Full Energy Survey Checklist

Updated version 2017

An Energy Survey is undertaken to determine the current energy position in a building (quantity and cost of each form of energy over a given period) with the aim of identifying cost-effective energy saving measures.

1. Where is energy being used?
2. How efficiently is it being:
   - **Converted** by heaters, boilers, furnaces, refrigerators, compressors etc;
   - **Distributed** by electricity, gas, steam, air, water, heating oil systems; and
   - **Used** by plant, buildings and equipment.
3. What are the potential savings that could be made?
4. How can they be achieved?
5. How much will it cost to achieve the savings?
6. What are the priority areas?
7. How is energy information obtained, analysed and used?
8. Are there any management or people issues that need to be addressed?

Item	Details
Site name	
Site address	
WCC UPRN	
Contact details	
Date site visit arranged	
Site visit confirmed the day before with-	
Name of energy assessor (s)	
Date of this energy survey	
Area(s) assessed	
Date of previous Advisory Report	
Date of previous energy survey / walk round	
What is the current DEC energy rating of the building?	A B C D E F G
Occupancy Hours per day= Days per week=	
Building Information	
Building general description	
Is the building listed or of special, architectural or historic interest?	Yes No

Item	Details
Building floor area m^2 =	
Is the condition of the building fabric regularly inspected for energy efficiency?	Yes No
Are there any specific building fabric measures that apply to this building?	Yes No
Is there a swimming pool on the site?	Yes No
If so, is there a swimming pool cover?	Yes No
Are there any kitchen facilities?	Yes No
Are there any commercial catering facilities on site?	Yes No
Are there any lifts or escalators?	Yes No
Are there any steam boilers?	Yes No
Energy Consumption and Generation	
Site annual energy consumption electricity = gas = heating oil =	
Are on-site meter readings taken?	Yes No
Site's own benchmark kWh/m^2 / £/m^2 / £/pupil	
National benchmarks for building type kWh/m^2 / £/m^2 / £/pupil	Typical practice = Good practice =
Savings potential from typical practice	
Savings potential from good practice	
Are there any on site renewables?	Yes No
If yes, please give details including installed capacity (kW / MW)	
Procurement	
Is energy purchased through	Yes No

Item	Details
ESPO?	
If not, who are the suppliers? Electricity = gas = heating oil =	
Is a policy in place that ensures that energy efficient equipment is procured?	Yes No
Invoicing	
Is the VAT rate correct?	Yes No
Does the site pay CCL?	Yes No
Are invoices based on estimates?	Yes No
Policy	
Is the contact at the property aware of WCC's Energy Policy for Properties?	Yes No
Energy Efficiency	
Is energy managed effectively?	Yes No
Are occupiers encouraged to economise on the use of energy consuming equipment?	Yes No
Have any energy reduction improvements been made?	Yes No
Are there any energy reduction improvements currently happening or planned?	Yes No
If yes to either of the two questions directly above, please give details	
For DEC production	
Are there sufficient meters in place to produce a reasonably accurate Operational Rating?	Yes No
Has a proportion of the sites energy consumption been discounted because of lettings	Yes No

Item	Details
or for special energy uses?)	
On site – Photos showing date are needed of:	• External signage showing site name and address. • Boilers / plant room • Meter and meter readings. • Any installations appliances / building fabric in need of replacement. • Any recently installed appliances / building fabric improvements. • Anything unique at the site.
Schools Only	
Is the school	CE / VA / VC / Academy?
Does your school have an energy policy?	Yes No
Do you have an energy action plan for your school?	Yes No
Are staff and students fully aware and have a good understanding of any environmental policies you may have?	Yes No
Does your school have an environmental or eco-officer?	Yes No
If no, who in your school is responsible for environmental education?	
Does your school have a permanent environment / energy notice board?	Yes No
Do you encourage your staff and students to carry out or join any environment campaigns?	Yes No
Do students carry out environmental improvements?	Yes No
Have you ever had an energy campaign in your school?	Yes No
Has anyone ever conducted a wasted energy survey in your school?	Yes No
Has anyone ever conducted a wasted water survey in your	Yes No

Item	Details
school?	
Is there any non-WCC use of the buildings?	Yes No
If yes, identify any non-WCC use of energy – e.g. Private nurseries which operate for longer hours and may take less holiday than the school but which are fed from the WCC school electricity supply. Non WCC catering companies providing meals within schools to the school and private nurseries using gas and hot water.	
Discuss with the school appropriateness of the way energy consumed is charged for – often it is just apportioned by floor area which would disadvantage the school if the heating is electric. Find out if it would be worthwhile fitting a single phase meter / sub-meter to measure consumption – depends on complexity of current charging arrangements.	

