Leeds CITY COUNCIL

AGENDA ITEM NO.:	Appendix Aii
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EXECUTIVE BOARD – 30 MARCH 2011

CARBON AND WATER MANAGEMENT PLAN 2011 - 2021

CHIEF ASSET MANAGEMENT OFFICER

1. EXECUTIVE SUMMARY

1.1. This plan outlines the Council's approach to the management of carbon dioxide emissions, energy and water consumption from its buildings (excluding social housing) and operational activities over the next ten years, within the context of Leeds City Council's sustainable development objectives. It forms an integral part of the draft Ten-year Asset Management Plan, which involves the specific aim of reducing the cost, in real terms, of running the Council's operational buildings.

1.2 This plan includes:

- A brief introduction to the drivers behind the actions put forward in the plan, including an evaluation of performance against the previous 2003 – 2008 Energy and Water Management Plan targets (Section 2)
- A background on the changes in drivers since the 2003 – 2008 Energy and Water Management Plan, including reference to the financial implications to Carbon Reduction Commitment (CRC) in the October 2010 Comprehensive Spending Review (Section 3)
- Long term aims and objectives of the 2011 – 2021 Carbon and Water Management Plan (Section 4)
- The 10 year headline plan of carbon and water reduction measures (Section 5)
- A discussion of the short-term "Million pound challenge" that has arisen as a response to the comprehensive Spending Review of October 2010 (Section 6)
- An outline of potential funding methods and risks (Section 7)
- The governance frameworks relating to data management and reporting, roles and responsibilities for carbon and water management (Section 8)
- A timetable for the corporate stakeholder consultations leading to seeking Executive Board approval on 30 March 2011 (Section 9)
- Recommendations for support and endorsement of aims, objectives and targets set out in this plan (Section 10)

1.3 Energy and water consumption has reduced year on year from at least 1991. The Energy and Water Management Plan 2003 – 2008, the aims of which still remain valid are to ensure that LCC adopts best practice, target setting in particular, to avoid excessive cost and penalties associated with carbon emissions and consumption.

1.4 National and European legislation call for continued downward pressure on carbon emissions, energy and water consumption. In December of 2009, the Council's Executive Board agreed a Leeds Climate Change Action Plan which called for a 40% reduction in carbon emissions from the Council's operations by April 2021. The full

Council passed a further resolution in January 2010 to extend this aspiration to carbon emissions from the whole City. Whilst the scope of this plan is confined to the Council's operations only, it may be used as a means of demonstrating to other large organisations how to achieve results on this scale.

2. INTRODUCTION

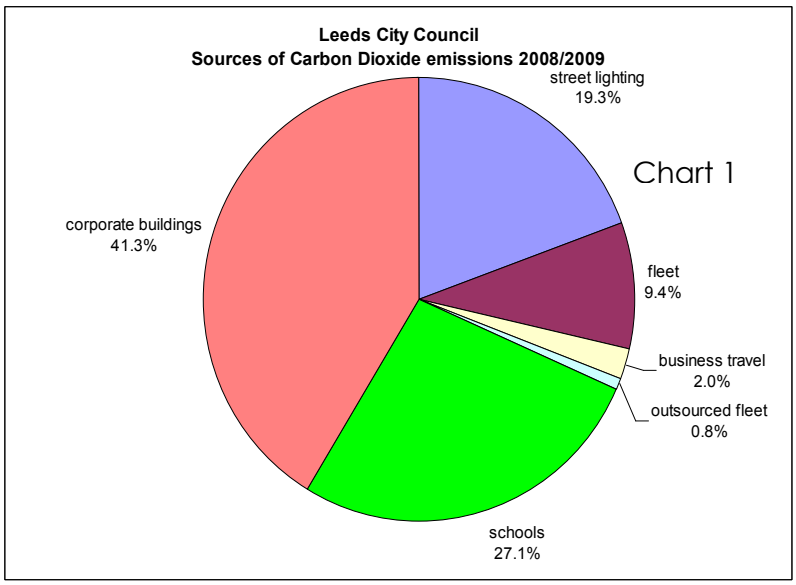
2.1. Reductions of Carbon Dioxide emissions[1] of up to a third have been achieved in the twenty years since the Rio Earth Summit, as illustrated in table 1 below:

- C 60% due to rationalisation of poorly performing buildings and replacement as necessary with newer more energy-efficient property.
- C 30% due to upgrades of energy using equipment (such as modern high-efficiency boilers and lighting) and building fabric elements (such as double glazed windows and doors, draught sealing and roof insulation) as part of the regular maintenance process.
- C 10% due to capital investment such as "Invest-to-Save", Local Authority Energy Fund (LAEF), and Salix Recycling Capital Fund over the last 8 years.

