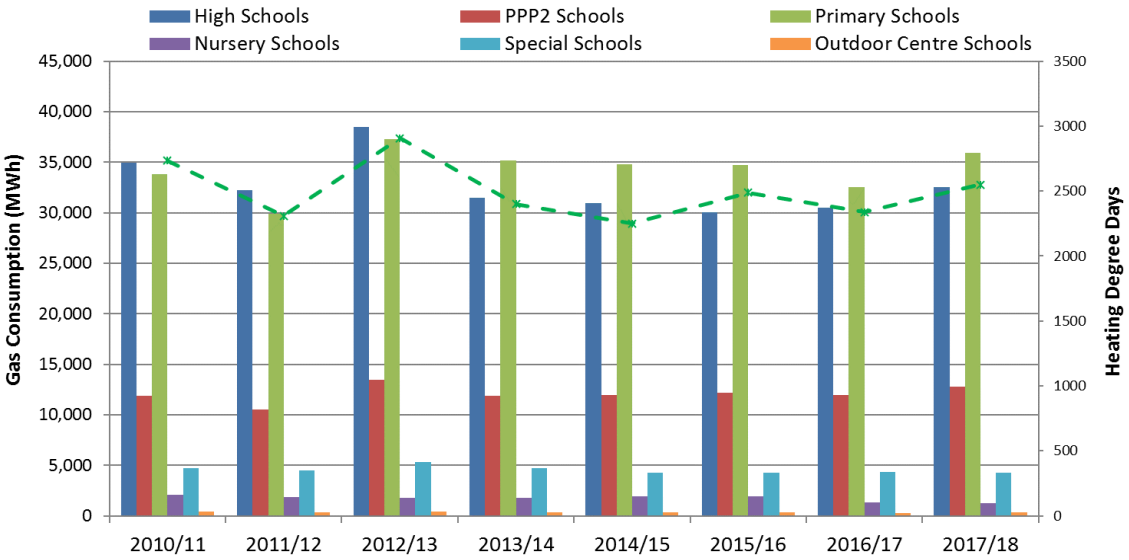
3.5 The graph above highlights energy spend by property type. The Council continues to spend significantly more on electricity (£2.95m) than gas (£2m). Gas and electricity costs across the school estate increased in 2017/18 by 2.9% and 6.6% respectively. Costs for 2018/19 have risen by around 9.1% for electricity and 10.7% for gas and based on current guidance it is anticipated that cost for both electricity and gas will increase by over 10% in 2019/20. The clear trend is for cost rises significantly above rates of inflation placing increasing pressure on budgets.

Graph 3: 2017/18 Grid Electricity Consumption against 2016/17 & 2010/11 Baseline



3.6 The graph above compares 2017/18 grid electricity consumption against both the 2010/11 baseline and 2016/17 consumption. Grid electricity use was lower in 2017/18 than in 2016/17. This reduction can be attributed to improved efficiency through the installation of new equipment, such as LED lighting, and the installation of onsite electricity generation through the RE:FIT and Edinburgh Community Solar Co-operative projects. These projects have offset increases to electricity consumption from the increasing floor area across the school estate, higher use of electricity in new builds and increased use of electrically powered heating systems.

Graph 4: 2010/11 to 2017/18 Gas Consumption correlated against Heating Degree Days

