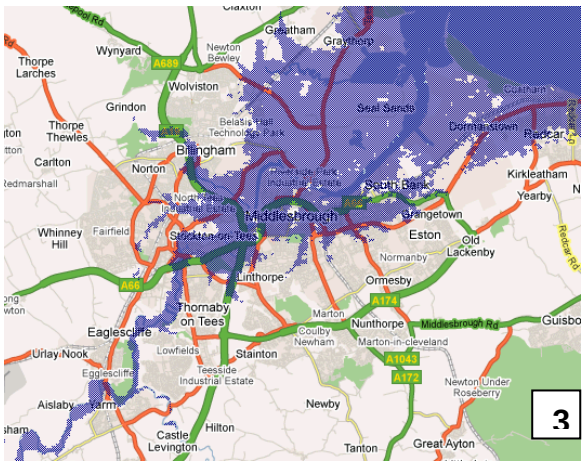
DRAFT – 24 AUGUST 2009

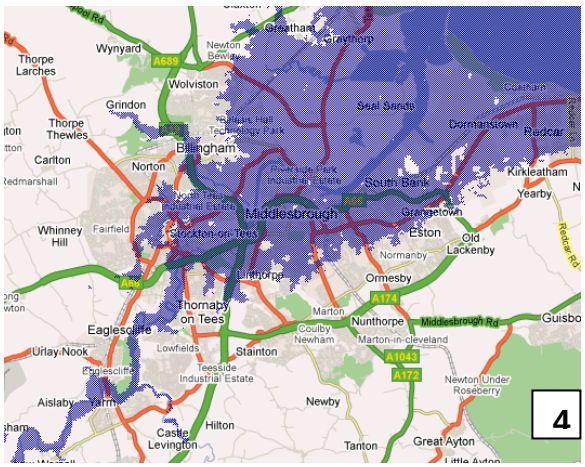
Stockton-on-Tees
BOROUGH COUNCIL

Environment Select Committee

Review of Carbon Management

2009





Environment Select Committee, Stockton-on-Tees Borough Council, Municipal Buildings, Church Road, Stockton-on-Tees TS18 1LD

Select Committee – Membership

Councillor Mrs Rigg (Chair)
Councillor Smith (Vice-Chair)

Councillor Cains
Councillor Larkin
Councillor Leckonby
Councillor Rix
Councillor Stoker
Councillor Womphrey
Councillor Woodhead

ACKNOWLEDGEMENTS

The Committee thank the following contributors to this review:

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Foreword

Councillor Mrs Rigg
Chair – Environment Select Committee

Councillor Smith
Vice-chair – Environment Select Committee

Original Brief

1. What services are included?

All aspects of the Council including the co-operation of many partners including schools and Tees Active.

2. The Thematic Select Committee's / EIT Project Team overall aim / objectives in doing this work is:

To identify options for future strategy / policy / service provision that will deliver efficiency savings and sustain / improve high quality outcomes for SBC residents.

- Public leadership and how effective the plans we have will be on impacting upon carbon emissions. The Council needs to play an effective social leadership role if it is to have the credibility to influence external partners and champion carbon reduction.
- Examine the opportunities to reduce the costs of our energy.

3. Expected duration of enquiry? What are the key milestones?

6 Months

4. In addition to analysis and benchmarking costs, performance, assets etc, what other processes are likely to be required to inform the review? (e.g. site visits; observations; face-to-face questioning, telephones survey, written questionnaire, co-option of expert witnesses etc).

Site visit to Rosebrook School and any other identified buildings that have energy saving factors.

5. How will key partners and/or the public be involved and at what stages?

Presentation by ARUP representative (commissioned to calculate the Council's carbon footprint)
Renew
Carbon Trust

6. Please give an initial indication how transformation will enable efficiencies and improvements to be delivered by this review?

To determine feasibility of council-wide energy/carbon budget
To identify taxation costs and benefits
To analyse investing for the future opportunities (i.e. new build vs refurbishment; IT; renewable energy)

1.0 Executive Summary and Recommendations

(The recommendations are submitted for approval, in principle, subject to a full assessment of both service and medium term financial planning implications.)

2.0 INTRODUCTION

2.1 The Government wants to encourage and empower local authorities to take additional action in tackling climate change, where they wish to do so. It believes that people should increasingly be able to look to their local authority not only to provide established services, but also to co-ordinate, tailor and drive the development of a low carbon economy in their area.

2.2 The nine English regions are already taking action to help meet the UK's greenhouse gas targets and budgets. The Local Democracy Economic Development and Construction Bill will require each English region to develop a new single Regional Strategy, which must include plans to tackle climate change.