Table 1	All energy in MWh	CO_2 in tonnes	Water in m^3
1991/92 – Rio Earth Summit baseline year	609,104	210,956	1,831,187
2001/02 – Energy & Water Management Plan baseline year	478,147	167,921	1,124,318
2007/08 – Energy & Water Management Plan final year	404,000	142,000	964,593
2008/09 - NI 185 baseline year	413,877	136,987	987,713
2009/10 - CRC baseline year	396,000	131,962	1,062,985

For the purpose of this plan, the baseline year is the highlighted NI 185 baseline year of 2008/09 because it is that upon which the Council's 40% CO_2 reduction target is based.

2.2. As can be seen in Table 1, in 2008/09 LCC emitted approximately 137,000 tonnes of carbon from its operations, involving building energy, street lighting, fleet, and business travel. It consumed approximately 413,000MWh of energy, and 1.19M m^3 of water.



This document will use the word "carbon" or "CO_2" as shorthand for carbon dioxide in relation to such emissions [1]

2.3. Note that carbon emissions from Waste Management are seen as arising from domestic activity and commercial operations rather than from those of the Council

2.4. Chart 1 indicates that carbon emissions from buildings (including schools, amount to circa two-thirds of the overall total. However this plan also covers the whole range of the Council's operational activities except housing.

2.5. Since the energy and water management plan 2003 to 2008, very significant changes have occurred which directly link carbon emission with cost. For this reason the new plan is entitled the carbon and water management plan.

2.6. In December 2009 the Council adopted a policy objective to achieve a 40% reduction in carbon emissions from its operations by 2021. Therefore this plan sets out measures which are proposed for delivery of the Council's carbon reduction policy objectives over the next ten years. This plan enables the Council to protect its revenue budgets as far as possible from rising energy prices and carbon costs by implementing energy efficiency measures and reducing consumption.

2.7. Performance against previous plan objectives (Table 2)

2003/2008 objective	Outcome (table data)	Target achievement
Reduce CO2 emissions by 15%	Reduction of 18%	Exceeded by 3%
Reduce water consumption by 5%	Reduction of 16%	Exceeded by 11%
Reduce energy consumption by 10%	Reduction of 18%	Exceeded by 8%
Constrain expenditure within current levels, in real terms	Reduced by 20% in real terms	Exceeded by 20%

2.8. LCC was EMAS (Eco-Management and Audit Scheme) accredited in 2002 for "The management and reporting of the significant environmental aspects associated with all departments, services and sites of Leeds City Council and Education Leeds". This standard has been re-accredited every year since.

2.9. LCC was awarded the Carbon Trust Standard in summer 2009. This standard is counted as an "early action metric" under the rules of the CRC Energy Efficiency Scheme. This means that LCC will enter the CRC with pre-existing credits in place, ensuring an early competitive ranking.

2.10. This plan builds on the success of the 2003 -2008 plan, adding extra objectives relating to renewable energy sources and investment activity. It sets out LCC's approach to carbon and water management over the next decade across all of its operational activity (that is, emissions and consumptions associated with all functions with the exception of council-owned domestic dwellings). The key issues considered in the development of this plan are set out below.

3. BACKGROUND

3.1. The issues in this section are considered in more detail in appendix 1.

3.2. Energy availability and price issues

- During the next decade fossil fuels will become more expensive to extract from the earth.

- The measures in this plan to reduce carbon emissions by reducing consumption of fossil fuel and reducing consumption of mains water will reduce LCC exposure to the escalating costs of the fossil fuel market.

3.3. Carbon Reduction Commitment

- The compulsory Carbon Reduction Commitment Energy Efficiency Scheme (CRC) started April 2010. **Since the Comprehensive Spending Review in October 2010 the government has changed the scheme from a capped trading scheme with potential rewards and penalties, to a taxation amounting to approximately 11% on top of qualifying energy charges.**
- **From April 2012, LCC must purchase allowances to cover its carbon emissions, totalling c£1,440,000 per year, in the first year. As carbon allowance prices follow market forces the unit cost will grow year-on-year**.
- Each year the initial allowance will be capped by as much as 5% per year, requiring participants to reduce emissions or purchase excess emissions allowances on an open (monthly auction) market, with the potential for very significant unit price increases. .