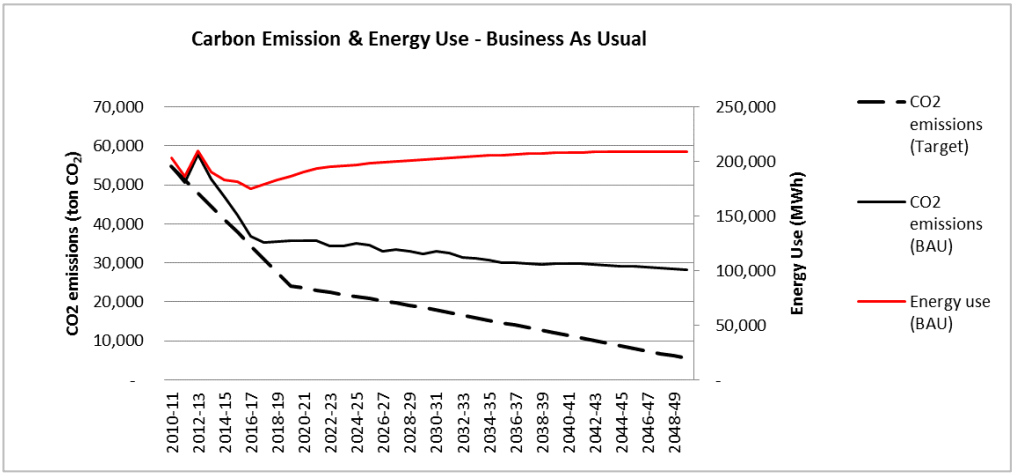


3.7 The graph above details 2017/18 gas use against recent years and the 2010/11 baseline year. Data has been correlated against heating degree days (HDD), which is a metric for quantifying the severity of weather conditions in relation to space heating requirements. Whilst 2017/18 was relatively mild from April to October 2017, Nov 2017 to March 2018 were exceptionally cold, placing significant demand for heating across the school estate. This is reflected in the increased demand for natural gas. Other contributory factors to the increased gas use in 2017/18 include the installation of combined heat and power plant in 4 high schools and the conversion of Sciennes Primary School from oil heating to gas heating in summer 2017.

Outcomes from Knowledge Transfer Partnership

3.8 For the past three years, Property and Facilities Management (P&FM) have been engaged in a Knowledge Transfer Partnership (KTP) with the Scottish Energy Centre at Edinburgh Napier University. The aim of the project was to develop a long-term strategy for energy efficiency and renewable energy generation within the Council's operational buildings. During the project the aim evolved to include how best to meet the Council's long-term carbon reduction target.

3.9 The graph below outlines projections for energy use and carbon emissions across the Council estate based on current energy consumption trends. In this projection, future new builds have an energy performance equivalent to recent new builds. Included in the graph is a CO2 emissions target in line with targets set out in the Climate Change Act (Scotland). This requires a 90% reduction by 2050.



3.10 The graph demonstrates that, based on current practice, the Council will fail to meet the reduction targets for buildings, and therefore will not be able to meet obligations as set out in the Climate Change Act. There will be a significant reduction in the Council's carbon emissions through the continued decarbonisation of the electricity grid. Emissions for electricity are projected to drop from 0.229kgCO_2/m^2 (2017/18) to 0.03 kgCO_2/m^2 by 2050.

3.11 In the business as usual scenario, energy demand is projected to increase significantly by 2050 to meet the requirements of projected population growth, and associated increase to total floor area across the estate. Whilst recognising that, in reality, a business as usual scenario is unlikely to be sustained over the long term as future regulations focus towards zero carbon buildings, the above graph sets out a clear driver for change.

3.12 The work of the KPT looked at several factors and technologies and considered the best strategic response for the Council to the projected shortfall in emissions. With carbon emissions from electricity projected to reduce to close to zero by 2050, thermal demand and associated consumption of natural gas will be the principal component of 'business as usual' carbon emissions.

3.13 To assess the best strategic response to this challenge, the Council's projected 2050 estate was split in to two key components: The Council's current building stock that will be operational in 2050; and, the Council's new build estate.

3.14 With the reduction of thermal demand as a focus, the project identified that significant carbon and cost savings could be achieved through the new build estate by adopting the Passivhaus Standard for new builds. Passivhaus is a rigorous comfort and energy standard that aims to provide healthy and comfortable internal conditions for occupants with a focus on low energy consumption. It has been used extensively in Europe since inception with many local authorities making it the required standard for public buildings. In the last decade, it has also been successfully applied to UK buildings, and there are a number of Local Authorities in England and Wales that are consistently delivering accredited Passivhaus buildings.

3.15 Based on the business as usual scenario, it is projected that adopting Passivhaus across Council buildings could deliver a 17% reduction to 2050 carbon emissions. Furthermore, based on current energy prices, it is estimated that Passivhaus would deliver an annual cost reduction of over £5/m^2. This would equate to a saving of around £75,000 for a new high school (15,000m^2) or £19,000 for a new primary school (3800m^2).

3.16 From high level review of delivered projects, indications suggest that Passivhaus schemes can be delivered at or near Scottish Futures Trust metrics, however this is yet to be demonstrated in Scotland where no non- domestic Passivhaus schemes have been commissioned. The key will be to draw upon experienced teams. There is potential opportunity for lower carbon emissions and lower running costs without significant additional capital investment.

