

Report for Resolution

Report to Executive
4 February 2009

Report of Director of Transformation

Subject Environmental Strategy – invest to save proposals

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Purpose

To seek Executive approval to earmark £200,000 from the City Council's "invest to save" funding pot, for use to submit as a commitment to the national Local Authority Carbon Management programme (LACM). This commitment will be used to secure an additional £200,000 LACM match-funding to spend on a range of environmental projects. It is envisaged that the projects will both:

- Help reduce the City Council's carbon footprint, to meet its stated policy of reducing by 6% per year for the next 5 years, and
- Reduce the City Council's energy costs, enabling the investment to be paid back over time.

This request would normally be submitted as part of the Council's annual budget process, but needs to be considered early in order to comply with the LACM bidding timetables.

Recommendations

Executive is asked to:

- Agree the identification of £200,000 from the Council's "invest to save" pot, for spending on an initial range of environmental projects
- Build this commitment into the Council's budget setting process for 2009/10
- Note that additional funding may be needed for future environmental projects, and that additional requests will be made at the appropriate time
- Delegate responsibility to the LACM Board, chaired by the Portfolio Holder for Sustainable City Development, to manage the process of project approval and monitoring.

Financial Consequences

The financial consequences of this report are that the £200,000 requested will be met from reserves. If we are successful in our bid to LACM, it will be matched by an interest free loan. This will generate a total of £400,000 to spend on a range of environmental projects. It is anticipated that these projects will both reduce the Council's carbon footprint, and produce efficiency savings from reduced energy costs. As efficiencies are generated, this will generate payments back to LACM and the "invest to save" pot. Some of the projects which are initiated will be capital projects, and progress on these will be monitored by the Capital Programme Board.

Risk Assessment

The City Council has a declared policy of achieving a 6% reduction in its carbon footprint over the next 5 years (i.e. a total of 30%). It has also recently agreed an Environmental Strategy setting out our ambitions for improving our environmental performance. It is now vital that the City Council initiates a range of projects to start practical actions – without these there is a risk that our ambitions will not be achieved, and our reputation will be damaged.

Delivery of the annual 6% target will depend on a range of different projects. These are set out in the annex. Payback periods are notoriously difficult to predict, but those used in our calculations have been recommended by the LACM, which operates this scheme on a national basis, and has worked with many local authorities. Nevertheless, as energy costs fluctuate regularly, it is impossible to predict the actual level of carbon reduction that will be achieved, or the level of cost efficiencies that will result from our actions.

Strategic Priority and Outcome/Service Priorities

The report helps to meet the strategic priority “Strong and prosperous city – working to improve quality of life for residents, visitors and those who work in the city now and in the future” and it also supports the delivery of 2 priorities from the 2008-10 Corporate Plan:

- Develop and implement the environmental strategy
- Design and implement the LACM programme

Executive Member: Councillor Morrey - Sustainable City Development

Ward: All

Contact Officers

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Background Documents

Draft Carbon Management Plan (CMP)

Examples of SALIX projects

Report

Introduction

1. Energy is fundamental to the way we live our lives. Energy sources such as gas, oil and coal have helped the UK to develop from the beginnings of the industrial revolution to the current day economic prosperity. However recent energy price changes, better scientific knowledge regarding emissions and issues in regards to the country of origin for energy supplies has started an energy management trend within the developed world.
2. The way in which energy is consumed needs to change and action needs to be taken to address issues such as climate change, security of supply and the cost of energy for businesses, industry and households. In the government's Energy White Paper "Our energy our future: Creating a Low Carbon Economy", and via the Climate Change Bill, the challenge has been set to reduce carbon emissions, whilst at the same time proving affordable energy and ensuring reliable energy supply.

The Norwich City Council Commitment

3. Norwich City Council acknowledges that it has a responsibility to help the UK achieve its commitment to reduce climate changing carbon emissions to help achieve a sustainable quality of life, for now and future generations to come. The government and other public sector bodies are in a particularly strong position to influence and develop this change. Norwich City Council is pleased to be part of the Carbon Trust's Carbon Management Programme. Since the programmes internal launch, the Environmental Management Team has been increasing our awareness of energy use, waste across the council and within our service provision.
4. Our authority now has its own draft Carbon Management Plan (see Annex 1) which will be used to achieve our 6% CO₂ emission reductions target and therefore assist the council in achieving a number of strategic goals. These include the 2nd theme of the Sustainable Community Strategy which is a City of Environmental Excellence. The CoNP objectives are
 - a. for Norwich to become a low-carbon city
 - b. to minimise our use of global resources and
 - c. to become a model city for the management of the natural and historic environments.
5. These strategic aims are also mirrored within our Corporate Plan 2008 - 2010 by "putting environmental sustainability, culture and creativity at the heart of everything we do". Furthermore, the Local Authority Carbon Management programme is one of the 53 priorities set in our Corporate Plan 2008 – 2010.
6. The carbon management plan calculates the actions required to reduce our carbon emissions over the five years of the plan. Within the plan are a number of projects which will assist to reduce our carbon emission by 30% by 2012. These include awareness campaigns such as the "One Small Step" campaign as well as energy efficiency measures such as automated PC shutdown and voltage optimisation. It is intended that once our own house is in order we will be able to promote best practice to other authorities, businesses and the public.
7. With dramatically rising energy prices and reducing global energy reserves it is

prudent for the council to minimise energy use and thereby reduce carbon emissions. The Carbon Management Plan aims to reverse the increasing energy use and increasing carbon emissions by the council and could save over £3.6m over the 5 year lifetime of the plan.

8. This action is also prudent as the European Buildings Directive has come into force in the UK this year requiring many of our civic buildings (those with a floor area over 1000m²) to be graded in terms of energy performance on an A-G type scale in the same way as white electrical goods are already graded. With the lack of wide scale investment in improving the energy performance of Council buildings the Carbon Management Plan will be vital in making the necessary improvements and enabling the Council to perform well. These documents are publicly displayed and are therefore a good indicator to the public in regards our environmental performance. A further risk to the Council is the Carbon Reduction Commitment (CRC) which is under consultation and this may require the Council to join a mandatory carbon trading scheme in the near future which if implemented would penalise poor performing Councils.

Opportunity

9. Norwich City Council was selected in 2008, amidst strong competition, to take part in the Local Authority Carbon Management Programme (LACM). Norwich City Council partnered with the Carbon Trust on this programme in order to realise significant carbon and cost savings. This Carbon Management Plan commits the council to a target of reducing CO₂ by 30% by 2012 and underpins potential financial savings to the council of around £3.6 million.
10. The LACM programme recognises that councils will need to invest in order to deliver efficiency savings, and therefore includes the potential for an interest free loan, providing this is matched by funding from the council itself. Therefore our "spend to save" investment will be match funded pound for pound by an interest free loan from SALIX Finance to create a Carbon Reduction Fund. This fund is expected to return all investment over the length of the programme. If this fund is not created the programme would be a serious risk of not implementing our 6% per year reduction target.
11. The Norwich City Council Carbon Management Plan (CMP), sets out our strategy for reducing carbon emissions by 30% by 2012, from a baseline of 2006/07. The targets within the CMP will be SMART – specific, measurable, achievable, realistic and time bound. The data indicates that the BAU (Business As Usual) costs for electricity and gas will be approximately £2,69m per year by 2012. If target reductions are reached (6% reduction per year until 2012) the value at stake i.e. the difference between the target cost and BAU cost over the 5 year period totals £3,6m: (BAU cost 8.4%). In addition to the vast financial benefits the implementation of this project will enable the authority to assist in national carbon reduction and promote our environmental aspirations to the general public.
12. Failing to reach our corporate objective of a 30% reduction in CO₂ will be a lost opportunity to save this £3.6m over the period of the programme. All projects within the programme will have a payback of less than 7 years. The first year of the programme will identify projects that have less than a two year payback. The Carbon Management Plan targets the projects with the best payback results first. These projects will be managed by the Local Authority Carbon Management Board and implemented by the Local Authority Carbon Management Team which have been set up as part of the LACM programme

divided by the Carbon Trust.

13. The Carbon Management Plan envisages up to 7 year payback from carbon reduction projects or initiatives. Through SALIX 0% government finance match funding a range of initiatives will be delivered on a phased basis, by focussing on easier wins first, and then progressing to larger projects over time. Through the SALIX partnership Norwich City Council will establish a fund to deliver the LACM and Carbon Management Plan. The total of the fund will be £400,000 of which Norwich City Council will need to invest £200,000. The authority can spread the funding over the length of the programme and can could invest more or less money as appropriate to existing budgetary constraints however a commitment is required to establish the fund in order for SALIX to match our investment.

Conclusions

14. Norwich City Council joined 73 other authorities in the LACM6 programme developed by the Carbon Trust. We have calculated our carbon footprint and developed a range of projects which if financed will start to achieve our 6% reduction target. The environmental management team is requiring a commitment of £200,000 to create a fund to deliver the first projects within the Carbon Management Plan. The cost to the authority of not delivering the 30% carbon emissions reduction by 2012 could be approximately £3.6m as well as not achieving a number of corporate objectives.
15. Executive is asked to approve the identification of £200,000 from the “invest to save” funds for use to secure match funding from the SALIX funding pot.
16. Background information is attached, including:
 - Annex A - the Draft Carbon Management Plan (CMP) – this will be submitted to the LACM alongside our funding proposals. It sets out the detailed work programme for the LACM
 - Annex B – examples of SALIX projects with the CMP
17. Once we have secured funding approval from SALIX, we are proposing that the LACM Board, which is chaired by Councillor Morrey, and sponsored by the Director of Transformation, will be responsible for the allocation of funds to specific projects, and for the monitoring of progress. Progress will also be reported regularly to the Climate Change Panel, and the Capital Programme Board.

Forward for executive

This document, the Norwich City Council Carbon Management Plan (CMP), sets out our strategy for reducing carbon emissions by 30% by 2012, from a baseline of 2006/07. Our carbon footprint for the year 2006/07 was made up of emissions from council buildings, travel/fuel use, lighting, water consumption and non-domestic waste to landfill. Total emissions for the year have been calculated at 13,500 tonnes of CO₂ equivalent (tCO₂e).

The CMP sets out a five year strategy to build on the actions and achievements already completed or being implemented within our LA operations. To achieve the target of a 30% reduction in emissions there is a requirement to increase the resources available for carbon management, both capital resources for the implementation of technical measures, and personnel to develop the enabling measures. By making these resources available (and by attracting external investment from SALIX finance) Norwich City Council will achieve our emissions reduction target.

The CMP is due for completion in March 2009. It is intended that the CMP will be signed off by Cabinet/CMT before implementation. The CMP is being delivered by the Environmental Strategy Team and Asset and City Management. Figures used within this document are correct for publication (Jan 2009) however these can change due to fluctuation in fuel prices.

Further questions should be directed to Richard Willson (Environmental Strategy Manager)
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Norwich City Council Carbon Management Plan



2008-2012

“putting environmental sustainability, culture
and creativity at the heart of everything we do”



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Foreword from Chief Executive Laura Mc Gillivray

Energy is fundamental to the way we live our lives. Energy sources such as gas, oil and coal have helped the UK to develop from the beginnings of the industrial Revolution to the current day economic prosperity. However recent energy price changes, better scientific knowledge regarding emissions and issues in regards to the country of origin for energy supplies have started an energy management trend within the developed world.