3.4. Strategic context, financial and environmental drivers, and targets

- In terms of its own internal objectives, LCC originally targeted to reduce its carbon emissions by at least 3% per year.
- Nationally, a Central Government commitment to reducing CO_2 emissions by 80% by 2050 against the 1991/92 baseline was then introduced.
- Subsequently LCC adopted the Climate Change Action Plan in December 2009 and committed to reduce carbon emissions by 40% between 2008/09 and 2020/21. This equates to a higher rate of reduction than the existing targets.

4. AIMS AND OBJECTIVES

4.1 Objectives

- In summary LCC's aim is to reduce CO_2 emissions by 40% by April 2021.

Table 2

Summary of long term objectives to 2021

Objective	Outcomes
To reduce revenue expenditure on energy and water at levels proportional to CO_2 reductions based on summer 2010 prices.	Revenue cost savings of £6.0M per annum at today's prices. (Note: This is an 40% cost saving and a proportion of it will need to be committed over the relevant payback period to servicing unsupported borrowing for initial costs of retrofitting existing buildings or raising the environmental performance of replacement

	new buildings)
To reduce CO_2 emissions by a minimum of 40% by April 2021	A reduction of 54781 Tonnes of CO_2 emitted per annum from 2021
To reduce energy consumption from fossil fuel to support reduction in CO_2 emissions	A reduction of 213,475MWh of energy per annum taken from the fossil fuel sources from 2021
To produce renewable energy, replacing fossil fuel to support reduction in CO_2 emissions	An increase in renewable energy production to 14,320MWh from 2021
To Maintain level of investment in carbon reduction projects to ensure competitive positioning in CRC league tables	Ensure that the financial penalty from CRC is minimised
To halt the recent increase in water consumption and effect a reduction of a minimum of 10% by April 2021	A reduction of 96055 m^3 of water per annum from 2021

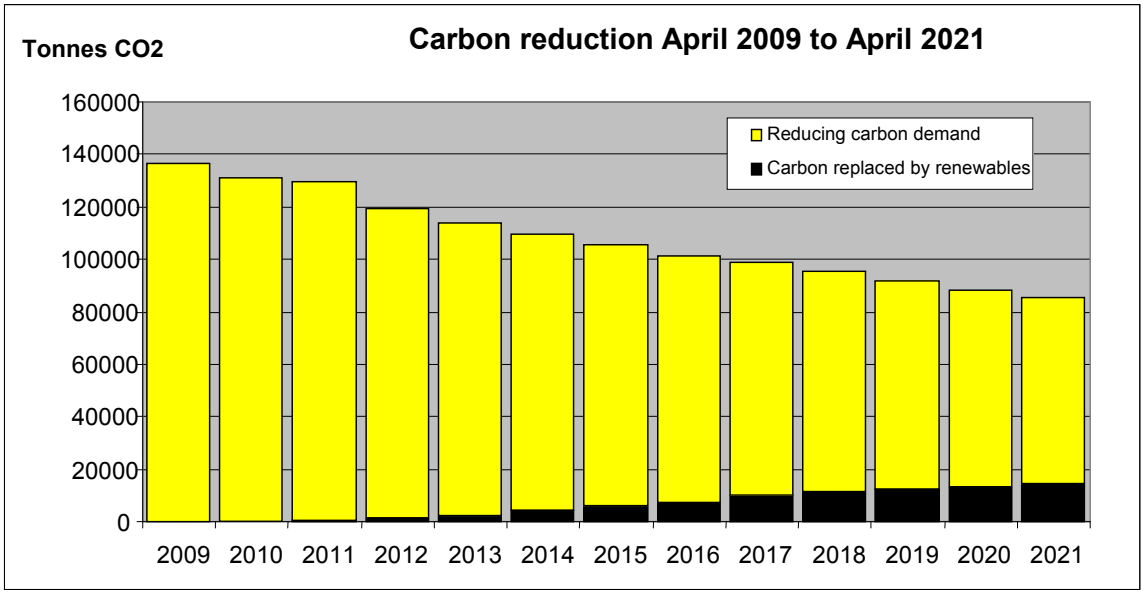
- A proposed target of 10% water reduction is offered in this plan. Suggested annual targets, which would be required to deliver 40% carbon across the whole operational estate and 10% water reductions by 2021, are then set out in table 3 below.