3.17 On 11 October 2018, the Finance and Resources Committee approved a report on Wave 4 Infrastructure Investment Programme that included a recommendation that the Wave 4 programme design should include the implications of adopting a Passivhaus or similar approach. This approach should be adopted for all Council new build projects.

3.18 Understanding and influencing the impact of existing buildings on 2050 carbon emissions is not as straightforward as on new buildings where complete control can be exercised over design. Whilst it is reasonable to expect that new buildings last for 30+ years, only a proportion of the Council's existing buildings will be operational in 2050. In addition, the Council's estate is diverse and different building archetypes will present different technical challenges to carbon reduction.

3.19 P&FM have several active projects and strategies focussed on delivering energy and carbon reduction. The continued improvement of operational efficiency continues to be a primary objective. To deliver 2050 targets, more ambitious energy reduction projects will be required. Fabric improvement of long term assets will be essential and there would be benefit in investigating opportunities for an extensive energy focussed refurbishment of historic buildings.

3.20 Over the short term, the predominant strategy for existing buildings is to prioritise energy and carbon efficiencies that support best value.

ISO50001 – Energy Management System Accreditation

3.21 ISO50001 defines a route for organisations to deliver energy efficiency and carbon reductions by focussing on achieving best practice in energy management. It follows the same management system of continual improvement as other standards such as ISO90001 and ISO140001.

3.22 As detailed in the 2016/17 Energy in Schools Report, Property and Facilities Management are in the process of developing an ISO50001 Energy Management System for significant energy consumers across the operational estate including schools. The original intention had been to seek accreditation by the end of 2018. ISO released a new version of the standard in September 2018 which has required some adaptation to processes. P&FM are in the process of procuring an external

auditor to support the delivery of the standard and intend to have ISO50001 accreditation by summer 2019.

Building Energy Management Systems

3.23 As reported in previously, the improvement of the Council's Building Energy Management System (BEMS) controls is a critical element of the Council's energy management strategy. Works have continued throughout 2018/19 and a large portion of the Council's school estate now has upgraded BEMS control. This enables heating and ventilation plant to be monitored and controlled remotely, both by Council officers and by appropriate technical support contractors.

3.24 This increased functionality brings opportunities for improved energy management by ensuring that plant is operating optimally, and to accurate schedules. It also allows remote diagnosis of faults. Whilst upgrades are set to continue through both the BEMS upgrade programme and under programmed asset management works, attention is also being given to energy and operational performance. Ensuring that BEMS run efficiently as possible will involve ongoing analysis of settings, data logs, and energy data along with collaboration with locality FM staff and building representatives to ensure that needs are met. The implementation of ISO50001 and associated energy monitoring and targeting will support the ongoing achievement of this objective.

RE:FIT

3.25 Works carried out under the RE:FIT project are now complete. Through this project, there was significant investment in the school estate, including 2 boiler replacements, 7 controls upgrades, 2 full LED lighting upgrades and the installation of 4 combined heat and power engines.

3.26 Savings across the project are projected at over £300k per annum and are guaranteed by the installation contractor (EOn). The majority of the works were carried out from July 2017 to March 2018, therefore only partial savings were realised in 2017/18. In August 2018, the project entered a contractual period of savings monitoring. This is conducted in line with recognised statistical methodologies and is subject to independent review. Most energy efficiency measures are delivering savings in line with expectations. Where initial savings are falling below expectation, P&FM will be working collaboratively with EOn to ensure the best possible outcome for the project.

Solar Photovoltaic Panels

3.27 There are an increasing number of properties across the Council estate with solar photovoltaic panels installed. Community owned solar panels were installed in 18 schools under the Edinburgh Community Solar Co-operative project. All three new high schools have significant solar installations: James Gillespie's High School (47kW), Portobello High School (160kW) and Boroughmuir High School (50kW). Smaller solar PV systems have also been installed on some of the new nurseries and rising school roll buildings.

3.28 In total, 1,115MWh of solar electricity was generated across Council buildings with 816MWh used on site by schools. This displacement of grid electricity reduced Council carbon emissions by over 300 tonnes. Whilst the Council pays for the majority of solar generation through the agreement with Edinburgh Community Solar Co-operative, onsite generation from Council owned systems on recent new builds saved over £20k in grid electricity costs.

3.29 Solar generation across the Council school estate is expected to continue across future new schools as they strive to meet building standards. A breakdown of solar generation for 2017/18 across Council schools has been provided in Appendix 3.