Survey

Heating	Y / N / N/A
Is the building connected to WCC Energy Management System (Trend or JEL panel in the boiler-house)?	
Can heating times be reduced by fifteen minutes at the end of the day?	
Are multiple boilers sharing a low load, when one unit would suffice?	
Are there other zone controls?	
Is there an opportunity to fit TRV's?	
Is the condition of the boiler plant regularly inspected for energy efficiency?	
Is there uncontrolled heat output from distribution pipe-work?	
Is there damaged or insufficient insulation on boilers, valves, flanges and associated pipe-work?	
Has a boiler plant energy performance inspection been carried out in the last 12 months?	
Is the seasonal efficiency of the boiler plant less than 65%?	
Is the main heating fuel gas?	
Is the main heating fuel oil?	
Is the main heating fuel electricity?	
Is the main heating fuel wood / biomass / pellets?	
On the whole, is the temperature satisfactory?	
Are there any places with excessive temperatures?	
Are temperature and thermostats situated in inappropriate locations?	
Is the temperature generally consistent throughout the building?	
Are there any staff complaints or comments about the temperature?	
Is the temperature easy to control?	
Is there any simultaneous heating and cooling?	
Is heating on with windows open at the same time?	
Is heating on when not required / outside working hours?	
Are boilers running when no demands other than standing losses?	
Are there any cold draughts coming from windows or doors?	
Are windows open when heating or air conditioning is on?	
Is heat output restricted? Is furniture blocking the heating? Are there any obstructions in front of the radiators? Are there blocked grilles or missing air filters?	
Are any individual / portable / electric heaters being used?	
Are there any heating oil fuel storage tanks?	
Are there high ceilings with no warm air movement?	
Notes / Recommendations	

Lighting	Y / N / N/A
Is lighting maintenance, cleaning and lamp replacement carried out regularly?	
Are windows and skylights cleaned and kept free of obstruction to maximise use of natural light?	
Do blinds/curtains allow best use of daylight?	
Are there opportunities to use more daylight?	
Are there any areas where artificial lighting is used in areas with sufficient daylight?	
Has the building lighting strategy been reviewed by experts which shows it meets current needs using minimum energy?	
Are there any staff comments or complaints about lighting levels?	
Are there any areas with excessive light levels?	
Is task lighting used or needed?	
Do staff have individual control over their lights?	
If not, does the switching pattern suit the room?	
Is presence or absence detection / PIR (passive infrared motion sensors) lighting installed?	
If so, does the PIR system control adequately?	
Are lights switched off (if daylight sufficient/room not in use)?	
Do people know where the light switches are?	
Are light switches arranged conveniently and labelled?	
Can large banks of light be controlled by a single switch?	
Are empty / unoccupied areas lit unnecessarily?	
Are any tungsten filament lamps running more than four hours per day?	
What types of fluorescent tubes are in use? T12 (36mm) T8 (25mm) T5 (19mm)	
Are LEDs installed?	
What condition are reflectors in? Old and opaque Old New	
Is there a ‘last one out turns it off’ procedure in place?	
Is exterior lighting switched off when not needed?	
Is outside lighting on fixed time switch or manual control?	
Notes / Recommendations	

Water	Y / N / N/A
Are electrically heated hot water storage cylinders or electric point of use heaters fitted with time controls?	
Are the hot water storage cylinders in good condition e.g. free from any leaking, fouling, corrosion and suitably insulated?	
Are immersion heaters running at the same time as the boilers?	
Are excessive amounts of hot water used?	
Are the hot water pipes insulated?	
Is pipe insulation sufficient?	
Is hot water used where cold water would suffice?	
Any there any staff comments or complaints about hot water requirements?	
Are water saving measures fitted to the hot taps / showers?	
Have the HWS systems been assessed as effectively and efficiently matching current demand?	
Is the temperature of hot water at the taps regularly too high?	
Is there any non-domestic water use, i.e. vehicle washing?	
Is drinking water from mains or bottled? Mains Bottled	
Is urinal flushing controlled? None Some All	
Are there waterless urinals? None Some All	
Are water displacement devices in place in WCs? None Some All	
Are there any known or suspected water losses?	
Are there any dripping taps?	
Are there any overflows running?	
Are water heaters / instantaneous water boilers in place for drinks?	
If so, are water heaters used instead of kettles?	
Notes / Recommendations	