The way in which energy is consumed needs to change and action needs to be taken to address issues such as climate change, security of supply and the cost of energy for businesses, industry and households. In the government's Energy White Paper "Our energy our future: Creating a Low Carbon Economy", and via the Climate Change Bill, the challenge has been set to reduce carbon emissions, whilst at the same time proving affordable energy and ensuring reliable energy supply.

Norwich City Council acknowledges that it has a responsibility to help the UK achieve its commitment to reduce climate changing carbon emissions to help achieve a sustainable quality of life, for now and future generations to come. The government and other public sector bodies are in a particularly strong position to influence and develop this change. Norwich City Council is pleased to be part of the Carbon Trusts Carbon Management Programme. Since the programmes internal launch the Environmental Management Team has been increasing our awareness of energy use and waste across the council and our within our service provision.

Our authority now has its own Carbon Management Plan which will be used to achieve our 6% CO₂ emission reductions target and therefore assist the council in achieving a number strategic goals which include **"To make Norwich a world-class city in which to live, work, learn and visit"** Sustainable Community Strategy 2008-2020 The Sustainable Community Strategy sets themes with strategic objects for the City. The 2nd theme, City of Environmental Excellence, sets the objectives for Norwich to become a **low-carbon city**, to minimise our use of global resources and to become a model city for the management of the natural and historic environments. This strategic aims is also mirrored in our Corporate Plan 2008 - 2010 by **"putting environmental sustainability, culture and creativity at the heart of everything we do"** The carbon management plan will also be used to increase awareness in regards to general energy efficiency across the council. It is intended that once our own house is in order we will be able to promote best practice to other authorities, businesses and even the public.



Laura Mc Gillivray

Steve Morphey

Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for local authorities - it's all about getting your own house in order and leading by example. The UK government has identified the local authority sector as key to delivering carbon reduction across the UK inline with its Kyoto commitments and the Local Authority Carbon Management programme is designed in response to this. It assists councils in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their carbon emissions.

Norwich City Council was selected in 2008, amidst strong competition, to take part in this ambitious programme. Norwich City Council partnered with the Carbon Trust on this programme in order to realise vast carbon and cost savings. This Carbon Management Plan commits the council to a target of reducing CO₂ by 30% by 2012 and underpins potential financial savings to the council of around £1 million.

There are those that can and those that do. Local authorities can contribute significantly to reducing CO₂ emissions. The Carbon Trust is very proud to support Norwich City Council in their ongoing implementation of carbon management.



Richard Rugg
Head of Public Sector, Carbon Trust



1. Introduction: Management Summary

Global climate change is recognised as the key environmental threat facing the world. Concerns over fossil fuel depletion, security of energy supplies and rising energy costs are focussing the attention of individuals, organisations and governments on the need for energy conservation and carbon emission reduction.

Over the past year Norwich City Council has been working with the Carbon Trust and 73 other authorities in a programme to calculate our carbon emissions footprint, to set targets for reducing our carbon emissions, and to formulate a plan to deliver the target. Our regional partner authority on the Local Authority Carbon Management (LACM) programme was Cambridgeshire County Council.

This document, the **Norwich City Council Carbon Management Plan (CMP)**, sets out our strategy for reducing carbon emissions by 30% by 2012, from a baseline of 2006/07. Our carbon footprint for the year 2006/07 was made up of emissions from council buildings, travel/fuel use, lighting, water consumption and non-domestic waste to landfill. Total emissions for the year have been calculated at **13,500 tonnes of CO₂ equivalent (tCO₂e)**.

The CMP sets out the policy context for carbon reduction initiatives within the council. In addition it outlines our vision, strategic objectives and emission reduction targets from delivering the CMP, as well as a summary of the predicted cost and carbon emissions savings. The CMP for Norwich City Council cannot be seen as a stand-alone document where energy and resource use issues are tackled in isolation, but needs to be seen within the bigger picture as it helps to achieve a number of strategic objectives for the city council.

The Sustainable Community Strategy sets themes with strategic objectives for the City. The 2nd theme, City of Environmental Excellence, sets the objectives for Norwich to become a low-carbon city, to minimise our use of global resources and to become a model city for the management of the natural and historic environments. The City Council's Corporate Plan 2008/10 highlights the City Council's environmental ambitions. The Corporate Plan describes how this will be achieved by "putting environmental sustainability, culture and creativity at the heart of everything we do".

The Carbon Trust has assisted Norwich City Council to recognise the essential role of resource efficiency in addressing the multiple challenges of climate change. Norwich City Council and our partner Cambridge County Council wished to set an example in this respect. Norwich City Council wishes to develop new policies, use new carbon reduction projects and develop organisational or cultural ways to improve service efficiency as well as reducing our carbon emissions. It is hoped that by taking this low carbon journey the authority will lead businesses and the third sector realise the same resource efficiencies and savings.

The Council continually strives to offer community and business stewardship on environmental matters and we feel that our stakeholders will gain confidence that their local authority has planned for the future by our adoption of this document. The progress of this plan will be monitored by the cross party Climate Change panel and an interdepartmental Carbon Management Board.

Participating councils benefit from consultant support in the form of workshops and limited dedicated support tailored around the 5 Step process. This process guides authorities through a systematic analysis of their carbon footprint, the value at stake and the opportunities available to help them manage carbon emissions in a strategic manner.



Fig. 1 Local Authority Carbon Management programme 5 steps.

2.0 Carbon Management Strategy

2.1 Context and drivers for Carbon Management

Climate change affects all of us - and we can all be part of the solution. Climate refers to the average weather experienced over a long period. This includes temperature, wind and rainfall patterns. The climate of the Earth is not static, and has changed many times in response to a variety of natural causes. The Earth has warmed by 0.74°C over the last hundred years. Around 0.4°C of this warming has occurred since the 1970s. The recent Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) leaves us in no doubt that human activity is the primary driver of the observed changes in climate.

The main human influence on global climate is emissions of the key greenhouse gases - carbon dioxide (CO₂), methane and nitrous oxide. The accumulation of these gases in the atmosphere strengthens the greenhouse effect. At present, just over 7 billion tonnes of CO₂ is emitted globally each year through fossil fuel use, and an additional 1.6 billion tonnes are emitted by land use change, largely by deforestation. The concentrations of these gases in the atmosphere have now reached levels unprecedented for tens of thousands of years.

Climate change presents a significant challenge to the UK and to the international community. There are also enormous opportunities if we are willing to take action. Government, business and individuals all have a part to play, and all of us can benefit from rising to the challenge of climate change. The evidence from central government is overwhelming. Publications such as the Stern Review: The Economics of Climate Change produced by Treasury or Adapting to Climate Change in England: A Framework for Action published by DEFRA all highlight the need for early actions to avoid damage to our economy and our infrastructures. By taking action now and over the next few decades we will be able to adapt or protect our day to day lives and general quality of life.

“Climate change is one of the greatest challenges facing society today – both for the international community and the UK. The debate about the causes is over: we now know that the planet has warmed largely due to human activity” Rt Hon Hilary Benn MP
Adapting to Climate Change: A Framework for Action. DEFRA 2008

With dramatically rising energy prices and reducing global energy reserves it is prudent for the Council to minimise energy use and thereby reduce carbon emissions. The Carbon Management Plan aims to reverse the increasing energy use and increasing carbon emissions by the Council and save over £3.6m over the lifetime of the plan.

The European Buildings Directive has come into force in the UK this year requiring many of our civic buildings (those with a floor area over 1000m²) to be graded in terms of energy performance on an A-G type scale in the same way as white electrical goods are already graded. With the lack of wide scale investment in improving the energy performance of Council buildings the Carbon Management Plan will be vital in making the necessary improvements and enabling the Council to perform well. These documents are publicly displayed and are therefore a good indicator to the public in regards to environmental performance. A further risk to the Council is the Carbon Reduction Commitment (CRC) which

is under consultation and this may require the Council to join a mandatory carbon trading scheme in the near future which if implemented would penalise poor performing Councils.

The CMP includes a number of actions, which are low, or nil cost measures where building user behaviour and Council policy decisions can make significant reductions in energy use. For this reason a corporate approach by all Services and a wide range of officers have been identified for implementing the actions embodied within the Plan.

All the physical improvement measures in the Plan which will require investment have a reasonably short term pay back period with practical works including for example roof insulation, cavity wall insulation, better control of the temperature in buildings and reducing draft/heat loss from buildings. All measures that householders would undertake in their homes to reduce their fuel bills and carbon emissions. It is important to emphasise that the Council should lead by example on this issue and demonstrate that through its activities, the Council can contribute specifically to carbon reduction. Furthermore with the costs of energy likely to continue to rise substantially, the Council needs to actively address the Carbon Management agenda.

2.2 *Our low carbon vision*

The Carbon Management Plan sets out the policy context for carbon reduction initiatives within the council. In addition it outlines our vision and strategic objectives and emission reduction targets from delivering the Carbon Management Action Plan, as well as a summary of the predicted cost and carbon emissions savings.

The Carbon Management Plan for Norwich City Council cannot be seen as a stand-alone document where energy and resource use issues are tackled in isolation, but needs to be seen within the bigger picture as it helps to achieve a number of strategic objectives held within the City of Norwich Partnership (CNOP) Sustainable Community Strategy 2008-2020 **“make Norwich a world-class city in which to live, work, learn and visit”**.

The Sustainable Community Strategy sets themes with strategic objectives for the City. The 2nd theme, City of Environmental Excellence, sets the objectives for Norwich to become a low-carbon city, to minimise our use of global resources and to become a model city for the management of the natural and historic environments.

The City Council’s Corporate Plan 2008/10 highlights the City Council’s environmental ambitions via the priority to deliver a strong and prosperous city. **“To improve the quality of life for residence, visitors and those who work in the city now and in the future”**. The Corporate Plan describes how this will be achieved by **“putting environmental sustainability, culture and creativity at the heart of everything we do”**.

In addition the CMP helps to achieve a range of aims and objectives held within the Environmental Strategy **“It is our policy to meet our national and international legislative obligations, to develop local sustainable communities, enhance the local environment, deliver environmentally-friendly services and enforce environmental legislation to help stem the depletion of finite natural resources”**. Environmental Strategy 2008-2010.

- **Increased energy efficiency in Council owned property**
- **Reduced disposal of waste to landfill**
- **Increased recycling**
- **Reduced consumption of paper in council activities**
- **Reduced consumption in fuel in council operations**
- **6% reduction in total CO2 emissions for council operations (30% by 2012)**
- **Protection and enhancement of habitat and biodiversity**
- **Enhancement of the quality of the built environment Environmental considerations within Procurement Strategy**

2.3 Strategic themes

The Carbon Management Plan sets out a five year strategy to build on the actions and achievements detailed in section 4. To achieve the target of a 30% reduction in emissions there is a requirement to increase the resources available for carbon management, both capital resources for the implementation of technical measures, and personnel to develop the enabling measures. By making these resources available (and by attracting external investment) Norwich City Council will achieve emissions reduction by:

The City Council's Corporate Plan 2008/10 highlights the City Council's environmental ambitions via the priority to deliver a strong and prosperous city. **"To improve the quality of life for residence, visitors and those who work in the city now and in the future"**. The Corporate Plan describes how this will be achieved by **"putting environmental sustainability, culture and creativity at the heart of everything we do"**.