Outlook

3.30 The Council is now starting to crystallise some of the benefits of the significant investment that has been undertaken into energy conservation across both the school and wider property estate. Tangible carbon and energy reductions have been realised through the RE:FIT programme, Edinburgh Community Solar Co-operative, and the upgrade of Building Energy Management Systems.

3.31 It is clear from the work carried out during the Knowledge Transfer Partnership that this is just the start of the journey, and significant change will be required to meet future carbon targets. The project has helped set the vision and ambition for future new builds and adaptation of the Council's existing estate. The adoption of Passivhuas for new buildings presents a significant opportunity for energy improvement.

3.32 The immediate focus for P&FM is to improve the energy performance of new builds as well as optimise the operational efficiency of the existing estate. More strategically, consideration is being given to a full-scale energy efficient retrofit of an existing building, to inform options for future development of the estate.

3.33 Energy prices are continuing to rise. Delivering best value remains a key focus in relation to energy technologies and strategies. Rising floors areas and increasing use of buildings present challenges to energy reduction. Whilst there have been successes to date, there is still significant potential for energy and carbon savings from improvement to both equipment and the operation of buildings.

4. Measures of success

4.1 The Council builds on the work carried out under the Knowledge Transfer Partnership and commits to a long-term vision for carbon and energy reduction across its estate.

4.2 The Council continues to meet legislative requirements as set out in the Energy Performance of the Buildings Directive and reporting requirements as set out in the mandatory Carbon Reduction Commitment Energy Efficiency Scheme.

4.3 The Council continues to maintain an accurate record of energy consumption across the school estate.

4.4 The Council demonstrates a reduction in energy consumption and related carbon emissions across the school estate.

4.5 The Council achieves ISO50001 accreditation.

4.6 The Council takes advantage of the opportunities presented by operating a modern Building Energy Management Systems across the school estate.

5. Financial impact

5.1 The wholescale cost of energy is continuing to increase. This is compounded by increases to non-energy costs relating to grid infrastructure and the decarbonisation of energy generation.

5.2 Whilst increasing costs will place a pressure on budgets, they will also impact positively on the payback period for investment in energy conservation.

5.3 Best Value is a clear focus of current energy management strategy. Robust energy management practices and a clear vision for energy reduction is essential for continual improvement.

5.4 The closure of the Carbon Reduction Commitment at the end of March 2019 will result in a hike in cost per kWh of energy. The Council will be a net beneficiary of this change; however, this change will add to the direct cost of energy.

6. Risk, policy, compliance, and governance impact

6.1 The introduction of ISO50001 will provide resilience around energy management activities and support compliance with obligations under the Climate Change Act (Scotland).

6.2 Legislation has been used to drive forward change to reflect EU targets on emission reduction. Increasingly legislators are looking towards public bodies adopting a planned response for energy efficiency and carbon reduction. It is important that the Council is receptive and reactive to the likelihood of increased legislation, and develops plans and strategies to improve the efficiency of its built environment.

6.3 Whilst the Council benefits from a competitive energy contract it remains subject to energy price trends and changes to energy charging structures.

7. Equalities impact

7.1 Appropriate energy management of school buildings will have a direct enhancement of rights. For example, appropriate management of indoor temperature will aid education and learning through improved thermal comfort.

7.2 Energy management within schools will focus on delivering environments that meet best practice guidelines as set out in the Council's Energy Policy. Thermal comfort

is not a defined state. Some people will feel comfortable at certain temperatures whilst others may not.

8. Sustainability impact

8.1 As detailed in the report, the work carried out under the Knowledge Transfer Partnership has significant potential to inform change that will benefit the sustainability of the Council's school estate.

8.2 There is significant potential for sustainability benefits through appropriate energy management within the school estate, including reduced consumption and associated carbon reduction.

8.3 The introduction of an Energy Management System provides a platform from which to build and improve on sustainability objectives delivered to date.

9. Consultation and engagement

9.1 The Energy and Sustainability Team works closely with colleagues in both Property and Facilities Management and across the wider Council on energy projects. In addition, the team works with a wide range of stakeholders, suppliers, and organisations to ensure that the Council's practices are focussed towards delivering best practice.

9.2 The Energy and Sustainability Team will continue to build on the collaboration formed with Edinburgh Napier University during the Knowledge Transfer Partnership.