2.3 As well as ensuring that governance frameworks are aligned, the Government wants to encourage local authorities and others in bringing forward more community scale heat and electricity generation. For example, community heating provides 2% of heating needs in the UK, but it could play a bigger role of up to 14%. To help achieve an increase in community energy generation, the Government has tasked local authorities to incorporate energy planning into their decision making processes, through the Climate Change Planning Policy Statement.

2.4 The public sector is directly responsible for around 1% of UK's emissions. Public sector emissions have already reduced by a third between 1990 and 2007, compared to an 18% reduction by the UK economy as a whole.

2.5 Budget 2008 announced the Government's ambition for new public sector buildings to be zero carbon from 2018. In addition, action is taking place across the public sector:

- All new schools will be zero carbon by 2016 and the higher education sector is developing a carbon reduction strategy. Over the next fifteen years, all secondary schools and up to 50% of primary schools will be refurbished to be better adapted to climate change and have lower carbon footprints.
- 35 Local Authorities have committed to set targets in their Local Area Agreements to reduce greenhouse gas emissions from their operations, and all authorities will be required to report progress against these national indicators, with outcomes publicly reported from November 2009.

2.6 In November 2002 Stockton Council signed the Nottingham Declaration on Climate Change. In doing so it made a commitment to "prepare a plan with our local communities to address the causes and effects of climate change and to secure maximum benefit for our communities."

2.7 Stockton-On-Tees Borough Council is part of the Tees Valley Climate Change partnership, which aims to tackle climate change in the most efficient way through sharing resources and efficient sub-regional collaboration on cross-boundary issues. The emissions target set by the Partnership is to reduce greenhouse gases emissions by 8.75% below 2000 level by 2012, and as an active supporter of this pioneering sub-regional partnership, Stockton-On-Tees has agreed to contribute to the delivery of this target.

3.0 EVIDENCE/FINDINGS

(The recommendations are submitted for approval, in principle, subject to a full assessment of both service and medium term financial planning implications.)

Background:

Stockton Borough Council accounts for 2 per cent of carbon emissions in the borough which although is not a significant percentage overall is considered high as the Council is not a manufacturing organisation.

The local authority carbon management programme has been developed by the carbon trust and provides technical and change management support to help local authorities realise carbon savings. The programme has been running for six years with 270 organisations participating.

The programme has five steps:

- Mobilise the organisation — June 2007
- Set baseline, forecast and targets — August 2007
- Identify and quantify options: — November 2007
- Finalise Strategy and Implementation plan: — March 2008
- Implement plan — 2008 – 2013

A target of 25% carbon saving by 2013 has been adopted, based upon both the experience of other local authorises in previous phases of the programme and from the information supplied by members of the project team relating to actions that are planned or expected to happen over the next five years.

The scope of the project includes schools, leisure facilities, council administrative buildings, libraries, the fleet, business mileage, and street lighting. As the carbon impact of our waste management strategy is highly complex it is subject to a separate review process. However, it is expected that carbon 'expenditure' will be a major consideration in determining waste management strategies and will add to our overall target.

Tristar homes have not been included in the scope of this programme as there are other drivers and programmes in place to improve the energy efficiency of the social housing stock.

Benefits to Participation in the Carbon Management Programme

Participation in the carbon management programme sends out a clear message that the Council is committed to reducing its contribution to climate change and is utilising resources responsibly. During the course of the programme there will be opportunities to engage with local businesses to encourage their participation in achieving carbon savings through ideas sharing, networking and support from the carbon trust.

The carbon management programme has been running for several years and it provides a tried and tested methodology to deliver carbon reduction and financial savings. It offers technical and specialist support to enable both the cultural shift within the organisation as well as offering proven technological solutions to energy issues within the local authority environment.

Carbon management has links to, and will contribute towards targets and objectives within:

- The Stockton on Tees Climate Change Action
- The Tees Valley Climate Change Strategy
- Sustainable Community Strategy 2008 - 2021
- Asset Management Plan
- Building Schools for the Future
- Procurement Strategy
- The Corporate Travel Plan

Producing and Delivering the Action Plan:

A cross-service project team was established, including membership from Tees Active. This group has brought together the necessary information to form the baseline position in terms of our carbon emissions and our energy costs as well as the following:

- Developed a project plan with objectives, deliverables, governance and some potential opportunities for energy savings ;
- Setting the target of 25% carbon reduction by March 2013, from the 2005/06 baseline;
- An innovative awareness campaign including a draft communications strategy, considered an example of excellence by the Carbon Trust, has been devised in-house by officers within Development and Neighbourhood Services based around the carbon dioxide molecule and utilising the “CO2” in captions and messages.