"It is our policy to meet our national and international legislative obligations, to develop local sustainable communities, enhance the local environment, deliver environmentally-friendly services and enforce environmental legislation to help stem the depletion of finite natural resources". Environmental Strategy 2008-2010.

Objectives for Carbon Management Plan

Objectives for public buildings

- To improve the energy performance of buildings
- To engage staff by implementing environmental champions, running communication campaigns and the provision of training.
- To increase the percentage of energy sourced from renewable or efficient sources

Objectives for landlord lighting

- To utilise technology to drive efficiency in public lighting provision
- To improve the control of landlord lighting, to optimise the balance between emissions and community safety

Objectives for vehicle fleet, business travel and transport

- To reduce the total number of miles travelled
- To reduce emissions from journeys made
- To use more efficient vehicles
- To reduce alternative fuel use
- To encourage the use of more sustainable modes of transport

Objectives for internal transformation

- Investing in energy conservation measures which ideally have a payback period under 5 years
- Ensure effective collection and management of data for the significant sources of council carbon emissions. Production of an annual report.
- Develop an internal “ring fenced” financing mechanism for carbon management
- Developing relationships with regional, national and international partners to share best practice and deliver improved carbon reduction schemes.

2.4 Targets and objectives

The **Norwich City Council Carbon Management Plan (CMP)**, sets out our strategy for reducing carbon emissions by 30% by 2012, from a baseline of 2006/07. The targets within the CMP will be SMART – specific, measurable, achievable, realistic and time bound.

This council will reduce the CO₂ emissions from its activities by 30% from the 2007 baseline, by December 2012.

The direct costs of the programme and the projected returns on investment and emissions reductions over the next 5 years can be seen in the table below:

Total Estimated Capital Expenditure (£K)			£0 Carbon reduction fund			
Total Annual Cost Savings						
	08/09 savings	09/10 savings	10/11 savings	11/12 savings	12/13 savings	5 year Total
Annual savings (£K)	30,000	210,997	443,253	698,797	979,759	1,288486
Total Annual Carbon Reductions (tCO ₂ e)						
	08/09 savings	09/10 savings	10/11 savings	11/12 savings	12/13 savings	5 year Total
Carbon Reduction (tCO ₂ e)		7,24263	1,403730	4,1698514	6,810055	10,013,551

3 Emissions Baseline and Projections

3.0 Scope

The public sector is in a key position to lead on efforts to reduce CO₂ emissions by setting a behavioral and strategic example to the private sector and the communities they serve. The way in which the local authority delivers its functions can achieve CO₂ emissions reductions. Measurement against this indicator requires each local authority to calculate its CO₂ emissions from analysis of the energy and fuel use in their relevant buildings and transport, including where these services have been outsourced.

The scope of NI 185 is described as follows:

“NI 185 is to include all CO₂ emissions from the delivery of local authority functions. In terms of the meaning of the word in legislation “function” covers both the duties and powers of an authority. It covers all an authority’s own operations and outsourced services. Even if the services are being provided by an external body (e.g. a private company) they remain the function of the authority”.

There is no exhaustive list of the powers and duties of an authority in legislation, as the term function is taken to understand what that means for the relevant authorities. However, social housing provided by the authority or a third party is not included within the scope of the indicator. Employee commuting is also not included.

Norwich City Council define the scope of NI185 as:

- emissions from council buildings, including CityCare.
- emissions from business travel excluding staff
- emissions from fleet
- emissions from water use
- emissions from landlord lighting

Buildings that are owned by the council but are operated by third parties have been excluded from the baseline. Many of these facilities will be communicated to via the council in respects to lowering fuel bills and reducing carbon emissions. In addition the council has collected data on a range of other environmental indicators as part of our environmental strategy 2008-2010. These data sets complement other information sources such as council owned housing SAP ratings and information in regards to Per Capita emissions NI186

Procurement

The emissions associated with the manufacture of the non-recycled office paper used by the authority have been included in the baseline. Though purchasing data is available for a range of consumables and equipment (e.g. stationery, PC’s, photocopiers etc.), the carbon impacts of their supply chains are less well understood, and they have not been included within the baseline.

Waste Disposal

Good quality data is not available for waste tonnage disposed of to landfill. Tonnage of recycled waste is available. Waste data included in the baseline consists of an estimate of waste to landfill plus skip (general) waste to landfill.

Water Consumption

Good quality data is available for the volume of water consumed. Although emissions from this source are small they have been included in the baseline as consumption data is readily available and the appropriate emissions factor is known.

3.2 *Baseline*

	Total	Buildings and street lights	Transport	Waste and Water
Baseline CO₂ emissions (tonnes)	9,458,610	7,106,083.93	2,176,243	9,657
Baseline Cost (£)	£2,565,957	£1,937,297	£997,458	£

Table 3.1 – Summary table of emissions for baseline year 2006

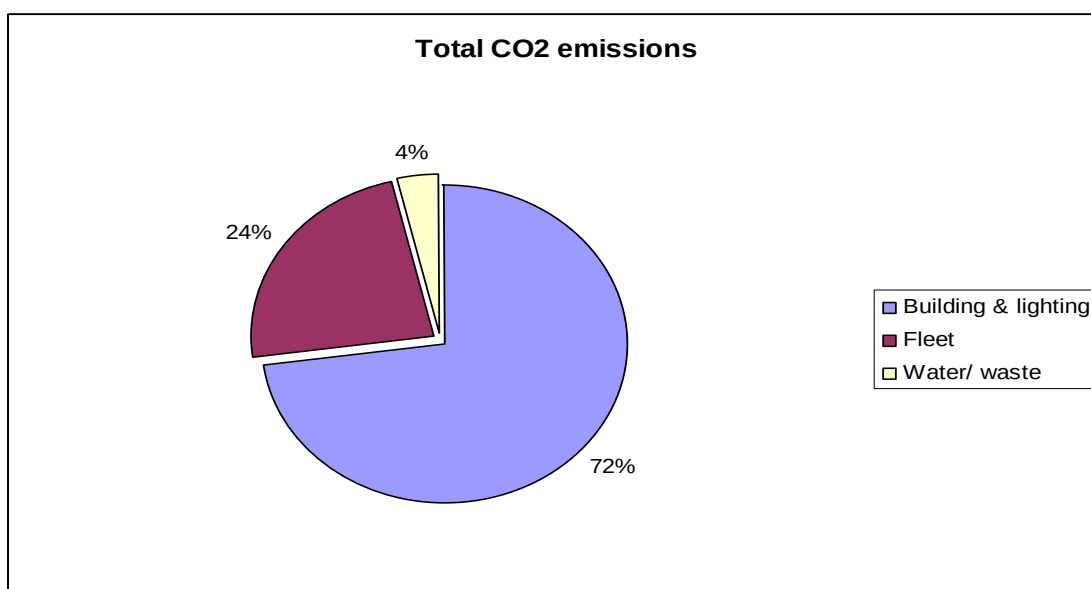
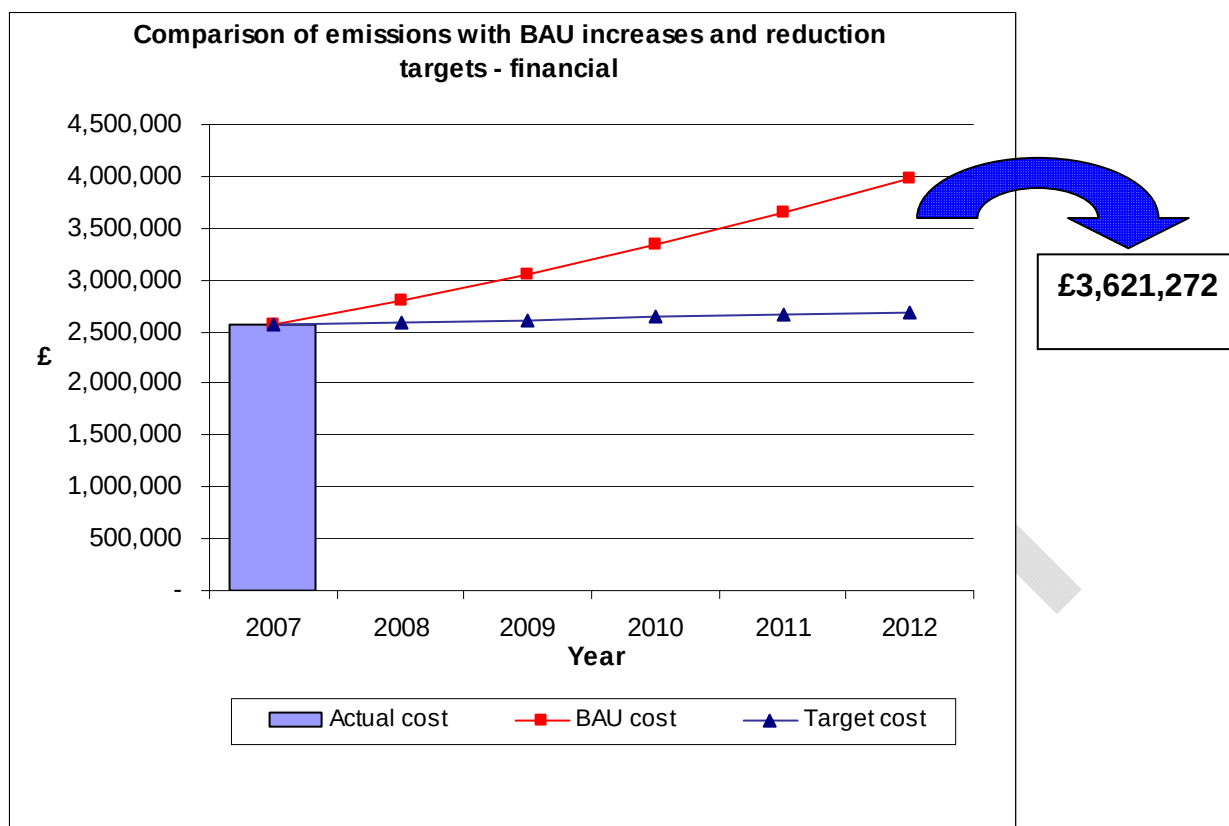


Figure 3.1 Summary of emissions for baseline year 2007

3.3 Projections and Value at Stake



Cumulative value at stake - The cost of not doing the programme

The data indicates that the BAU (Business As Usual) costs for electricity and gas, which is not recharged to consumers, will be approximately £2,688,000 per year by 2012. If target costs are reached (6% reduction per year until 2012) the value at stake between the target cost and BAU cost over the 5 year period is **£3,621,272** : BAU cost 8.4%

Carbon Management Projects

3.4 Existing projects

The following table summarises the emissions reduction opportunities identified. The list is not exhaustive and this part of the document (and the accompanying annexes) will be continually revised and updated to take account of new opportunities and challenges. Further detail on the emissions reduction opportunities can be found in Appendix A.