10. Background reading/external references

10.1 Energy Performance in Buildings Directive (Scotland) Amendment Regulations 2012 – This directive covers the requirements for Energy Performance Certificates in Scotland.

10.2 Carbon Reduction Commitment Energy Efficiency Scheme (CRC) – This website provides guidance on the CRC scheme.

10.3 Scottish Government Climate Change – This website provides detail on Scottish Government policy in relation to climate change and associated legislation.

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11. Appendices

11.1 Appendix 1. Energy Consumption and Baseline Data

11.2 Appendix 2. Energy Benchmark Data

11.3 Appendix 3. Solar Electricity Generation

Appendix 1 – Energy Consumption and Baseline Data

Property Type	2017/18						Heating Degree Days	
	Electricity		Gas		Oil			
	MWh	% Change (Baseline)	kWh	% Change (Baseline)	MWh	% Change (Baseline)		
High School	7,259	-9%	32,529	-7%	0	0%	2010/11	2735
PPP2	5,821	2%	12,808	8%	0	0%		
Primary Schools	9,880	4%	35,894	6%	112	-93%	2017/18	2548
Nursery Schools	606	5%	1,237	-41%	0	0%		
Special Schools	1,176	-8%	4,273	-9%	0	0%	% Change	-7%
Outdoor Centres	750	3%	357	-12%	21	-48%		
TOTAL	**25,492**	-1%	**87,098**	-1%	**132**	-92%		

Appendix 2 – Energy Benchmark Data

High Schools	Electricity (kWh/m²)	Gas (kWh/m²)
BALERNO HIGH SCHOOL	37	240
BOROUGHMUIR HIGH SCHOOL	37	166
BOROUGHMUIR HIGH SCHOOL (NEW 2017)	8	27
CASTLEBRAE HIGH SCHOOL	33	170
CURRIE HIGH SCHOOL	32	219
JAMES GILLESPIE'S HIGH SCHOOL	68	274
LEITH ACADEMY	55	255
LIBERTON HIGH SCHOOL	29	148
PORTOBELLO HIGH SCHOOL (NEW)	62	254
QUEENSFERRY HIGH SCHOOL	45	190
ST THOMAS OF AQUINS	44	194
TRINITY ACADEMY	39	217
WESTER HAILES EDUCATION CENTRE	71	301

Primary Schools	Electricity (kWh/m²)	Gas (kWh/m²)
ABBEYHILL PRIMARY SCHOOL	48	199
BALGREEN PRIMARY SCHOOL	49	218
BLACKHALL PRIMARY SCHOOL	102	61
BROUGHTON PRIMARY SCHOOL	48	217
BRUNSTANE PRIMARY SCHOOL	49	127
BRUNTSFIELD PRIMARY SCHOOL	31	206
BUCKSTONE PRIMARY SCHOOL	34	195
BUN-SGOIL TAOBH NA PAIRCE (FORMER BONNINGTON P/S)	30	184
CANAL VIEW PRIMARY SCHOOL	34	154
CARRICK KNOWE PRIMARY SCHOOL	44	138
CLERMISTON PRIMARY SCHOOL	46	221
CLOVENSTONE PRIMARY SCHOOL	46	143
COLINTON PRIMARY SCHOOL	29	129
CORSTORPHINE PRIMARY SCHOOL	35	143
CRAIGENTINNY PRIMARY SCHOOL	29	174
CRAIGLOCKHART PRIMARY SCHOOL	34	172
CRAMOND PRIMARY SCHOOL	47	299
CURRIE PRIMARY SCHOOL	40	148
DALMENY PRIMARY SCHOOL	44	105
DALRY PRIMARY SCHOOL	43	225
DAVIDSON'S MAINS PRIMARY SCHOOL	66	147
DEAN PARK PRIMARY SCHOOL	49	284
DUDDINGSTON PRIMARY SCHOOL	58	207
EAST CRAIGS PRIMARY SCHOOL	3	171
ECHLINE PRIMARY SCHOOL	55	158
FERRYHILL PRIMARY SCHOOL	64	130