- Table 3 - Target Energy, Carbon and Water reductions to meet the Councils 40% policy objective and associated financial savings

	Energy consumption in MWh	annual savings @ summer 2010 prices	cumulative savings @ summer 2010 prices	CO_2 emission in Tonnes	Year-on-year reduction in CO_2	Water in m^3
2008/09	413,877	0	0	136,987	baseline	1,188,055
2009/10	396,000	£91,944	£91,944	135,727	2.10%	1,210,000
2010/11	391,533	£310,799	£402,743	134,816	1.60%	1,210,000
2011/12	357,274	£1,531,425	£1,934,168	127,638	8.08%	1,198,200
2012/13	337,624	£546,283	£2,480,451	124,294	3.13%	1,186,400
2013/14	319,054	£521,755	£3,002,207	119,033	3.13%	1,174,600
2014/15	301,506	£498,328	£3,500,535	113,772	3.13%	1,162,800
2015/16	284,924	£475,953	£3,976,488	108,511	3.13%	1,151,000
2016/17	269,253	£454,583	£4,431,072	103,250	3.13%	1,139,200
2017/18	254,444	£434,172	£4,865,244	97,989	3.13%	1,127,400
2018/19	240,450	£414,678	£5,279,922	92,728	3.13%	1,115,600
2019/20	227,225	£396,059	£5,675,981	87,467	3.13%	1,103,800
2020/21	214,727	£378,276	£6,054,257	82,206	3.13%	1,092,000

- It should be noted that a proportion of the energy cost savings associated with the 40% reduction will need to be committed over the relevant payback period to servicing unsupported borrowing for initial costs of retrofitting existing buildings or raising the environmental performance of replacement new buildings.

4.2. To achieve the 40% policy objective, a mixture of energy efficiency measures and replacement of some fossil fuel with renewable energy is proposed, as illustrated in the following chart 2:-



4.3. The emission reduction rate will fall relatively slowly over the first two to four years to allow time to plan and implement the raft of new energy savings measures from retrofit programs outlined in table 4, overleaf, across the whole of the council's operational estate and schools. The implementation of these proposals will result in a step change in carbon and energy reduction going forward, but in order to achieve the 40% target it will be necessary to include renewable energy and other measures which have a longer financial payback period. The increasing contribution of energy from renewable sources is illustrated in black at the bottom of the above chart. The relative contributions of the main energy conservation measures to be employed are set out in table 4 – Delivery Plan.

5. THE TEN YEAR PLAN

5.1. Ten Year Programme of Carbon and Water Management Measures

Note: Table 4 is based on the Climate Change Action Plan. In practice, Line 3 relating to schools has been split. Issues relating to retained schools buildings have been transferred to Line 1. Rebuilding of schools, funded by BSF has now been limited to the three schools currently in progress, with no further rebuilding planned at this stage