Ref	Project	Lead	Cost			Annual Saving		Pay back	% of Target	Year
			Cap'l	Rev'ue	Res'ce	Fin	CO ₂			
1	PC Monitor Switch to LED	JA	0	0	0	3,000		n/a	TBC	2008
2	MFD's	JA	0	0	0	3,000		n/a	TBC	2008
3	One Small Step Campaign and Environmental Champions	RW	2,000	0	0	23,971		0.8	TBC	2008
4	City Hall Voltage Optimization	CM	25000	0	0	13,461		1.86	TBC	2009
5	City Hall Cavity and Loft Insulation	CM	6123			5486		1.12	TBC	2009 2010
6	PIR water release in washrooms									2008
7	Window Replacement	CM	1.5 m	-	-	2195	-	-	-	2009

3.5 Planned / funded projects

Ref	Project	Lead	Cost			Annual Saving		Pay back	% of Target	Year
			Cap'l	Rev'ue	Res'ce	Fin	CO ₂			
1	Seria Server survey and optimisation	JA	27000	-	-	-	-	-	-	2009
2	Removal and replacement of fan heaters in city hall	AP	3000	-	-	-	-	-	-	2009
3	Replacement of laundry equipment with gas	CM	15000	-	-	-	-	-	-	2009
4	Sub Metering	CM	6000							
5	Plant room jackets and pipe insulation	CM	1000							
6	Swimming pool cover (Gas)	RW	2000	-	-	-	-	-	TBC	2009
7	Swanton Road Voltage Optimization	CM	25000			11548		2.16	TBC	2009



8	PIR – Landlord lighting	-	-	-	-	-	-	-	-	-
9	ST Giel's Multi-story VO	CM	25000			6,530		3.83	TBC	2010
10	The Norman Cnetre Cavity Wall Insulation	CM				1599		0.79	TBC	2009
11	PC Auto Swith Off	JA	20000	-	-	7491	-	2.67	TBC	2009
12	Aqua fund	CM	-	-	-	-	-	-	TBC	2009
13										
14	Pool cars	AB	-	-	-	7007	-	-	TBC	2008
15	Removal of portable heaters	CM	-	-	-	-	-	-		
16	Swimming pool cover (Elec)	RW	2000	-	-	-	-	-	TBC	2008
17	Window Replacement	CM	1.5 m	-	-	2195	-	-	-	2009
18	Staff education – Procurement guide	RW								
19	Energy policy	AB								

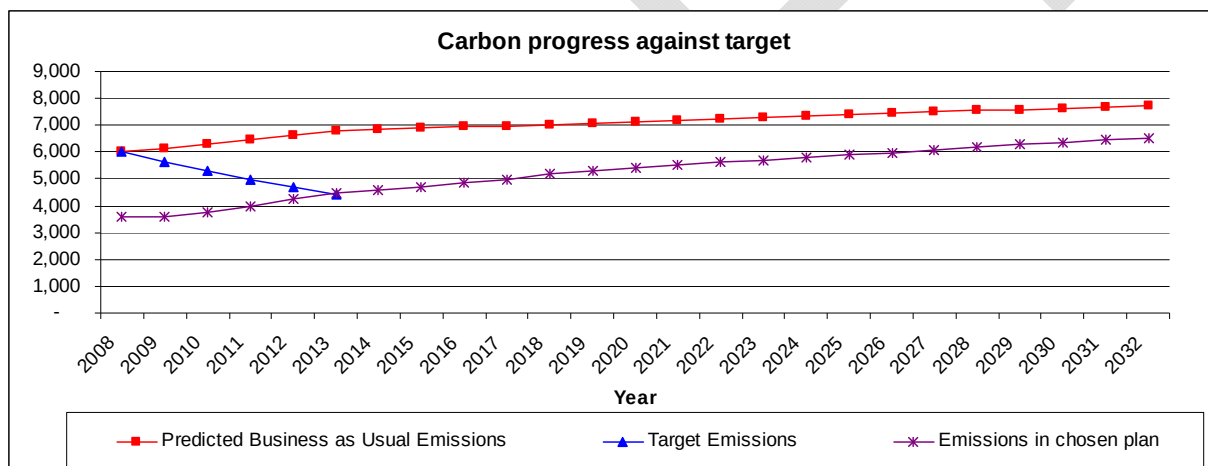
3.6 Near term projects

Ref	Project	Lead	Cost			Annual Saving		Pay back	% of Target	Year
			Cap'l	Rev'ue	Res'ce	Fin	CO ₂			
1	BMS OPTIMISATION –	CM								
2	Lighting PIR	CM								
3	Lighting replacement – T5	CM								
4	EMS Adoption	RW								

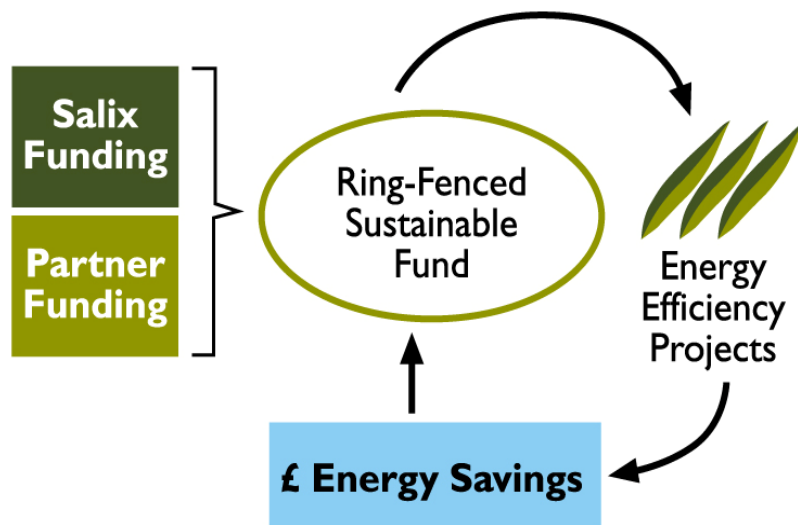
3.7 Medium to long term projects

Ref	Project	Lead	Cost			Annual Saving		Pay back	% of Target	Year
			Cap'l	Rev'ue	Res'ce	Fin	CO ₂			
1	St Andrews Blackfriars VO	CM	25000			3,539		7.06	TBC	2010
2	The Norman Centre	CM	25000			4071		6.14	TBC	2011
3	St Giles House VO	CM	25000			2996		-	TBC	-
4	The Guildhall VO	CM	25000			1395		-	TBC	-
5	Staff Canteen City Hall VO	CM	25000			1396		-	TBC	-
6	Public Toilets at Market Place VO	CM	25000			1368		-	TBC	-

3.8 Projected achievement towards target



Carbon Management Plan Financing



The total Spend to save investment will be match funded pound for pound by an interest free loan from SALIX Finance to create a Carbon Reduction Fund. This fund is expected to return all investment over the length of the programme. If this fund is not created the programme would be a serious risk of not implementing our 6% per year reduction target.

Key benefits

The Norwich City Council Carbon Management Plan (CMP), sets out our strategy for reducing carbon emissions by 30% by 2012, from a baseline of 2006/07. The targets within the CMP will be SMART – specific, measurable, achievable, realistic and time bound. The data indicates that the BAU (Business As Usual) costs for electricity and gas, which is not recharged to consumers, will be approximately £2,688,000 per year by 2012. If target reductions are reached (6% reduction per year until 2012) the value at stake i.e. the difference between the target cost and BAU cost over the 5 year period totals £3,621,272 : (BAU cost 8.4%) In addition to the vast financial benefits the implementation of this project will enable the authority to assist in national carbon reduction and promote our environmental aspirations to the general public.

Risks

Failing to reach our corporate objective of a 30% reduction in CO₂ will be a lost opportunity to save 3.6 million pounds over the period of the programme. All projects within the programme will have a payback of less than 7 years. The first year of the programme will identify projects that have less than a two year payback. The LACM targets the best payback results first.

If the funds are not identified there will be a reputational risk to the authority it will fail the first year of the Carbon Management Programme.

The project has a low operational risk of failure if investment is identified.



The critical success factors for the Carbon Management Plan is the implementation of a range of projects to realise our 6% per year efficiency savings. This savings will be monitored by the Environmental Strategy Manager via remote monitoring systems and/ or utility bills.

As part of our membership of the LACM programme the City Council is entitled to access the SALIX funding programme. This provides a 0% loan which is then paid back from efficiency savings generated by the carbon reduction initiatives, but the loan must be matched by equivalent funding from the City Council.

A 6% annual reduction is a relatively tough target. In order to meet our 6% per year target the City Council will therefore need to start a wide range of different carbon reduction initiatives. Whilst some will have relatively short payback periods, some need to be started soon but will not payback from some longer periods. We estimate that in order to meet our 30% target (over 5 years) we will need to invest a total of between £350,000 - £400,000 which would need to be met 50% from the Council and 50% from the SALIX funding pot. This funding pot is likely to be invested 3 to 4 times over the project.

Because of the longer term nature of some carbon reduction projects, the SALIX funding pot allows for a 7 year payback period. Unfortunately the City Council's Invest to Save pot requires payback within 2 years. This means that the Invest to Save pot cannot be used to provide all of the investment needed to deliver the 30% target. It is therefore proposed that the Invest to Save funding be used to match fund those initiatives that will payback within 2 years, but alternative Council funding will need to be identified to meet those initiatives with a longer payback period.

3.9 Assumptions

- Assumption 1: The BAU scenario is 8.4% pa
- Assumption 2: The BAU demand is 0.7% pa
- Assumption 3: Payback years are calculated via SALIX and Carbon Trust calculation tools.
- Assumption 4: Total emissions are calculated via DEFRA NI185 calculation tool
- Assumption 5: All projects will require a feasibility study using actual meter readings

3.10 Benefits / savings – quantified and un-quantified

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Annual cost saving	37500	112500	225000	337500	450000	562500
Annual CO ₂ saving	270	810	1620	2430	3240	4050
% of target achieved	2	6	12	18	24	30



Unquantified benefits:

- first benefit, etc.

3.11 Additional resources

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Transformation	TBC					
Asset and city management						
Finance						

Programme can easily fail or deliver far less than is planned if there are insufficient resources to deliver the projects. Clearly state, by department, what additional resources will be required. Briefly state, describe what these additional people will be doing.

3.12 Financial costs and sources of funding

figures in £ 1000's	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Annual costs:	TBC					
Total annual capital cost						
Total annual revenue cost						
Total costs						
Committed funding:						
Committed annual capital						
Committed annual revenue						
Total funded						
Unallocated funding						
Unallocated annual capital						
Unallocated annual revenue						
Total unfunded						

£200,000 City Council Invest to safe fund
£200,000 SALIX loan 0% interest

Actions to Embed Carbon Management in Your Organisation

Nottingham Declaration
Environmental strategy 2008 – 2010
Corporate Plan
Transformation team plan

3.13 Corporate Strategy – embedding CO₂ saving across your organisation

6% reduction target is now part of Environmental strategy 2008-2010
Delivering the LACM is part of the action plan and is also included within the Corporate plan 2008-10
Service plans will soon include carbon management/ sustainability

3.14 Programme Management – bringing it all together effectively

(See LACM Programme Board)
+ Climate Change Panel

3.15 Responsibility – being clear that saving CO₂ is everyone's job

Via One-Small-Step, Environmental Strategy, New purchasing guide and communications...
New environmental section within service plans for 2009/2010

3.16 Data Management – measuring the difference, measuring the benefit

Environmental Strategy Manager Richard Willson + Asset and City Management

3.17 Communication and Training – ensuring everyone is aware

Release funds to effectively communicate to internal stakeholders/ staff the “One Small Step Campaign” Potential for completion prizes to encourage energy saving values, reduced printing etc.