The plan is being delivered by the group who individually have responsibility for one or more of the 23 projects within the plan. Bi-monthly meetings of the project group take place to steer progress on these projects and to consider additional schemes or variations to the original plan.

Governance Arrangements:

Quarterly progress reports are considered by the corporate management team with annual reports being presented to Cabinet (see attached report presented on 11 June 2009).

Annual reports are submitted to the carbon trust and to the Salix finance organisation primarily to record carbon savings and spend on projects.

Additional Drivers for Action:

Since joining the carbon management programme there have been a number of additional drivers to take action to reduce our carbon emissions. The most significant being the impending carbon reduction commitment which is in effect a tax on carbon emissions if we do not achieve savings year on year. This is likely to be £12 per tonne starting in 2011 but likely to rise in later years of the programme.

The comprehensive area assessment is looking much closer at our use of natural resources and having a carbon management plan as well as a sustainable

procurement strategy with measurable impacts on carbon emissions is likely to put the council in a good position.

The new national indicator NI 185 which measures the carbon emissions from our operations is included within the local area agreement and as such sets very clear targets for reduction over the next few years.

There is also a new national indicator NI 194 which measures the air quality impact form our operations and looks at not only the carbon emissions but also the oxides of nitrogen emitted from vehicles and boiler plant.

Additional Risks and Opportunities:

The economic downturn presents both risks and opportunities to the carbon management programme. One of the original projects was to look at the office accommodation and rationalise what we had with perhaps the disposal of some of the portfolio which is now going to be very difficult to achieve on the scale perhaps originally envisaged. We have also had set backs on the supply of some equipment where companies have gone into receivership.

On a more positive note this programme does provide an opportunity to support emerging "green" businesses which may well provide part of a long term solution to the current economic situation.

The Committee was given evidence of 'Small Steps, Big Strides!' which is the Council's Carbon Management Communication Strategy & Action Plan 2008 – 2010. Due to delays in appointing staff the plan was not introduced until January 2009.

Questions were raised about what was going to be delivered and by when. The following table highlights the key milestones

Key Milestones	Target
Re-launch the *We've Made a Co2mmittment* brand.	March 2009
Launch new awareness campaign – ***Small Steps Big Strides***	March 2009
School assemblies – Presentation on the whole theme of the Environment, with specific information on Carbon Management and recycling. Schools and individual children will be encouraged to look at how they can actively reduce their own carbon footprint.	January 2009 - October 2010
Issue primary schools with **Small Steps Big Strides** information booklets detailing how to reduce carbon emissions. Information will include signposting to relevant websites, competitions and project and also up-to-date information on the Eco Schools and Solar4schools projects.	February 2009
In conjunction with the Climate Change Officer, deliver 4 staff road show events, including Municipal Building, Stirling House, Kingsway House.	October 2010
Attend 4 Community Events, including Summer Carnival and Greener Living Road Show.	October 2010
Develop marketing and awareness plan for Travel Smart.	April 2009

Particular focus was on the length of time actions needed before being undertaken especially when buildings were in control of the Council.

Members also received an update for the School Programme Delivery Plan which listed 10 schools in the Borough that were progressing against targets to improve their carbon footprint. With approximately 80 schools in the Borough questions were raised regarding the actions of schools not identified as it gave an impression that nothing was being done to contribute to reducing CO2. In order to identify strengths and weaknesses within schools it was recommended that a report be compiled so that all schools were identified showing their level of commitment to the carbon reduction strategy.

Officers identified that as the schools programme developed more schools wanted to be a part of the initiative. As energy monitors became available it was seen that they would become a useful tool to teach children the benefits of carbon management in reducing climate change.

It was suggested that as Stockton Council had obtained energy monitors and as part of raising public awareness that an article should be placed in Stockton News to highlight how energy is used and how it can be reduced.

Councillors were unaware of the Travel Smart scheme although it had been given a completion date of April 2009. They were informed that this had not been met as raising awareness had not been developed as had been expected but was still within the action plan.

Questions were raised regarding bus companies operating in Stockton Borough as to the level of contribution they are making to reduce their impact on climate change. Members were informed that included in the Government's wider transport objectives are means to address climate change by cutting emissions of carbon dioxide and other greenhouse gases, by offering and encouraging greener travel choices and using of low-carbon technologies. Through Kickstart bus funding, the Department for Transport's looking to pump-prime bus services which will contribute to the overall objectives of increasing bus patronage, and in particular developing bus services as an alternative to car use, bringing with it a reduction in congestion and benefits to the environment.

Stockton Borough Council has developed an energy centre but it was felt that this might lack public awareness. Signage to the energy centre from the High Street was suggested as a way of raising public knowledge as the centre contained useful information and energy saving devices. Alternatively, as SBC own The Shambles and as the tourist information is to relocate there it was suggested that the energy centre could also be considered as this would give it a more prominent position being located on the High Street.