FLORA STEVENSON PRIMARY SCHOOL	46	124
FOX COVERT ND & RC PRIMARY SCHOOLS	70	149
GILMERTON PRIMARY SCHOOL	28	139
GRACEMOUNT PRIMARY SCHOOL	15	219
GRANTON PRIMARY SCHOOL	38	178
GYLEMUIR PRIMARY SCHOOL	34	194
HERMITAGE PARK PRIMARY SCHOOL	45	176
HILLWOOD PRIMARY SCHOOL	28	272
HOLY CROSS PRIMARY SCHOOL	25	132
JAMES GILLESPIE'S PRIMARY SCHOOL	71	154
KIRKLISTON PRIMARY SCHOOL	61	136
LEITH PRIMARY SCHOOL	37	150
LEITH WALK PRIMARY SCHOOL	35	195
LIBERTON PRIMARY SCHOOL	33	204
LONGSTONE PRIMARY SCHOOL	43	254
LORNE PRIMARY SCHOOL	23	130
MURRAYBURN PRIMARY SCHOOL	21	225
NETHER CURRIE PRIMARY SCHOOL	90	0
NEWCRAIGHALL PRIMARY SCHOOL	41	202
NIDDRIE/ST FRANCIS COMBINED PRIMARY SCHOOL	61	122
PARSONS GREEN PRIMARY SCHOOL	168	10
PENTLAND PRIMARY SCHOOL (NEW)	49	131
PRESTONFIELD PRIMARY SCHOOL	87	3
PRESTON STREET PRIMARY SCHOOL	29	114
QUEENSFERRY PRIMARY SCHOOL	33	135
RATHO PRIMARY SCHOOL	41	215
ROSEBURN PRIMARY SCHOOL	40	179
ROYAL HIGH PRIMARY SCHOOL	33	225
ROYAL MILE PRIMARY SCHOOL	25	197
SCIENNES PRIMARY SCHOOL	40	123
SIGHTHILL PRIMARY SCHOOL	34	166
SOUTH MORNINGSIDE PRIMARY SCHOOL	41	164
ST CATHERINE'S PRIMARY SCHOOL	42	179
ST CUTHBERT'S RC PRIMARY SCHOOL	72	206
ST JOHN VIANNEY RC PRIMARY SCHOOL	30	218
ST JOHN'S RC PRIMARY SCHOOL	33	0
ST MARGARET'S PRIMARY SCHOOL	34	281
ST MARK'S RC PRIMARY SCHOOL	46	183
ST MARYS PRIMARY SCHOOL (LEITH)	32	171
ST MARY'S PRIMARY SCHOOL (ELONDON)	47	181
ST NINIANS PRIMARY SCHOOL	32	212
STENHOUSE PRIMARY SCHOOL	18	173
STOCKBRIDGE PRIMARY SCHOOL	155	0
TOLLCROSS PRIMARY SCHOOL	27	175
TOWERBANK PRIMARY SCHOOL	64	173
TRINITY PRIMARY SCHOOL	41	9

VICTORIA PRIMARY SCHOOL	32	193
WARDIE PRIMARY SCHOOL	47	129

PPP2	Electricity (kWh/m²)	Gas (kWh/m²)
BONALY PRIMARY SCHOOL (NEW)	48	152
BROUGHTON HIGH SCHOOL (NEW)	52	118
CRAIGROYSTON HIGH SCHOOL (NEW)	64	154
FORRESTER/ST AUGUSTINE'S HIGH SCHOOL - NEW	66	171
HOLYROOD HIGH SCHOOL (NEW)	60	120
JUNIPER GREEN PRIMARY SCHOOL - NEW	52	91
TYNECASTLE HIGH SCHOOL (NEW)	61	68

Special Schools	Electricity (kWh/m²)	Gas (kWh/m²)
GORGIE MILLS SCHOOL	53	133
KAIMES SPECIAL SCHOOL	57	153
OAKLANDS SPECIAL SCHOOL	56	240
PILRIG PARK SPECIAL SCHOOL	45	146
PROSPECT BANK SPECIAL SCHOOL	23	292
REDHALL MLD PRIMARY SCHOOL	55	185
ST CRISPINS SPECIAL SCHOOL	94	310
WOODLANDS SCHOOL MLD	49	147