Work has already begun on the one small step campaign with the design of posters, energy management stickers and the creation of the internal web page. The remainder of the funds will be used for incentives and prizes to change the staff hearts and minds. The areas in which the project will address are: **Switch Off, Shut Down, Think before you print, Use your mug, Recycle, Take the stairs, Walk or cycle.**



Project ideas include the following: The provision of sweets to staff who turn off the PC monitors to instil and reward good practice, free hot drink vouchers left on bicycles in the cycle shed, the provision of incentives to staff using the stairs or who have turned lights off within their office during the day. The provision of locally sourced fruit within the kitchen areas for staff who turn off lights, dishwashers etc. Other ideas include a prize for printer use reduction and free hot drinks to staff who bring their own mug to the restaurant. Environmental Strategy will be published on-line and sent out in hard copy to management team

3.18 Finance and Investment – the money to match the commitment

This factor of embedding Carbon Management is covered in section five of this Plan.

TBC

3.19 Policy Alignment – saving CO₂ across your operations

Our authority now has its own Carbon Management Plan which will be used to achieve our 6% CO₂ emission reductions target and therefore assist the council in achieving a number strategic goals which include **“To make Norwich a world-class city in which to live, work, learn and visit”** Sustainable Community Strategy 2008-2020 The Sustainable Community Strategy sets themes with strategic objects for the City. The 2nd theme, City of Environmental Excellence, sets the objectives for Norwich to become a **low-carbon city**, to minimise our use of global resources and to become a model city for the management of the natural and historic environments. This strategic aims is also mirrored in our Corporate Plan 2008 - 2010 by **“putting environmental sustainability, culture and creativity at the heart of everything we do”** The carbon management plan will also be used to increase awareness in regards to general energy efficiency across the council. It is intended that once our own house is in order we will be able to promote best practice to other authorities, businesses and even the public.

Sustainable Community Strategy

The City of Norwich Partnership through its Sustainable Community Strategy sets out a proposed vision for Norwich, **“To make Norwich a world class place to live, work, learn and visit”**

The partnership has identified six themes and strategic objectives to help it deliver this vision. One of these is to create a ‘City of Environmental Excellence’, under which three strategic objectives have been identified:

- To become a low-carbon city
- To minimise our use of finite global resources
- To become a model city for the management of the natural and built environment

In addition the CMP helps to achieve a range of aims and objectives held within the Environmental Strategy **“It is our policy to meet our national and international legislative obligations, to develop local sustainable communities, enhance the local environment, deliver environmentally-friendly services and enforce environmental legislation to help stem the depletion of finite natural resources”**. Environmental Strategy 2008-2010.

- **Increased energy efficiency in Council owned property**
- **Reduced disposal of waste to landfill**
- **Increased recycling**
- **Reduced consumption of paper in council activities**
- **Reduced consumption in fuel in council operations**
- **6% reduction in total CO2 emissions for council operations (30% by 2012)**
- **Protection and enhancement of habitat and biodiversity**
- **Enhancement of the quality of the built environment Environmental considerations within Procurement Strategy**

NB – Carbon Accounting within procurement

Programme Management of the CM Programme

3.20 The Programme Board – strategic ownership and oversight

Membership of the LACM Programme Board:

Project Sponsor (PS): a strategic, hands on role. The PS sets the scope and targets for the Programme and then monitors progress and removes obstacles as chair of the Programme Board. The programme will cut across organisational boundaries, so the PS will also need to actively engage peers across the organisation to build involvement in Carbon Management

The Project Sponsor is Paul Spencer Director of Transformation

Councillor Sponsor (CS): championing Carbon Management within the Council, engaging with the Leader of the Council to raise the profile of the Programme

The Councillor Sponsor is Cllr Brian Morrey. Executive member for Sustainable City Development & Chair of the Climate Change Panel.

Finance Champion (FC): a senior finance point of contact for the Project Leader and Project Sponsor(s) in progressing Carbon Management. They will help in assessing / championing the invest to save principle and exploring the role of external sources of funding, such as Salix.

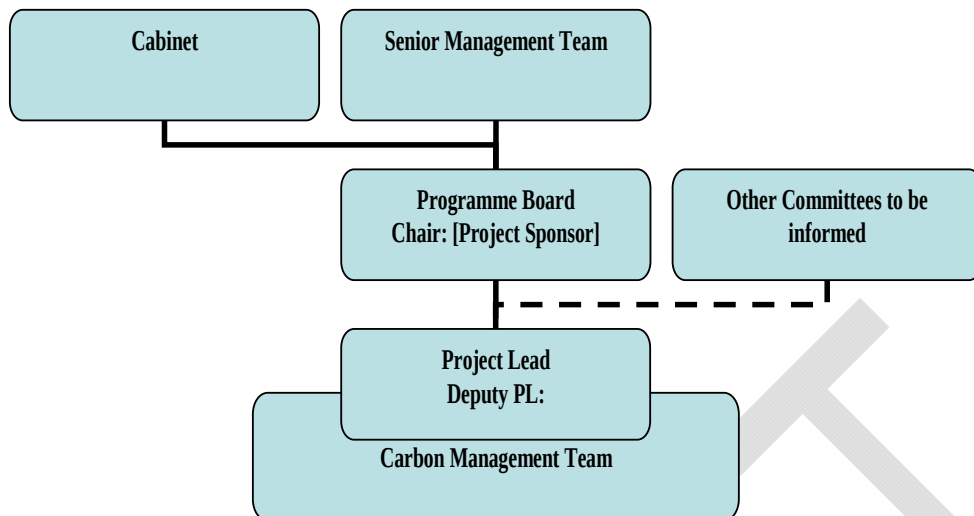
Mark Smith: Finance Control Manager

Co-sponsors to cover the main areas of the organisation carrying out CM work

- o ***Chris Dady – Head of Asset and City Management***
- o ***Anton Bull – Head of procurement and Contract Management***
- o ***Jane Allen – Service Improvement Manager***
- o ***Adrian Akester – Head of Citizen Services***
- o ***Graham Nelson – Head of Planning and Regeneration Services***

NB: Additional Board members maybe invited to attend if required to add specialist advice

The Project Lead will chair meetings of the CM Team to review progress on activities and projects, identifying any blockages that need to be raised with the Programme Board. The Project Lead will meet at least monthly with The Project Sponsor to discuss progress. The Programme Board will meet every two months.



This is a diagram of the LACM structure. The structure allows the Carbon Management Team to take ideas and actions to the programme board via the project lead. The structure allows other interested parties, such as the climate change panel, to feed in the LACM programme and to the programme board.

3.21 The Carbon Management Team – delivering the projects

Project Leader: Richard Willson - Environmental Strategy Manager

Deputy Leader: Carol Marney – Facilities and Building Maintenance Manager

Name and role of Co-sponsors to cover the main areas of the organisation carrying out CM work

- o Katie Bayliss - Internal communications
- o Sue Clarke - Green Travel Planning/Fleet management/ Procurement & Service Improvement
- o Chris Rayner - Housing Property Manager
- o Jane Rogers - Steria UK Contract
- o Abbi Brook – Private Sector Housing: Home energy Officer
- o Mark Smith – Finance control Manager City Care Contract
- o Simon Meek – Green Spaces Manager
- o Mike Burrall – Planning Team Leader
- o Julia Elmes – National Graduate Management Trainee
- o City Care – Stephen Moy
- o Steria computer services

3.22 Succession planning for key roles

TBC

3.23 Ongoing stakeholder management

TBC

3.24 Annual progress review

In January 2007 this Council resolved unanimously to: "develop and support strategies within the Council for the reduction of carbon emissions by an increasing percentage per year up to a target of 6% reduction per year as soon as possible; this should be assessed and reported to full Council annually as part of the budget cycle and to the Climate Change Panel on a regular basis for monitoring."

"Carbon Management will become a continual practice in Norwich City Council to mitigate the impact of escalating utility bills and to control carbon emissions from the future growth of energy consumption"

Brain Morry – Portfolio Holder Sustainable Development

Climate change Pane Including Member for Sustainable Development

CMT Central Management Team (Director of Transformation)

Reports progress every 2 weeks

Carbon Management Board – Cross Council Representation including finance and asset management

Environmental Strategy Manager meets every other month

Carbon Management Team – Cross Council Team

Team gets regular feedback in regards to projects. Group meet every 4 weeks

Annual report will be published yearly.

The review should:

- *cover the cost and all benefits from the Programme:*
 - o *financial savings, either cashable or returned to your 'rotating fund'*
 - o *CO2 savings against your target*
 - o *less quantifiable benefits, such as influencing the local community (supporting NI186)*
- *align with your NI185 reporting*
- *report to you CMT / Cabinet, via your Programme Board*

Appendix A: Carbon Management Matrix - Embedding

	CORPORATE STRATEGY	PROGRAMME MANAGEMENT	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	POLICY ALIGNMENT *
BEST 5	- Top level target allocated across organisation - CO₂ reduction targets in Directorate Business Plans	- Cabinet / SMT review progress against targets on quarterly basis - Quarterly diagnostic reports provided to Directorates Progress against target published externally	- CM integrated in responsibilities of senior managers - CM part of all job descriptions - Central CO₂ reduction advice available Green Champions leading local action groups	- Quarterly collation of CO₂ emissions for all sources - Data externally verified - M&T in place for: - buildings - street lighting - waste	- All staff given formalised CO₂ reduction: - induction and training - communications - Joint CM communications with key partners - Staff awareness tested through surveys	Finance committed for 2+ yrs of Programme - External funding being routinely obtained - Ring-fenced fund for carbon reduction initiatives	- CO₂ friendly operating procedure in place - Central team provide advice and review, when requested - Barriers to CO₂ reduction routinely considered and removed
4	- CO₂ reduction commitment in Corporate Strategy - Top level targets set for CO₂ reduction - Climate Change Strategy reviewed annually	- Sponsor reviews progress and removes blockages through regular Programme Boards - Progress against targets routinely reported to Senior Mgt Team	- CM integrated in to responsibilities of department heads - Cabinet / SMT regularly updated - Staff engaged through Green Champion network	- Annual collation of CO₂ emissions for: - buildings - street lighting - transport - waste - Data internally reviewed	- All staff given CO₂ reduction: - induction - communications - CM matters communicated to external community	Coordinated financing for CO₂ reduction projects via Programme Board Finances committed 1yr ahead Some external financing	- Comprehensive review of policies complete - Lower level policies reviewed locally - Unpopular changes being considered
3	- CO₂ reduction vision clearly stated and published - Climate Change Strategy endorsed by Cabinet and publicised with staff	- Core team regularly review CM progress: - actions - profile & targets - new opportunities	- An individual provides full time focus for CO₂ reduction and coordination across the organisation - Senior Sponsor actively engaged	Collation of CO₂ emissions for limited scope i.e. buildings only	- Environmental / energy group(s) given ad hoc: - training - communications	- A view of the cost of CO₂ reduction is developing, but finance remains ad-hoc - Some centralised resource allocated - Finance representation on CM Team	- All high level and some mid level policies reviewed, irregularly Substantial changes made, showing CO₂ savings
2	- Draft Climate Change Policy - Climate Change references in other strategies	Ad hoc reviews of CM actions progress	CO₂ reduction a part-time responsibility of a few department champions	- No CO₂ emissions data compiled - Energy data compiled on a regular basis	Regular awareness campaigns Staff given CM information on ad-hoc basis	Ad hoc financing for CO₂ reduction projects	- Partial review of key, high level policies - Some financial quick wins made
1	- No policy - No Climate Change reference	No CM monitoring	No recognised CO₂ reduction responsibility	- No CO₂ emissions data compiled - Estimated billing	No communication or training	No specific funding for CO₂ reduction projects	No alignment of policies for CO₂ reduction