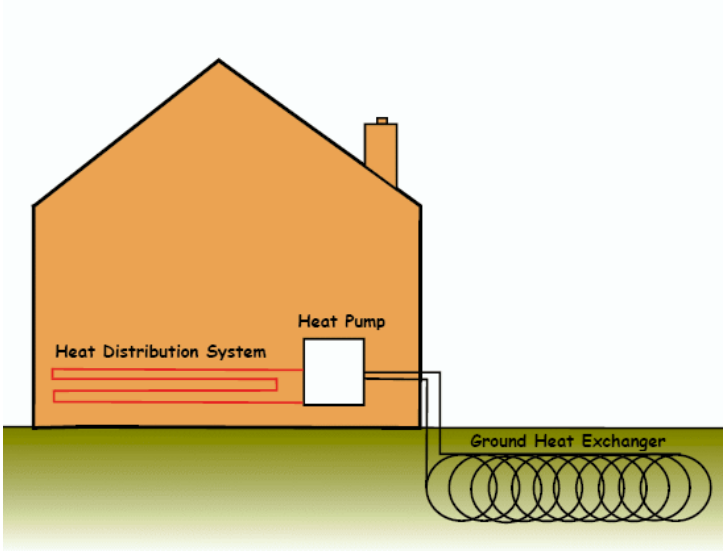
The Council's architect's department gave evidence showing how consideration is given to building quality and energy saving for properties including schools which make up the majority of Council buildings. A recent addition to building regulations is the Display Energy Certificate (DEC) Rating (A to G).

Schools with buildings that have a floor area in excess of 1000m² are required to have a Display Energy Certificate (DEC). This was effective from 1st October 2008. DEC's have been introduced to raise public awareness of the actual energy use and energy efficiency of the buildings they visit. A DEC certificate presents the

actual energy use of a building on an A-G scale where A is the most energy efficient and G is the least. The certificate is similar to those that are required for fridges and other new white goods.

The DEC has to be displayed in a prominent place visible to the public. It must be updated each year and be accompanied by an 'advisory report' listing measures to improve the performance. This report can last up to seven years before it too will need to be updated, but will not be required to be displayed along with the DEC.

Conyers and Rosebrook Schools have introduced heating provided by ground source heat pumps. (The education budget for Rosebrook School was not affected as grant funding was available. It is hoped that wherever possible to introduce this form of heating in schools as it does not cause a large cost differential and uses much lower temperature water.) The pumps take heat from under the ground using a liquid circulating in a buried pipe. The heat extracted is generally used to warm water for space heating.



The following table shows the available DEC ratings for Stockton Borough schools.

Stockton Borough Schools	DEC Rating
Bader Primary	D
Barley Fields Primary	C
Bewley Infant	C
Bewley Junior	C
Billingham South Primary	D
Bowesfield Lane primary	C
Christ the King RC Primary	D
Crooksbarn Primary	D
Durham Lane Primary	D

Egglescliffe Primary	E
Fairfield Primary	E
Frederick Nattrass	B
Hardwick Primary	C
Harewood Primary	E
Harrow Gate Primary	C
Hartburn Primary	D
High Clarence Primary	
Holy Trinity CE Infant	D
Ingleby Mill	C
Junction Farm Primary	D
Kirklevington Primary	C
Layfield Primary	D
Levendale Primary	D
Mandale Mill Primary	C
Mill Lane Primary	D
Norton primary	D
Oakdene Primary	C
Our Lady of the Most Holy Rosary	E
Oxbridge Lane primary	C
Pentland Primary	E
Preston on Tees Primary	E
Priors Mill CE Primary	C
Roseberry Infant	C
Roseberry Junior	B
Rosebrook Primary	
St Bede's RC Primary	C
St Cuthberts RC Primary	C
St Francis of Assisi CE Primary	D
St Gregory's RC Primary	G
St John the Baptist CE Primary	C
St John the Evangelist RC Primary	D
St Josephs RC Primary (Billingham)	C
St Josephs RC Primary (Norton)	D
St Marks Elm Tree CE Primary	D
St Mary's CE Primary	