Nursery	Electricity (kWh/m²)	Gas (kWh/m²)
BALGREEN NURSERY SCHOOL	23	93
CALDERGLEN NURSERY SCHOOL	146	545
CAMERON HOUSE NURSERY	20	169
CARRICK KNOWE NURSERY SCHOOL	8	0
COWGATE UNDER 5 CENTRE	38	298
CRAIGMILLAR CHILDRENS CENTRE	107	150
DARROCH CENTRE	41	2
FORT PRIMARY SCHOOL (NOW YPC AND SW STAFF)	43	212
GRANTON EARLY YEARS CENTRE	93	0
GREENDYKES EARLY YEARS (previously C&F)	62	210
GREENGABLES NURSERY SCHOOL	78	295
HAILESLAND C&F CENTRE	40	261
HOPE COTTAGE NURSERY SCHOOL	75	314
JAMES GILLESPIES NURSERY	7	113
KIRKLISTON NURSERY SCHOOL/KIRKLISTON COMM CENTRE	281	223
LIBERTON NURSERY SCHOOL	67	233
LOCHRIN NURSERY SCHOOL	23	340
MOFFAT EARLY YEARS CAMPUS	37	232
SPINNEY LANE NURSERY SCHOOL	478	0
ST LEONARD'S NURSERY SCHOOL	29	318

STANWELL NURSERY (DR BELL'S)	35	206
STENHOUSE CHILD & FAMILY CENTRE	29	302
VIEWFORTH CHILD & FAMILY CENTRE	102	66

Outdoor Centres	Electricity (kWh/m^2)	Oil (kWh/m^2)
BENMORE OUTDOOR CENTRE	161	0
LAGGANLIA OUTDOOR CENTRE	124	178

Appendix 3 – Solar Electricity Generation

ECSC Sites	System Size kWp	Commissioning Date	2017/2018		
			Generation	Export kWh	Consumption
BLACKHALL PRIMARY SCHOOL	15.00	27/07/2016	11,284	5,642	5,642
BUCKSTONE PRIMARY SCHOOL	100.00	29/08/2016	78,175	8,667	69,509
CAMERON HOUSE COMMUNITY CENTRE	20.00	30/08/2016	17,913	8,957	8,957
CANAL VIEW PRIMARY SCHOOL	100.00	23/07/2016	84,013	35,857	48,156
CARRICKNOWE PRIMARY SCHOOL	50.00	08/07/2016	44,022	10,602	33,420
CARRICKVALE COMMUNITY CENTRE	30.00	13/07/2016	26,829	13,415	13,415
CLERMISTON PRIMARY SCHOOL	21.00	18/08/2016	19,241	9,620	9,620
CRAIGHALL DAY	30.00	29/07/2016	22,215	11,107	11,107
CURRIE HIGH SCHOOL	133.38	22/09/2016	95,677	8,580	87,098
CURRIE PRIMARY SCHOOL	45.00	19/08/2016	36,492	4,964	31,527
DAVIDSONS MAINS PRIMARY SCHOOL	35.00	30/06/2016	30,693	28,852	1,842
DEAN PARK PRIMARY SCHOOL	83.00	31/08/2016	68,908	28,597	40,311
EAST CRAIGS PRIMARY SCHOOL	50.00	25/07/2016	42,949	8,505	34,444
GYLEMUIR PRIMARY SCHOOL	30.00	04/08/2016	26,954	13,477	13,477
LIBERTON PRIMARY SCHOOL	45.00	30/08/2016	38,707	11,690	27,018
OAKLANDS SPECIAL SCHOOL (NEW)	125.00	24/06/2016	107,841	25,245	82,596
PROSPECT BANK SCHOOL	35.00	14/07/2016	29,505	5,901	23,604
RATHO PRIMARY SCHOOL	70.00	15/09/2016	56,182	28,091	28,091
REDHALL MLD PRIMARY SCHOOL	50.00	05/08/2016	38,376	11,955	26,421
WARDIE PRIMARY SCHOOL	30.00	19/08/2016	23,318	11,659	11,659
WOODLANDS SCHOOL MLD	20.00	29/07/2016	15,687	7,843	7,843

CEC Site	System Size kWp	Commissioning Date	2017/2018		
			Generation	Export kWh	Consumption
James Gillespie's High School	47.00	14/03/2015	34,672	0	34,672
James Gillespie's Primary School	5.00	30/08/2013	4,094	0	4,094
Corstorphine Primary School	8.00	30/08/2013	2,737	0	2,737
Boroughmuir High School	50.00	17/01/2018	24,626	0	24,626
Portobello High School	160.00	01/08/2016	131,018	0	131,018
Leith Primary	2.00	01/04/2006	1,638	0	1,638