* Major operational policies and procedures, e.g. Capital Projects, Procurement, HR, Business Travel

Appendix B: Definition of Projects

Project: Reference:	PC Auto Shut down <i>It would help the Carbon Trust if you also use the following reference: LA6- NOR 001</i>
Owner (person)	<i>TBC – Steria / Environmental Strategy Manager</i>
Department	<i>IT Services / Steria</i>
Description	<i>Using 1E Nightwatchman Steria will have the ability to switch off all computers within the authority to save energy. The 1E Nightwatchman will also allow steria to switch on to install and update our computer services when required. “NightWatchman utilizes the power management capabilities of your computer and combines this with an effective scheduling system in a single, easy-to-use package. Using NightWatchman you can define company-wide power saving policies, scheduled power-downs and automatic document saving.”</i>
Benefits	• <i>Financial savings: £ 7,491</i> • <i>Payback period: 2.67 years</i> • <i>CO₂ Emissions reduction: 32 tonnes of CO₂ per year</i> • <i>% of target – the percentage of your CO₂ saving target will this project annually contribute</i>
Funding	• <i>£20,000</i> • <i>Steria contact to run operational costs</i> • <i>Invest to save fund and Salix loan .</i> • <i>Carbon Management Board to confirm that project meets council spend to save requirements</i>
Resources	• <i>Steria to project manage new software</i>
Ensuring Success	• <i>Project is within the Environmental Strategy 2008-2010</i> • <i>Finance available via either Salix fund or spend to save</i>
Measuring Success	• <i>Sub metering of city hall and monitoring software developed by IEl</i> • <i>Aug 2009</i>
Timing	• <i>Milestones / key dates e.g.</i> - o <i>start date: Oct 2008</i> - o <i>completion date: Feb 2009)</i>
Notes	<i>NightWatchman® is the leading software solution for remotely powering down computers within a network, with over 2.5 million licences deployed worldwide. It saves data, closes applications safely and then powers down PCs to save energy and costs.</i>

Project:	MFD (Multi-functional Devices)
Reference:	It would help the Carbon Trust if you also use the following reference: LA6NOR02
Owner (person)	Jane Allen
Department	Transformation
Description	Replacement of printers with MFD's
Benefits	• Financial savings: £ 3000 • Payback period: Contract improvement • CO₂ Emissions reduction: 13 tonnes of CO₂ per year • % of target – the percentage of your CO₂ saving target will this project annually contribute
Funding	• Steria contract – refresh of printers • Project ongoing 2008/09
Resources	• Being delivered within current resources
Ensuring Success	• Risk reduced due to contract requirement
Measuring Success	• Removal and reduction of stand along printers
Timing	• Milestones / key dates e.g. - o start date: 2008 - o completion date 2009
Notes	

Project: Reference:	Window replacement programme <i>It would help the Carbon Trust if you also use the following reference: LA6NOR003</i>
Owner (person)	<i>Chris Daddy (Head of Asset and City Management)</i>
Department	<i>Asset and City Management</i>
Description	<i>A replacement of the original windows in City Hall (1930's building) Replacement requirements from English Heritage were like for like, therefore saving have been calculated from draft proofing and secondary internal windows.</i>
Benefits	• <i>Financial savings: £ 2,195 per year</i> • <i>Payback period: N/A</i> • <i>CO₂ Emissions reduction: 20 tonnes of CO₂ per year</i> • <i>% of target – the percentage of your CO₂ saving target will this project annually contribute</i>
Funding	• <i>Project cost, £1,500</i> • <i>Operational costs Contracted</i> • <i>Source of funding: funding authorised</i>
Resources	• <i>Project delivered within current resources</i>
Ensuring Success	• <i>Completed programme of works</i>
Measuring Success	• <i>After / during works</i>
Timing	• <i>Milestones / key dates e.g.</i> ○ <i>start date: 2008</i> ○ <i>completion date (when it will deliver savings): 2009</i>
Notes	<i>See guidance for listed buildings</i>

Project: Reference:	<i>One Small Step Campaign and Environmental Champions</i> <i>It would help the Carbon Trust if you also use the following reference:</i> <i>LA6NOR004</i>
Owner (person)	<i>Richard Willson (Environmental Strategy Manager)</i>
Department	<i>Transformation</i>
Description	By getting our staff to think about the little things at work, we hope to encourage them to involve this thinking in their home life too, offering simple practical advice to help everyone 'do their bit' – each taking small steps to make a big difference collectively.
Benefits	• <i>Financial savings: £ 20,000</i> • <i>Payback period: 0.8 years</i> • <i>CO₂ Emissions reduction: 19 tonnes of CO₂ per year</i> • <i>% of target – the percentage of your CO₂ saving target will this project annually contribute</i>
Funding	• <i>Project cost, £2000</i> • <i>Operational costs £1,000</i> • <i>Source of funding: internal.</i> • <i>Authorised by climate change panel</i>
Resources	• <i>Additional resource: Communications and print design</i> • <i>Project delivered within current resources</i>
Ensuring Success	• <i>A continued cultural change within the authority</i> • <i>Principal risks: technical, financial (eg what happens if the project is insufficiently resourced), etc.</i>
Measuring Success	• <i>Number of projects completed</i>
Timing	• <i>Milestones / key dates e.g.</i> ○ <i>start date: Aug 2008</i> ○ <i>completion date Ongoing</i>
Notes	

Project: Reference:	Council pool car replacement <i>It would help the Carbon Trust if you also use the following reference: LA6NOR05</i>
Owner (person)	<i>Head of Procurement (Anton Bull)</i>
Department	<i>Procurement – Central Purchasing</i>
Description	<i>Replacement of pool cars (petrol) to high efficiency (99g/km) diesel models.</i>
Benefits	<i>Financial savings: £ 7000]</i> <i>Payback period: n/a contact</i> <i>CO₂ Emissions reduction: 15.6 tonnes of CO₂</i> <i>% of target – the percentage of your CO₂ saving target will this project annually contribute</i>
Funding	<i>Project cost: Contract</i> <i>Operational costs, e.g. annual maintenance or running costs</i> <i>Source of funding: internal, external, investment criteria to be met etc.</i> <i>Say how /when decision on funding will be made</i>
Resources	<i>Additional resource (e.g. people) requirements to enable delivery and where these will come from</i> <i>If this project will be delivered within current resources, say so</i>
Ensuring Success	<i>Replacement of pool cars in accordance to contract conditions</i>
Measuring Success	<i>A modern fuel efficient fuel fleet</i>
Timing	<i>Milestones / key dates e.g.</i> <i>o start date: 2008</i> <i>o completion date 2008</i>
Notes	<i>Emission reductions may be hard to achieve due to average city driving conditions. Potential hybrid for next refresh.</i>

Project: Reference:	City Hall Voltage Optimization <i>It would help the Carbon Trust if you also use the following reference: LA6NOR06</i>
Owner (person)	<i>Chis Daddy (Head of asset and city management)</i>
Department	<i>Asset and city management</i>
Description	The declared electricity supply in the United Kingdom is now, as a result of European Harmonisation, 230V with a tolerance of +10% to -6%. This means that effective voltage can be anywhere between 216V and 253V depending on local conditions. Most electrical equipment manufactured for Europe and the UK is rated at 220V and operates more efficiently at this level. Operating electrical equipment at higher than optimum voltages leads to significantly higher energy consumption. Equipment like lighting and motors consume more power at higher voltages. “A 230V linear appliance used on a 240V supply will take 4.3% more current and will consume almost 9% more energy.”
Benefits	• <i>Financial savings: £ 14,461</i> • <i>Payback period: 1.12 years</i> • <i>CO₂ Emissions reduction: 57.8 tonnes of CO₂/Yr</i> • <i>% of target – the percentage of your CO₂ saving target will this project annually contribute</i>
Funding	• <i>Project cost: £25,000</i> • <i>Operational costs: Contract (annual maintenance)</i> • <i>50/50 Spend to save and Salix</i> • <i>LACM Project board approval required</i>
Resources	• <i>Asset and city management to co-ordinate</i>
Ensuring Success	• <i>Funding from Salix</i>
Measuring Success	• <i>Before and After monitoring of electricity use</i>
Timing	• <i>Milestones / key dates e.g.</i> - o <i>start date: 2009</i> - o <i>completion date: 2009</i>
Notes	

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Project: Reference:	<i>It would help the Carbon Trust if you also use the following reference:</i> LA6-[first three letters of your authority]–[sequence number, e.g. 001] <i>but you may choose to use a unique reference of your own.</i>
Owner (person)	<i>Name of the person responsible for delivering the project</i>
Department	<i>Which part of the organisation the project sits within</i>
Description	<i>A short description of the project, no more than a paragraph</i>
Benefits	• <i>Financial savings: £ [x]</i> • <i>Payback period: [x] years</i> • <i>CO₂ Emissions reduction: [x] tonnes of CO₂</i> • <i>% of target – the percentage of your CO₂ saving target will this project annually contribute</i>
Funding	• <i>Project cost, e.g. the initial cost of implementing the project</i> • <i>Operational costs, e.g. annual maintenance or running costs</i> • <i>Source of funding: internal, external, investment criteria to be met etc.</i> • <i>Say how /when decision on funding will be made</i>
Resources	• <i>Additional resource (e.g. people) requirements to enable delivery and where these will come from</i> • <i>If this project will be delivered within current resources, say so</i>
Ensuring Success	• <i>Key success factors, or things that will need to happen for this project to succeed</i> • <i>Principal risks: technical, financial (eg what happens if the project is insufficiently resourced), etc.</i>
Measuring Success	• <i>Metrics for displaying performance or achievement</i> • <i>When success will be measured / evaluated</i>
Timing	• <i>Milestones / key dates e.g.</i> ○ <i>start date: dd/mm/yyyy</i> ○ <i>completion date (when it will deliver savings): dd/mm/yyyy</i> ○ <i>interim deliverable / decision points</i> <i>[you could also lay these out as a milestone chart for ease and clarity]</i>
Notes	

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This template should be used to define each of the projects within your programme. It should contain all the key information without being too long – one page would be a fair guide. The owner of the project should, if at all possible, complete the Project Definition.