St Patricks RC Primary (Stockton)	D
St Patricks RC Primary (Thornaby)	D
St Pauls RC Primary	D
St Therese of Lisieux	F
The Glebe Primary	D
The Links Primary	D
The Oak Tree Primary	D
Thornaby Village Primary	D
Thronaby CE Primary	D
Tilery Primary	D
Whinstone Primary	D
Whitehouse Primary	E
William Cassidi CE Primary	E
Wolviston Primary	
Yarm Primary	D
Billingham Campus	E
Bishopsgarth Comprehensive	D
Blakeston Comprehensive	D
Conyers Comprehensive	D
Egglescliffe Comprehensive	D
Grangefield Comprehensive	D
Grangefield (Teesside CLC)	
Ian Ramsey CE Comprehensive	E
Northfield Comprehensive	E
Our Lady & St Bedes Rc Comprehensive	D
St Michaels Comprehensive	D
St Patricks Comprehensive	D
The Norton Comprehensive	D
Thornaby Community School	D
Abbey Hill	E
Ashtrees	F
Westlands	B

The Committee attempted to determine the cost effectiveness of refurbishing school premises to improve energy efficiencies as it was stated that £180m was available for refurbishment but that the age and quality of buildings may not improve the DEC rating to that of a newly built school. Members were informed that it was difficult to

determine the level of cost savings as a number of factors such as school usage and hours of use will vary and that DEC ratings can only be used as a guide to energy efficiency.

As well as the DEC ratings Members were informed about the introduction of BREEAM (BRE Environmental Assessment Method). This is the leading and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building's environmental performance.

As part of the BREEAM Schools' assessment there are a number of issues that have to have client involvement independent from the design/construction elements. To date none of Stockton's schools have been formally assessed as part of BREEAM criteria. It will be necessary for all premises to be assessed and rated, as part of Building Schools for the Future (BSF) and it will be hoped that challenging but achievable ratings can be set. The Committee was informed that a decision needs to be taken and that no formal Council policy exists to ensure that the best score possible is achieved from all sections of the assessment. (Whilst it is recognised that new buildings will be predominantly schools a policy will also give guidance for acquired and refurbished Council premises.) The assessment level proposed will have a cost implication. BRE has published data on cost implication, which are as follows:

BREEAM RATING	PASS	GOOD	V GOOD	EXCELLENT	ZERO/LOW C
COST INCREASE %	0.01	0.2-0.7	1.0-2.6	4.1-5.6	2.7-15.3
AVERAGE	-	0.5%	2%	5%	10%

New build schemes will be easier to achieve better ratings than refurbishment. Schemes to be refreshed are unlikely to increase rating levels beyond current standards.

The following practical issues were identified.

Insulation

This is the major item that can significantly reduce energy and maintenance costs. The difficulty is providing sufficient insulation when the building is constructed that will give an effective lifespan. Buildings considered to be well insulated 15 years ago are now deemed to be inadequate and can be difficult to improve easily.

The use of facing brickwork is likely to decline in favour of timber frame or rendered walls with applied insulation. However these types of construction are not suitable for all public buildings that are often subject to physical rigours.

The more effective insulation products themselves can be formed from petroleum based materials but as long as they perform as insulants this is acceptable.

All SBC buildings are built with insulation standards exceeding current guidance as a matter of course.

Ventilation

This is a critical factor in education buildings, which have mandatory requirements.

Practice over the last few years has moved from electronically openable windows and roof lights to wind catchers on the roof. These enable natural ventilation and internal CO2 levels to be controlled without the need of mechanical ventilation. The use of windows and roof lights has been discontinued as it restricts the design and also has a number of mechanical controls involved. The wind catchers are now moving on to include solar fans, which will provide extract even when there is insufficient thermal movement or wind.

Should natural ventilation not be used, the mechanical option becomes more involved because of the requirement for heat exchangers and air recirculation ductwork.

Thermal Mass

The importance of thermal mass is now becoming relevant to public buildings as well as residential. In the past thermal mass was a way of using the mass of the structure to stabilise temperature control – a slow warm up and cool down. With increasing summer temperatures the thermal mass of the building can delay the time when the building reaches its maximum temperature. In schools this means that if the maximum temperature within the building can be moved from 1.00pm until 3.00 pm or later, a good internal condition can be maintained without the use of Air Conditioning. Thermal mass is best achieved with dense block work or brickwork so while external walls may be timber frame internal walls will be block work. This is where lightweight partitioning systems are not successful.

Heating Systems

Wet under floor heating systems became economical when good levels of under floor insulation became mandatory. Low temperature systems that no not make the floors hot became acceptable because of good heat distribution; low running costs and low maintenance especially in schools. Subsequently the systems have been found to be the best systems to be used with heat exchanger systems [ground or air sourced]. Because the effective heat exchange leaves the water at 40 deg. C that is the temperature required for under floor systems rather than the 70 – 80 deg C. for radiators.

At the present time – subject to enough space being available- ground source heat pumps are the most effective of the on site renewable energy resources. Current information indicates that between 3 and 4 units of heat can be generated by 1 unit of electricity. Currently a ground source heat pump will be in the region of £35 per square metre or exampled by Rosebrook School where the installation cost £70,000.