Table 4 -Delivery Plan

	Headline measures to achieve 40% reduction by 2021, as set out in Climate Change Action Plan, to be deilvered through the Carbon and Water Management Plan	tCO2 reduction	% of Total	Cumulative %	Responsibility	Funding and Risks	Project Delivery schedule 2011 2012 2103 2104 2105 2106 2107 2108 2109 2020 2021
1	Retrofitting existing estate – 17-25% reduction in estate carbon emissions through holistic energy and water efficiency packages (use 21% as median figure). Capital costs from unsupported borrowing, guaranteed payback from energy savings in less than 10	20000	14.60%	14.60%	Project team PPPU/CPM/ SAM/EDUC	Contractual payback guarantee - unsupported borrowing. Funding secured for schools project management and contract management capacity.	
2a	Changing the Workplace, Phase 1, City Centre, reducing emissions by reducing the back-office space occupied, energy savings as marginal benefit to reducing total cost of occupied space. Assume a 15% reduction in occupied space and 25% reduction in assoc	8000	5.84%	20.44%	Programme board / Project team	Phase 1 business case approved. Disposal of surplus property subject to market demand	
2b	Changing the Workplace, Phase 2, outside the City Centre, reducing emissions by reducing the back-office space occupied, energy savings as marginal benefit to reducing total cost of occupied space. Assume a 10% reduction in occupied space and 10% reduct	3250	2.37%	23%	Programme board / Project team for each project	Business cases to reflect savings in running costs. Capital Programme disposal of surplus property - subject to market demand	
3	Service rationalisation of public-facing buildings. Reduction of size of estate and replacement with higher performance buildings (appendix 2, section 1.7 and 1.8)	1400	1.02%	23.83%	Project teams (SAM/CPM/ Services)	Service reviews and asset management rationalisation projects	
4	Large Scale renewables - Wind turbines (2-3) and district heating (1 or 2 areas) large scale biomass (e.g. anaerobic digestion (AD) plant) funded primarily by private sector investment in return for guaranteed demand from LCC, reduce estate emissions by c	4500	3.28%	27.12%	Project teams to be initiated by SAM	Business cases to be brought forward to SIB. Partnerships for Renewables or similar external finance. Planning risks to be carefully managed.	
5	Behavioural / "soft" techniques in use of buildings and equipment. Current targeted low-cost/no-cost measures, self funded in first financial year (appendix 2, section 1.3)	8802	6.43%	33.54%	SDU / Services CPM / IT	Requires continuing action. Funded from current financial year savings.	
6	Switch majority of remaining fleet vehicles to alternative fuel including hybrid and electrical,, plus efficiency gains from EU programmes to reduce carbon emissions from all vehicles. Assume 30% reduction. Use of grants and may require borrowing to fin	2400	1.75%	35.30%	Commercial Services	Infrastructure - Department for Transport grants and Local Authority Energy Fund. Vehicle replacements funded from Revenue savings.	
7	Use of new street lighting luminaires and control gear plus different lighting regime. Assume additional 10% reduction. (appendix 2, section 1.11)	2250	1.64%	36.94%	Highways and transportation	Local Authority Energy Fund/Salix. Risk - drive for changes needed through PFI contract	
8	Small Scale renewables - Contribution of dispersed hydro-electric, solar thermal, photovoltaics and building-scale biomass reducing building related emissions by circa 2%. (appendix 2, section 2.2.2 - 2.2.6)	1800	1.31%	38.25%	Project teams to be initiated by SAM	Partnership for Renewables or similar capital costs borrowed, with cost of borrowing covered by new Feed-In Tariff. Risk of uptake of biomass due to technical/ operational issues	
9	Fleet vehicles – alternatively fuelled vehicle trial could result in cost-effective transformation of entire refuse vehicle fleet to biogas, reducing emissions by 50%. (appendix 2, section 3)	1610	1.18%	39.43%	Commercial Services	Likely cost of circa £14m for AD plant (which could attract grants, PFI and other credits) and savings of circa £2m pa against current costs of diesel, plus potential for LATS credits, RTFO credits etc.	
10	Business travel planning and outsourced vehicles to be improved by circa 20% through EU programmes to reduce carbon emissions from all vehicles. (appendix 2, section 1.4)	769	0.56%	39.99%	SDU / Services	No cost to LCC.	
	TOTAL	**54781**	**40%**				

5.2. Having identified our long term objectives and interim targets, the Carbon and Water Management Group have agreed a series of proposals which will enable LCC to deliver the degree of improvement required. It is recognised that this may be achieved in a number ways, namely the protection from direct cost of energy through high percentage price increases and protection from increasing indirect costs of carbon emissions. These are set out in detail in Appendix 2

6. The Million Pound Challenge

6.1. During the Council's budgeting process for 2011/2012, an decision was made to reduce LCC building energy spend in real terms by £1,000,000 from a total of approximately £7,300,000, excluding schools. This challenge is defined by the need to deliver savings in the next financial year.

6.2. Existing externally financed capital projects are funded from energy savings, implying that almost no cash savings are likely to be available in 2011/12. The only likely means of producing savings is to drive very strongly to produce low-cost/no-cost savings through mostly behavioural changes by the whole council workforce.

7. Resources

7.1. Staff Resources

- There are a number of teams in the Council, referred to in Appendix 3, with some responsibilities for Energy Management Issues. A review of these services has been initiated, with a view to maximising efficiency and effectiveness. It is anticipated that the review project will bring forward recommendations before 31/03/2011

- To maximise impact, the Council seek to enter partnerships to bring forward external resources for delivery of schemes such as Re-Fit, below.