Please take this template as a basis and tailor it to your own requirements.

Project: Reference:	A <i>It would help the Carbon Trust if you also use the following reference:</i> LA6-[first three letters of your authority]–[sequence number, e.g. 001] <i>but you may choose to use a unique reference of your own.</i>
Owner (person)	<i>Name of the person responsible for delivering the project</i>
Department	<i>Which part of the organisation the project sits within</i>
Description	<i>A short description of the project, no more than a paragraph</i>
Benefits	• <i>Financial savings: £ [x]</i> • <i>Payback period: [x] years</i> • <i>CO₂ Emissions reduction: [x] tonnes of CO₂</i> • <i>% of target – the percentage of your CO₂ saving target will this project annually contribute</i>
Funding	• <i>Project cost, e.g. the initial cost of implementing the project</i> • <i>Operational costs, e.g. annual maintenance or running costs</i> • <i>Source of funding: internal, external, investment criteria to be met etc.</i> • <i>Say how /when decision on funding will be made</i>
Resources	• <i>Additional resource (e.g. people) requirements to enable delivery and where these will come from</i> • <i>If this project will be delivered within current resources, say so</i>
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Measuring Success	• <i>Metrics for displaying performance or achievement</i> • <i>When success will be measured / evaluated</i>
Timing	• <i>Milestones / key dates e.g.</i> ○ <i>start date: dd/mm/yyyy</i> ○ <i>completion date (when it will deliver savings): dd/mm/yyyy</i>

	<i>o interim deliverable / decision points</i> <i>[you could also lay these out as a milestone chart for ease and clarity]</i>
Notes	

Appendix B: Long list of emission reduction opportunities (to be continuously updated)

Site/Building	Type of Work	Job	Savings		Cost £	Payback Years	Status/Action
			CO2/t	£			
	Engagement	Staff energy induction module rollout	0	0	0		Module drafted
	Engagement	produce energy guide with Anton Bull	0	0	0		Energy policy being produced
	Engagement	Energy seminars and training	0	0	0		To organise and rollout in 2008
	Engagement	Use environmental champions and one small step campaign	0	0	0		Engage in 2008,
	BMS Optimisation	Review set points / sensor locations	0	0	0		To be investigated
	BMS Optimisation	Review heating and cooling conflicts	0	0	0		To be investigated
	BMS Optimisation	Night setback	0	0	0		To be investigated
	BMS Optimisation	Review time on / off settings	0	0	0		To be investigated
	BMS Optimisation	BMS training for Maintenance Officers	0	0	0		To be investigated
	BMS Optimisation	Enhance control schemes and add to BMS	0	0	0		To be investigated
	Sub Metering	Direct data import,	0	0	0		Discussions held with NPower
	Sub Metering	New electrical sub metering	0	0	0		Finance found to run project
	Sub Metering	N Power Encompass software	0	0	0		Software available
	Sub Metering	Review of sub meter data, load shape, utilisation	0	0	0		2009
	Sub Metering	Training for Maintenance Officers and building users	0	0	0		2009
	Sub Metering	Expand visibility to building users	0	0	0		Web based access ?
	Lighting	Corridor lighting - refit with PIR	0	0	0		Trial TBC
	Lighting	Offices - refit with T5	0	0	0		Survey required
	Lighting	Plant rooms – CFL's	0	0	0		Survey required
	Lighting	PIRs / Dimmers in offices / library areas	0	0	0		Survey required
	Lighting	PIRs in stairwells	0	0	0		Survey required
	Lighting	New build specification change	0	0	0		Review Spec
	Lighting	Sports ground buildings – change TF lamps with CFL's	0	0	0		Change on next maintenance visit
	Lighting	Control PIRs in toilet areas	0	0	0		Survey required
	Lighting	Decorative Wall Wash lighting to phase out	0	0	0		To be investigated
	Lighting	Install dusk to dawn controls on outside lighting	0	0	0		To be investigated
	Lighting	Replace desk and bed side lamps with CFL's / LED's	0	0	0		Survey required
	Building Fabric & Heating Improvements	Zoning of heating systems to be re-evaluated	0	0	0		To be investigated

	Building Fabric & Heating Improvements	Cavity wall insulation installation	0	0	0		Survey required
	Building Fabric & Heating Improvements	Loft and roof space insulation upgrade	0	0	0		Survey required
	Building Fabric & Heating Improvements	Install draft proofing to windows and doors	0	0	0		Spec to agree
	Building Fabric & Heating Improvements	Change heating source, where possible, from electric to gas	0	0	0		To be investigated
	Building Fabric & Heating Improvements	Investigate the use of constant electric heating on the hot water system	0	0	0		To be investigated
	Building Fabric & Heating Improvements	Replace the roof light fans with sealable vent stacks	0	0	0		To be investigated
	Building Fabric & Heating Improvements	Utilise low grade waste heat from servers	0	0	0		To be investigated
	Plant Room Equipment Insulation	Repair or upgrade insulation on pipework	0	0	0		Survey required
	Plant Room Equipment Insulation	Install valve and pump blanket type jackets	0	0	0		Survey required
	Plant Room Equipment Insulation	Repair or upgrade hot water calorifier insulation	0	0	0		Survey required
	Conserve Water	Install strategic smart sub meters	0	0	0		Aqua Fund
	Conserve Water	Install low water flush systems in new builds and upgrades	0	0	0		Aqua Fund
	Conserve Water	Install water displacement devices in cisterns	0	0	0		Aqua Fund
	Conserve Water	Complete IR tap controls in washrooms	0	0	0		Aqua Fund
	Conserve Water	Complete push spring return taps installation	0	0	0		Aqua Fund
	Conserve Water	Re-use of rain water / gray water	0	0	0		Retrofit costing to evaluate
	Review Energy Supply Options	Wind and PV generation schemes	0	0	0		N/A
	Review Energy Supply Options	Evaluate CHP option	0	0	0		N/A
	Review Energy Supply Options	Biomass heating scheme	0	0	0		N/A
	Review Energy Supply Options	PV system to repair and re-commission	0	0	0		N/A
	Develop & Implement Communications Strategy	Feedback on energy performance	0	0	0		On-going
	Develop & Implement Communications Strategy	Promote more appropriate / alternative use of comfort cooling	0	0	0		On-going
	Develop & Implement Communications Strategy	Review of purchasing decisions based on energy efficiency	0	0	0		On-going
	Develop & Implement Communications Strategy	Educate and train in energy efficiency process	0	0	0		On-going
	Develop & Implement Communications Strategy	Energy team involvement / considerations and feedback in upgrade and maintenance retrofits	0	0	0		Asset and City Management Team
	Develop & Implement Communications Strategy	Annual energy report, top 10, worse offenders etc	0	0	0		One Small Step Campaign
	Embedded into Strategy & Policy	Embed carbon management plan into environmental plan	0	0	0		Completed
	Embedded into Strategy & Policy	Review design guides and revise for energy reduction / best practices	0	0	0		Included in procurement guidance
	Embedded into Strategy & Policy	Raise the profile of energy management, reduction and targets	0	0	0		In Corporate strategy and environmental strategy

	Measure Emissions from Transport	Survey academic related travel	0	0	0		Survey required
	Measure Emissions from Transport	Use alternative fuelled fleet vehicles	0	0	0		Survey required
	Measure Emissions from Transport	Improve cycle ways around and to the University	0	0	0		Survey required
	Reduce Waste	Increase the recycling of waste	0	0	0		New internal office recycling completed
	Reduce Waste	Ban the ordering and use of telephone directories	0	0	0		n/a
	Reduce Waste	Have suppliers reduce their packaging strategy	0	0	0		n/a

DRAFT

	Man Input		Man Input	Man Input	Calc	Calc	Selection	Selection	Man	Calc	Man or Calc	Calc	Selection	Calc	Calc	Calc	Calc
#	Start Date (mm-yy)	Site	Description	Cost	Savings pa	PBP	Fuel Type	p/kWH	kWh pa	kg/kWh	tCO2 pa	£/tCO2 pa	Technology Type	PF	tCO2 LT	£/tCO2 LT	Project OK?
	Jun-08	Example 1	Roof Insulation & heating controls upgrade	£2,000	£500	4.0	Gas	2.250	22,222	0.185	4.1	486	Motor Controls - variable speed c	6.4	26	76	Compliant
	Aug-08	Example 1	Daylight controls + PIR	£5,000	£750	6.7	Electricity	12.500	6,000	0.537	3.2	1,552	Lighting - discrete controls	3.5	11	443	Not Compliant
1	Feb-09	City Hall	Voltage Optimisation	£25,000	£19,476	1.3	Electricity	12.500	155,808	0.537	83.7	299	Voltage reduction equipment	8.8	736	34	Compliant
2	Feb-09	City Hall	Cavity and Loft Insulation	£6,123	£4,994	1.2	Electricity	12.500	39,951	0.537	21.5	285	Insulation - building fabric	24.8	532	12	Compliant
3	Mar-09	St Andrew's & Blackfriars	Cavity and Loft Insulation	£1,400	£842	1.7	Gas	2.000	42,093	0.185	7.8	180	Insulation - building fabric	24.8	193	7	Compliant
4	Mar-09	The Norman Centre	Cavity and Loft Insulation	£1,269	£639	2.0	Gas	2.000	31,971	0.185	5.9	215	Insulation - building fabric	24.8	147	9	Compliant
5	Feb-09	PC	PC Switch off	£26,500	£15,625	1.7	Gas	12.500	125,000	0.185	23.1	1146	Office equipment - network PC p	4.4	102	260	Not Compliant
6	Sep-08	One Small Step	Promotional	£3,000	£29,963	0.1	Gas	12.500	239,705	0.185	19.0	158		-	#VALUE!	#VALUE!	#VALUE!
7	Mar-09	City Hall BEMS	Building management System	£2,480	£1,199	2.1	Gas	2.000	59,926	0.185	11.1	224	BEMS - remotely managed	3.5	39	64	Compliant
8	Mar-09	City Hall	Insolation of Heating pipework	£1,450	£719	2.0	Gas	2.000	35955.738	0.185	6.7	218	Insulation - building fabric	24.8	165	9	Compliant
9	Jan-08	Swanton Road	Voltage Optimisation	£25,000	£9,388	2.7	Electricity	12.500	75,100	0.537	40.3	620	Voltage reduction equipment	8.8	355	70	Compliant
10	Jan-08	Sheltered Housing	Laundry Equipment Replacement	£12,000	£20,000	0.6	Gas	2.000	1,000,000	0.185	370.0	32		-	#VALUE!	#VALUE!	#VALUE!
11	Jan-08					-				-		-		-	-	-	-
12	Jan-08					-				-		-		-	-	-	-
13	Jan-08					-				-	-	-		-	-	-	-
14	Jan-08					-				-	-	-		-	-	-	-
15	Jan-08					-				-	-	-		-	-	-	-
16	Jan-08					-				-	-	-		-	-	-	-
17	Jan-08					-				-	-	-		-	-	-	-
18	Jan-08					-				-	-	-		-	-	-	-
19	Jan-08					-				-	-	-		-	-	-	-
Tot				£104,222	£102,844	1.0					589.0	177			#VALUE!	#VALUE!	