Solar Shading

With increased temperatures is it important that even in temperate latitudes buildings effectively tackle shading to avoid high internal temperatures and avoid the requirement for Air Conditioning. Current regulations are directing the designers to external shading rather than changing glass types or internal blinds. This has significant issues in the design as there are greater costs in removing heat from solar gain that for heating the building in the first place.

Other Issues

The Committee enquired as to the possibility of introducing wind turbines at schools as a means of generating electricity. Members were informed that only Bishopsgarth and Northfield schools would be suitable to avoid planning objections and to site turbines away from residential areas. The main planning objections would be the way in which turbines affect radars at Durham Tees Valley Airport; interference of digital media; and noise.

The Committee has no evidence that the environmental impact of the BSF buildings has a prominent position in the design and build of the new schools. The Committee believe it is important to use available funding to achieve the best DEC rating possible with the intention to achieve carbon neutrality as this is already being consulted for possible introduction in 2016. The Committee therefore recommends that the BSF team has appropriate representation to incorporate environmental planning.

In particular to all discussions was the achievement of cost benefits. The Committee agreed with officers that it will be necessary to determine the various drivers that are bringing about change. As such it is recommended that a map of such drivers is developed which will include funding, Government policies and changes to building regulations to identify where cost benefits will be achieved.

DRIVER	**CRITERIA**	**INFLUENCE**
Building Regulations Part L 1&2 (2006)	Sets requirements for energy performance of buildings, part 1 domestic, part 2 other buildings. Major revisions scheduled for 2010 and 2016	Statutory so sets minimum standards that must be complied with. 2016 issue should demand 'carbon neutral' buildings
Government Policy	80% CO_2 reduction target for 2050, interim target of 34% CO_2 reduction target for 2020 and five year reduction budgets that are mandatory	Carbon reduction budgets devolved to local authorities and business
Stockton-on-Tees Borough Council Policy	25% CO_2 reduction target for 2013 compared to 2005/06 baseline	Sets requirements for savings in all council operations supported by Salix invest to save funding providing interest free loans over five years paid from energy savings
Code for Sustainable Homes/BREEAM	'optional' standards to go beyond building regulations on a series of grades, in the case of CoSH to level 6, carbon neutral. BREEAM for commercial buildings expected to be replaced by more demanding standard to reach carbon neutral requirement	CoSH Level 3 mandatory for social housing and rising to level 4. Cost of achieving higher levels is often the issue with initial capital costs determining standards to be achieved. However, Building Regs should reach carbon neutral requirement by 2016 thus forcing the issue.

DRIVER	CRITERIA	INFLUENCE
Carbon Reduction Commitment	New 'cap and trade' scheme for high energy users (includes SBC) to encourage reduction in energy use by charging for carbon emission allowances (£12/tonne initially so ~£375k per annum cost to council)	Effectively a tax on emissions so provides an additional financial element to consider against energy saving investment decisions.
BSF Policy	Standards expected from Building Schools for the Future programme.	Requires BREEAM Schools very good rating but also requires 60% carbon reduction compared to a school built to 2002 Building Regs. This provides a further £50/m^2 funding to achieve this target.
Grants	A number of sources of grant support exist including Low Carbon Buildings Programme, RIEP (Regional Improvement and Efficiency Partnership), Big Lottery Fund (CESP – Community Energy Saving Programme), some utilities and from time to time various other sources	These grants can be a means of achieving a viable low carbon approach in terms of payback or budget. One issue can be the timing of applications and how these fit with design and build timescales.
Salix – invest to save	Maximum 5 year payback period and £100/tCO2 lifetime basis or maximum 7.5 year payback period and £50/tCO2 lifetime basis for defined technologies.	Being used by Stockton-on-Tees Borough Council for insulation measures, voltage reduction, street light dimming and hours reduction with others to come under the Carbon Management Programme

ICT

The Committee was particularly interested to gather evidence concerning the impact of Information and Communication Technology (ICT) on the Council's ability to reduce its carbon footprint.

ICT has been used to automate many functions and processes within the Council and this has helped to improve the efficiency and cost effectiveness of our services. However, it can be argued that this has had a detrimental impact on the environment and also on the organisations running costs. All of this computing power consumes energy and thus increases our Carbon footprint. Gartner (an ICT Industry analyst) estimate that ICT equipment alone contributes around 2% of the overall carbon emissions worldwide. In addition the rising costs of energy over the last few years

together with the increasing demand for ICT equipment has meant that revenue budgets have been squeezed more tightly than ever.