HVAC – Air conditioning	Y / N / N/A
Is there air conditioning in the building?	
If yes, is it a central system or individual units?	C I
Is it natural ventilation only?	
Is it mechanical ventilation only?	
Is there mixed mode with natural ventilation?	
Is the HVAC control adequate?	
If yes, is it a central system or individual units? Central Individual	
Does the extract ventilation ever run when not required?	
Are there any clogged or obstructed grilles or filters?	
Are there any stuck or overridden dampers?	
Do occupants understand how to set the temperatures?	
Are temperatures too low in summer time?	
Is the air conditioning ever on together with the heating?	
Notes / Recommendations	

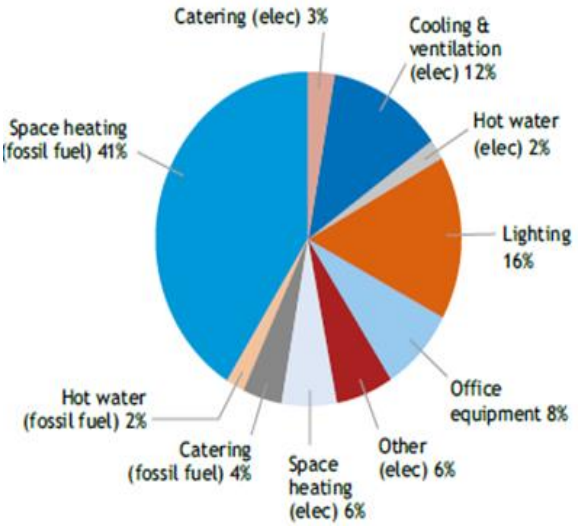
In the office / small appliances	Y / N / N/A
Are there any staff comments or complaints about computer rooms?	
Are computers left on overnight?	
Are monitors switched off when not in use?	
Are printers and photocopiers left on overnight/at weekend?	
Are water coolers left on overnight?	
Is the water heater located in the kitchen left on overnight?	
Is the kettle filled when only used for one cup of tea/coffee etc.	
Are portable fans used for cooling in summer?	
Are there any refrigerators?	
Are there any microwave ovens?	
Are there any vending machines?	
Are there any items of equipment used within the building that would benefit from automated controls?	
Are power-saving options on IT equipment effectively utilised?	
Notes / Recommendations	

Building Fabric	Y / N / N/A
Is there any poorly used space?	
Are most of the windows double glazed?	
Are windows clear to let in the maximum amount of light?	
Are windows and external doors draughty?	
Are doors and windows open when the heating is on?	
Is there any broken door and window glass?	
Are there any holes in walls or roof?	
Is there any substandard or damaged insulation?	
Is draft proofing required?	
Are there any staff comments or complaints about the building fabric?	
Is there overheating in summer?	
Are roof spaces insulated? (How many inches?)	
Notes / Recommendations	

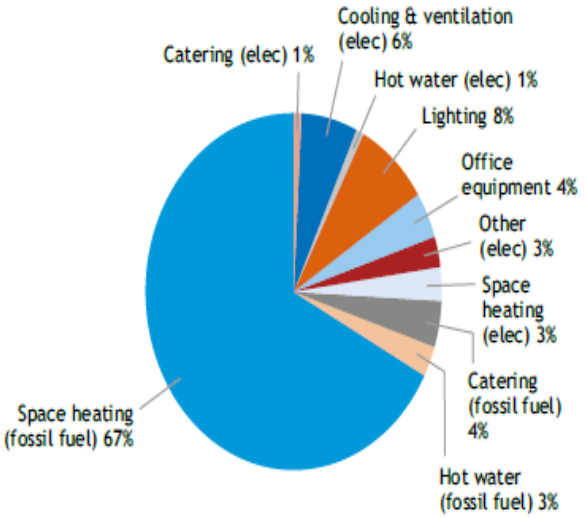
On-Site Catering	Y / N / N/A
Are kitchen ranges turned on before needed?	
Are kitchen ranges used as space heating?	
Are vending machines running 24 hours/day?	
Are there any badly fitting doors seals on refrigerators and freezers?	
Is hot water left running into sinks?	
Are empty freezers running through summer?	
Is there a steriliser sink?	
Are dishwashers running part empty?	
Are fridges and freezers next to heat sources?	
Is there any vigorous boiling of un-lidded pans?	
Notes / Recommendations	