Legend

Man Input

Calc

Selection

Man or Calc

PBP

PF

Action Type

User input in cell is required

No input required, this is a self calculating cell

User to select from drop down box

This is a self calculating box based on default values that the user can over type with actual figures

Payback Period

Persistence Factor

Heading

Column K - tCO2 pa

Worksheet Protection

Notes

Overwrite with actual tCO2 pa if project is complex and the basic calculation does not provide the correct value

Worksheet protection can be removed via : [tools](#) : [protection](#) : [unprotect](#)

Order for Data Entry

Notes

Start Date

Site

Description

Cost

Fuel Type

p/kWH

kWh pa

Technology

Enter estimated start date

Enter Site Name

Enter brief description of project

Enter project cost

Select fuel type from drop down

Enter price per kWH from drop down

Enter kWh pa saved

Select relevant Technology Type from the drop down

#	Project Type (From compliance tool)	PF	Work Type options (mainly from GPG312)	Salix Comments	Work Type Notes (Held in SERS and taken from GPG312)
1	BEMS - bureau remotely managed	6.0	Installation of building energy management system	We see this as a system where there is a pro-active monitoring bureau that checks settings and system performance at least every two months.	Building management systems allows reduction in staffing levels and remote identification of prevailing conditions and alarms. Automated data logging as part of an M&T system.
2	BEMS - not remotely managed	1.7	Installation of building energy management system	We see this as a Black box on the wall, perhaps with LCD display, with volt free contacts but not centrally connected.	Building management systems allows reduction in staffing levels and remote identification of prevailing conditions and alarms. Automated data logging as part of an M&T system.
3	BEMS - remotely managed	3.5	Installation of building energy management system	We see this as a system that can be remotely accessed with setting checked infrequently but at least twice a year.	Building management systems allows reduction in staffing levels and remote identification of prevailing conditions and alarms. Automated data logging as part of an M&T system.
4	Boilers - control systems	1.7	i. Boiler sequence controls ii. Boiler intelligent controls	Boiler sequence controls to be used where multiple boiler control is being considered.	
5	Boilers - control systems ECA approved	2.8	i. Boiler sequence controls ii. Boiler intelligent controls	Boiler sequence controls to be used where multiple boiler control is being considered.	
6	Boilers - replacement	8.8	i. Condensing Boilers ii. High efficiency	When GPG312 was produced the building regs did not require this and hence there were two boiler replacement options for condensing & high efficiency. However under current building regs all boilers have to be "high efficiency". With LTHW (Low Temperature Hot Water) systems that operate at 72/82 Deg'C the boiler can operate in a condensing mode and will be the type of system that most LAs will install, For larger buildings the systems may operate at a higher temperature - say 90 to 110 Deg C (MTHW) and will not be able to operate in a condensing mode. In these case they will be installing "High Efficiency" boilers. So you can use either descriptions.	
7	Combined Heat & Power	3.9	Combined heat & Power	We feel that for successful CHP projects, 95% utilisation for 17 hours a day 7 days a week is most probably required. We see applications where there are swimming pool involved as the most viable as the key issue can come down to how to make use of the low grade heat.	Usually only feasible on pools running all year
8	Compressed Air: air compressor upgrade	7.3	Compressed Air: air compressor upgrade	We see this as relevant to HE Sector with Science & Engineering Depts. Typical examples are use of low loss high efficiency air compressors, air receivers to reduce compressor cycling.	
9	Cooling - pipework insulation	8.8	i. Upgrade insulation of main circulation pipework, ii. Insulation of valves and flanges on distribution pipework		
10	Cooling - plant replacement / upgrade	8.8	Cooling - plant replacement / upgrade	We see this technology having limited applications - probably relevant to HE sector with Science & Engineering Depts and NHS sector where there is often the need for a lot of cooling.	
11	Energy from waste	7.2	Energy from waste	Typical examples are methane from landfill, incineration	

#	Project Type (From compliance tool)	PF	Work Type options (mainly from GPG312)	Salix Comments	Work Type Notes (Held in SERS and taken from GPG312)
12	Heat recovery	8.8	Heat recovery	We consider that this project type should be more generalised than just for swimming pools. As an example Hospitals can have operating theatres that use 100% fresh air make up and can therefore benefit from using heat recovery systems that recover heat from the exhaust air stream.	
13	Heating - controls in Leisure Centres / Swimming pools	6.0	Upgrading heating control systems	We see the concept here is that if the controls fail or fall out of calibration the public would complain and hence the systems would be repaired in a timely manner. Most of these facilities will have ready access to maintenance staff who can carry out these changes. That is why the PF is higher than say a school where they would just open some windows.	Electricity savings in addition to fossil fuel savings
14	Heating - direct fired system	8.8	Decentralisation heating services using direct fired warm air or packaged local boiler.	We see this as replacement of "wet systems" with direct fired warm air blowers or overhead gas fired radiant systems.	
15	Heating - discrete controls	1.7	Upgrading heating control systems	We see discrete controls as those that are "stand alone" and not linked into any type of network. An example of a discrete control is a heating controller in a house . Essentially these are "non BMS" type controls.	Electricity savings in addition to fossil fuel savings
16	Heating - discrete controls ECA approved	2.8	Upgrading heating control systems	We see discrete controls as those that are "stand alone" and not linked into any type of network. An example of a discrete control is a heating controller in a house . Essentially these are "non BMS" type controls.	Electricity savings in addition to fossil fuel savings
17	Heating - distribution improvements	8.8	Heat distribution - system Improvements	e.g. preventing overheating due to poorly balanced systems, revising pipework to generate new heating zones, improving the balance of air based HVAC systems.	
18	Heating - pipework insulation	8.8	i. Upgrade insulation of main circulation pipework ii. Insulation of valves and flanges on distribution pipework	Pipework insulation to include valves and flanges.	i. Higher for steam systems, ii. Dependent on service temperature
19	Heating - replace electric with gas	8.8	i. Replace electric gas tumble driers ii Replace resistance heating with gas fire LTHW.		
20	Heating - TRVs	1.7	Thermostatic radiator valves		
21	Heating - TRVs ECA tamperproof	2.8	Thermostatic radiator valves	We see these as being "tamperproof" in that an insert of some type is present that prevents the TRV being set any higher than a pre-ordained temperature such as 19 Deg'C (legal limit for offices).	
22	Heating - zone control valves	6.0	Zone control valves	We see this as being applicable to both "wet" heating systems and "dry" HVAC systems. More usually it applies to wet systems such as in schools where the whole school has to be heated just because a few classrooms are holding night school classes.	Suitable for building with identifiable heating circuits and different occupancy patterns
23	Hot water - distribution improvements	8.8	Hot water - distribution improvements	We see this as pipework improvements but not including insulation e.g. re-piping more directly to reduce heat losses.	
24	Hot Water - point of use heaters	8.8	Point of use hot water heaters to avoid long runs of distribution networks		

#	Project Type (From compliance tool)	PF	Work Type options (mainly from GPG312)	Salix Comments	Work Type Notes (Held in SERS and taken from GPG312)
25	Insulation - building fabric	24.8	i. Cavity wall & loft insulation ii. Cavity wall insulation iii. Loft insulation iv. Double glazing	As cavity wall insulation, loft insulation and double glazing all have a PF of 24.8 we have now grouped them together under Insulation - building fabric. For detailed analysis a more focused work group can be set.	
26	Insulation - draught proofing	8.8	Doughtstripping		e.g. Quattro Seal
27	Insulation - secondary glazing	8.8	Insulation - secondary glazing	Used to improve thermal properties of single glazing and provide draught proofing for poorly fitting windows. PF lower than double glazed window units.	
28	Lighting - discrete controls	3.5	Install automatic lighting controls	Strong consideration must be given to lighting controls being properly commissioned for the area and application in question.	
29	Lighting - discrete controls tamperproof (to be finalised)	0.0	Install automatic lighting controls	Strong consideration must be given to lighting controls being properly commissioned for the area and application in question. To qualify for this persistence factor (PF) we see these as being "tamperproof" in that they cannot be overridden.	
30	Lighting - upgrades	4.7	i. Change to Compact Fluorescent ii. Change to LED iii. Change from T12 to T8 iv. Change from T12 to T5 v. Change from T8 to T5.	A number of other work groups exist on SERS.	
31	Motor controls	3.5	Voltage controllers for constant speed motors	For the avoidance of doubt we would consider SavaWatt and PowerBOSS as a form of motor control rather than voltage reduction.	
32	Motor Controls - variable speed drives	6.4	Variable speed drives on pumps, fans, compressors	The term "larger" from notes in GPG312 can now be ignored as this was prepared when VSD were only economically available for motors above say, 20kW. Nowadays the cost has come right down and you can purchase them at a reasonable cost for very small motors.	
33	Motors - flat belt drives	6.4	Motors - flat belt drives	We see the typical application as being a fan being driven by a motor using V-belts. This is a technique that replaces the V-belt with a flat belt. You need to change the pulleys as well. You then save energy because you don't have losses associated with the pulley grooves rubbing against the belt side.	
34	Motors - high efficiency	7.3	Replace standard motor with high efficiency motor		Consider funding the additional cost relative to a standard motor
35	Office equipment improvements	7.3	Office equipment improvements	We see that this applies to say a replacement printer with a lower energy demand, or replacing a CRT with a flat screen, or a better insulated drinks dispenser.	
36	Office equipment - network PC power management	4.4	Office equipment: Network PC power management		
37	Radiator reflective foil (external walls)	8.8	Reflective foil behind radiators on external walls		

#	Project Type (From compliance tool)	PF	Work Type options (mainly from GPG312)	Salix Comments	Work Type Notes (Held in SERS and taken from GPG312)
38	Renewable energy	7.2	Biomass boilers, solar thermal or wind turbines.	Few projects have been identified that comply with scheme criteria. Conversion of existing boilers to run on biomass shows most promise. The use of a contribution to the project from another funding source may help.	
39	Swimming pool covers - liquid	6.8	Liquid Pool Covers	We understand that Butlins have successfully trialled this technique.	
40	Swimming pool covers - manual	4.4	Manual pool covers	These have a poorer PF due to the higher likelihood that the cover will not be used every night if the "human resources" are committed elsewhere.	
41	Swimming pool covers - motorised	6.4	Automatic swimming pool cover		
42	Time switches	1.7	Time controls on drinks machines, photocopiers and office equipment		
43	Time switches - tamperproof	2.8	Time controls on drinks machines, photocopiers and office equipment		
44	Ventilation - distribution	8.8	Air distribution - system Improvements	Redesign of systems to reduce pressure loss or excess air volume. Use of low loss air diffusers for system balancing.	
45	Ventilation - fans	7.3	Air distribution - system Improvements	Replacement of old style forward curved and backward curved centrifugal supply fans with high efficiency double inlet aerofoil bladed fans.	e.g. Efficientair.co.uk
46	Ventilation - presence controls	1.7	Air distribution - system Improvements		
47	Ventilation - presence controls ECA approved	2.8	Air distribution - control improvements		
48	Voltage reduction equipment	8.8	Voltage reduction equipment		e.g.. FluorSave, powerPerfector, Watt Misers