The challenge to the ICT industry and to this Council is to reduce this relatively large carbon footprint by implementing measures aimed at improving the ICT environment so that it is managed in a more ecologically friendly way. The Xentrall business case for ICT contains a number of large-scale projects which are aimed at reducing the complexity of the ICT environment at both Darlington and Stockton Councils. These will help to reduce our energy consumption, reduce the support burden and provide efficiency savings.

Xentrall ICT has representation on both Stockton and Darlington's Carbon management groups. In addition, through the SOCITM NE (Society of information Technology managers North-East) group, Xentrall are represented on a "Green ICT" sub-group aimed at sharing knowledge and learning from best practice regarding sustainable ICT.

The Committee was presented with a number of initiatives and projects that are currently underway.

Server and Storage virtualisation. There are a large number of servers (approx. 450) that are deployed at Stockton and Darlington which are used to deliver software applications to users. Traditionally, each application has required a separate server and this has led to a proliferation of devices. Many of the servers used are under-utilised and typically only 5 to 10 percent of their computing resources are used. However, more modern technologies can now be implemented to consolidate and virtualise these servers into a much smaller number of larger devices. In this way it is envisaged that the current 450 servers can be reduced to circa 150 devices over time. This is turn reduces the amount of power required for the servers and also for the air conditioning systems that are required to support them. By pooling resources in this way it is envisaged that the ICT infrastructure will be much more effective.

New Data Centre. There are currently separate data centres which are used to accommodate Stockton and Darlington ICT systems. Both are older 'traditional' type data centres which are no longer fit for purpose. Both Councils have tasked Xentrall ICT to build a new purpose built data centre which will serve the needs of both Councils for the foreseeable future. The location of this new data centre is to be the basement of the Town Hall in Darlington. This project is also linked to the Server and Storage virtualisation project mentioned above, as once the servers have been virtualised, then the demand for power and cooling in the new data centre will be substantially reduced. The new data centre will incorporate the latest modern design features which are aimed at reducing the amount of energy consumption and minimising the cooling requirements for the equipment. Separate power metering and monitoring facilities will be provided to closely monitor energy consumption.

Members enquired about the delays to the development of the new data centre and were informed that procurement issues and the presence of a large amount of dolomite at the site are contributing factors. When the centre is open will benefit Stockton Borough Council as the removal of servers from Municipal Buildings greatly improves the Council's reporting of National Indicator 185 rating which reports the percentage of CO2 reduction from local authority operations. In addition the DEC rating for the building will also be improved.

Printer Consolidation. The main objective is to substantially reduce the amount of printing that currently takes place at both Councils. There are currently a very large number of individual printing devices in use. The aim is to replace these with a much smaller number of high-capacity Multi-Function devices which will be strategically placed at suitable points within main Council offices. This will substantially reduce the amount of energy used to power these devices and will replace the need for separate devices currently used for Fax and scanning of documents. Other advantages include using less toner and plastics in ink packaging.

The Committee supports the need for a print strategy to be developed. This will include awareness-raising about the environmental impact of printing and will encourage users to 'think before you print". It should encourage double-sided printing and discourage the use of costly colour printing where this is not necessary. Such measures can substantially reduce the amount of paper and printer consumables which will reduce costs and benefit the environment.

In a bid to reduce the amount of printing for meetings, as an example, the Committee enquired whether it was cost effective and beneficial to provide monitors and a network that would allow the meeting documents to be accessed on-line thereby reducing the need for papers to be available. Tentative enquiries had been made but difficulties such as the impact on listed buildings such as the Town Hall proved to be a difficult obstacle to overcome.

Another issue regarding the lack of a physical set of papers is the difficulty incurred when reading from a monitor. E-readers are a new form of technology that mimic printed paper and can access various types of electronic documents. As such they are considered easier to read than a monitor so the Committee enquired whether they might be an option. The Committee was informed that no specific investigation was known to have been made into such technology but it may be something that can be further researched, possibly by the Councillors dedicated IT support officer.

Desktop PC environment. Two years ago Stockton BC introduced a policy by which all PC's would be automatically powered down on an evening and at the weekend. The Committee was pleased to learn that this has resulted in quite a significant reduction in energy consumption as machines were often left switched on unnecessarily. There has also been a significant migration to purchasing Laptops rather than traditional desktop PC's and also from using old power-hungry CRT monitors to modern flat Screen LCD monitor. Both initiatives have reduced energy requirements and heat output.

Evidence presented showed the levels of energy used and CO2 emitted per year for different types of office equipment used everyday within the Council.