Opportunities to Save Energy and Water

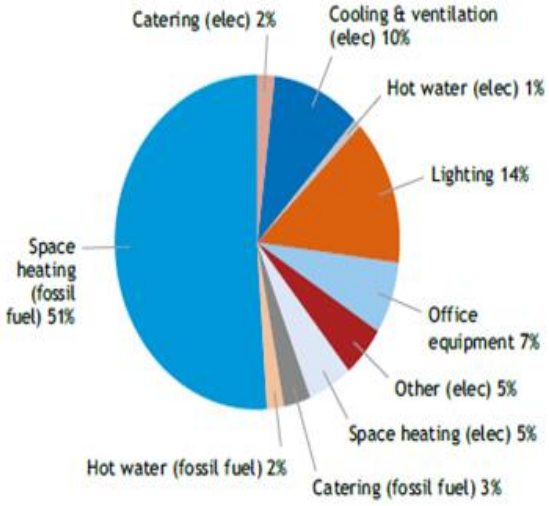
Local authorities – percentage cost



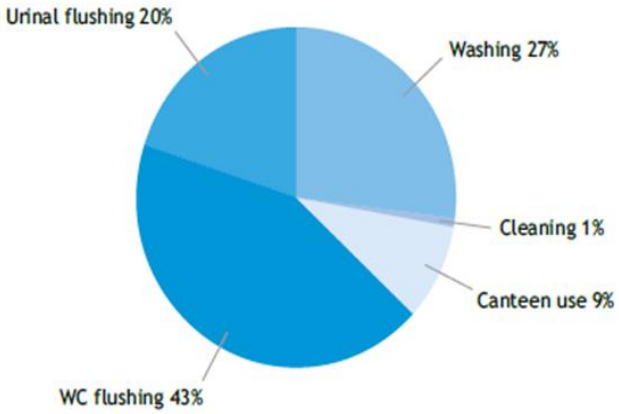
Local authorities – percentage energy use



Local authorities – percentage carbon emissions



Typical use of water in offices



Local authority buildings vary significantly, hence their water-usage profiles will be different. This graph shows the main areas to consider generally when planning a water reduction campaign as part of energy saving. Approximately 90% of this water usage can be decreased by using water-saving devices.

Priorities for Future Improvements

1. No cost measures (good housekeeping) or short payback
2. Low cost measures – medium payback
3. High cost measures – long payback

No - cost Measures				
Measure	Estimated annual saving		Estimated costs	Simple payback
	£	kWh	£	years
Behaviour change – only use the energy you need.				Immediate
Establish and Energy Team. Develop an Energy Policy.				
Understand your energy consumption data.				
Develop your own site benchmarks and set targets.				
Submit customer reads if an invoice is based on an estimate.				
Run awareness campaigns.				
Colour code switches – red (can't be switched off), amber (ask first), green (can be turned off if not being used).				
Minimise simultaneous operation of heating and cooling				
Use natural lighting where possible				
Turn off hot water boilers over the weekend if they are not used.				
Etc.				
Total				

Low - cost Measures				
Measure	Estimated annual saving		Estimated costs	Simple payback
	£	kWh	£	years
Behaviour change –				

using the energy you do use efficiently				
Valve and flange insulation				
Use timers / controls / sensors				
Ensure floodlights are on sensors. Change security lighting to LEDs.				
Enable power saving settings and power-down management on computer equipment.				
Box in and insulate pipework and valves.				
Use swimming pool covers.				
Design new buildings to maximise use of natural daylight and ventilation.				
Total				

High - cost Measures				
Measure	Estimated annual saving		Estimated costs	Simple payback
	£	kWh	£	years
Improve loft and cavity wall insulation				
improve insulation in flat roofs				
Improve the building fabric.				
Improve zoning for the heating system.				
Total				

General

Building Energy Rating – If your building is over 250m^2 and frequently visited by the public (weekly) you will need to display an Display Energy Certificate (DEC) in your entrance foyer. The certificate shows an energy rating from A to G in much the same way that ratings are displayed on fridges and washing machines. These can be sourced through ESPO framework 343.

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