Equipment type	Average power consumption while in use (watts)	1 yr power if left on 24/7/365 (kilowatt hrs)	CO2 emissions per year (kg)	Standby energy consumption (watts)
PC (processor only)	74	648	341	6/36*
PC monitor	100	876	462	4/7*
Inkjet printer	17	148	78	9
Laser printer	280	2453	1292	18
Fax machine	82	718	378	7
Photocopier	400	3504	1846	103

* figures relate to deep sleep and sleep modes

As well as current initiatives and projects the Committee learned of a series of planned initiatives for the Council.

Desktop Strategy review. Xentrall ICT is due to review the strategy regarding Desktop PC's in 2010. There is now a growing trend to virtualise Personal Computers in much the same way as servers. This has many of the same advantages as server virtualisation utilising computing power more efficiently by migrating processing power to the centre. Expensive desktop PC's can then be replaced by using 'thin client' devices which are much cheaper, easier to maintain and reduce energy consumption considerably.

Video Conferencing. Xentrall ICT is examining the feasibility of using video conferencing facilities at key locations within Stockton BC offices. This will potentially reduce the demand for travel for officers needing to attend meetings and this reduces our carbon footprint.

Video conferencing was of interest to Members particularly to reduce the amount of travelling to and from conferences which tend to be placed in the south of England. For video conferencing to increase may be dependent on improvements to the quality of high speed networks and broadcast quality both of which are likely to occur through technological advances.

This could be introduced between offices in Stockton and Billingham for a relatively small cost (£20,000?) to provide a trial before further advancement and investment throughout the authority.

The Committee was introduced to the concept of 'Webinars' which mixes available technology. Presentations can be viewed on-line with the participants to the seminar based in their office with audio and discussion via a telephone conference call. This has added benefits in that little or no cost is incurred and no travelling is necessary. (In schools virtual classrooms exist which provide a similar experience for school children.)

Telephone conferencing is already available throughout the Authority and Members considered it would be useful to remind officers and others how to use this and what benefits it will deliver. The Committee was informed that the Council's newsletter 'Keeping You In Touch' has an annual feature reminding officers of the added benefits of the telephone system and how to use them which may not be being utilised to their fullest.

Homeworking & Mobile working. ICT can be used to facilitate home working and mobile working. By equipping officers with the necessary tools and equipment to be able to work from home, the need for officers to travel to a main Council office location is reduced. Similarly, tools can be employed to enable mobile working so that officers can work more flexibly and more efficiently in the field without the need to travel back to their main office. This again reduces the amount of travel required and will reduce carbon emissions as well as allowing staff to work more efficiently and effectively.

Members enquired if homeworking would become the 'norm' but it is considered that, with the development of the Council's 'Workwise' programme various levels of working from home will be experienced. It was also felt that officers will benefit from meeting with colleagues so an amount of travelling and workspace will be required

although this could be reduced which could indeed reduce carbon production and emissions.

Advances in video conferencing should also benefit home workers to allow video links between the home workers home and the office.

ICT Strategy review. The current ICT Strategy is reviewed on a regular basis**.** Many of the projects and initiatives mentioned in this report are covered by the strategy. However, Xentrall ICT will update the ICT strategy to more closely align this with the Climate Change Action Plan and the Carbon Management Programme in order to ensure a more cohesive approach to the challenge of delivering sustainable ICT.

The above directly deals with ICT within the Council but there is also a responsibility by the schools in the Borough to reduce the ICT carbon footprint for which the Committee also took evidence but which are not exclusive to schools so could be adopted within the Council. The Committee was pleased to note that a high level of synergy exists between the Council and schools approach to reducing the carbon footprint created by ICT.

The removal of all active screensavers and other applications that prevent PCs from going into standby or hibernate mode would allow an energy and cost saving to be made (480k Wh (approximately £36) per PC per year – Oxford University Environmental Change Institute). When questioned officers agreed with the Committee's suggestion that screens should be switched off if not going to be used for some time or if the user leaves their desk or workstation for a period of time.

Users should switch off equipment after use especially if it is not to be used by another user. This should include chargers when they are no longer charging devices. Policies should be developed for shutting down projectors.

Timer switches should be used on non-networked technology and consideration should be given for using print management packages and other software which reduces the use of consumables and energy.

The Committee was informed that some 9,000 computers were within Stockton's schools and an audit of these would help to identify where savings were most likely to be made. BECTA (British Educational Communications and Technology Agency) along with the Carbon Trust has produced a calculator that allows schools to approximate the impact of their computers at least to provide a baseline and what carbon reductions could be achieved.

BSF is identified as providing opportunities for schools able to benefit from Government funding. The Committee was keen to ensure that all Stockton schools gained advantages especially when discussing Stockton Campus. Officers gave assurances that wherever possible all schools benefited from energy saving opportunities.

4.0 CONCLUSION

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