7.2. Funding

Funding is considered below under the headings of:

- Existing maintenance budgets
- Existing investment funds
- Unsupported borrowing

7.3. Existing maintenance budgets

This plan acknowledges that planned-maintenance budgets would be used to continuously improve the energy efficiency of buildings, services and plant, rather than simply replace and repair on a like-for like basis**, as appropriate.**

7.4. Existing energy and carbon investment funds available to LCC

There are currently three existing energy and carbon investment funds available to Leeds City Council (LCC). These are the Salix Energy Efficiency Loan Fund (SEEL), the Salix Recycling Fund (Salix) and the LCC Local Authority Energy Fund (LAEF).

- **The SEEL Fund** is entirely financed by the Carbon Trust through Salix Finance. LCC share of this comprises an overall capital value of approximately £350,000 and is dedicated to projects in 4 specific buildings from the top 100 properties in terms of energy consumption. This fund provides for projects to be identified, specified, costed, project managed by external consultants and contractors.

  The investment in this fund is interest free and is fully repaid by savings in energy costs in the buildings concerned. Funds are repaid direct to Salix then to the Carbon Trust. This fund is now closed. Performance risks in this fund are borne by the consultant and contractors, with regular performance reviews monitoring performance against design.

- **The Salix Fund** had initial interest free capital entirely financed by the Carbon Trust through Salix Finance. The Council's Salix Recycling Fund has a capital target of approximately £420,000 to be invested by April 2011, of which almost half is already committed. Projects are selected using the DECs and energy performance knowledge of the corporate property portfolio. Savings from energy costs are repaid into the fund for recycling by future lending on further energy projects. Each project is allowed to carry a management charge of up to 15% of the capital cost so as to provide a management resource to manage the projects arising. This fund has been almost exclusively taken up by corporate buildings. Some interest however has been shown by two secondary schools. Performance risks are borne by LCC, however, strict qualification criteria and a range of checks and balances are applied prior to agreement, and monitoring of outcomes is carried out during the design life of the project

  There is no end date for this fund; however LCC must provide auditable evidence each year that LCC continues to reinvest the repayments.

- **Local Authority Energy Fund** - LCC operates a separate LAEF fund alongside the Salix Recycling Fund which means that LCC is able to invest a further £150k in suitable energy/carbon savings projects. The qualification criteria, along with compliance checking and performance monitoring, closely match the Salix model

7.5. Unsupported Borrowing

Invest-to-Save schemes can generate savings or income sufficient to finance borrowing of the initial capital outlay. Subject to satisfactory appraisal of options and financial approvals for the ReFit pilot project, Strategic Investment Board will be recommended to support establishment of a rolling programme for retrofitting all suitable Council buildings (including schools) with Energy Conservation Measures (ECMs) via outcome-driven methods such as ReFit. It is proposed that when the interest-free Salix / LAEF energy efficiency funding is fully committed, then a business cases will be brought forward to seek access to substantial unsupported borrowing, subject to the outcome of the CSR in October. Potential performance risks inherent in these schemes are borne by the consultant and contractors, with regular performance reviews monitoring performance against design.

- **Retro-fitting existing buildings - RE-FiT**

For those buildings deemed to have a service life long enough to benefit from retrofit activities, various finance models, including RE-FiT are under consideration. RE-FiT is a self funding means for organisations to reduce energy expenditure and the carbon footprint of their buildings. The RE-FiT program is

currently running as a pilot program with £1m of investment due to start early in 2011/12. RE-FiT involves Suppliers (contractors) guaranteeing a set level of annualised energy savings - therefore providing a financial saving - over a defined time period. The Supplier's financial guarantee will be a key factor in persuading school governing bodies to take part and in securing unsupported borrowing.

A decision is still required on whether to repay loans as soon as possible, or to extend payback periods to so as to enable early receipt of part savings.

- **Schools energy scheme**

The council has offered to support all schools in the use of the outcome-driven schemes such as ReFIT to deliver an energy efficiency programme which is guaranteed to be self-funding on an individual school basis. On 23rd September 2010, the Schools Forum, on behalf of all schools, agreed to pay £50,000 per annum, over three years, from the Delegated Schools Grant to Strategic Asset Management for the costs of administering the client side of the programme on behalf of the schools. Subject to the CSR, the Council would offer to raise the initial capital investment through unsupported borrowing, which would be repaid by agreement from schools' guaranteed financial savings for the period of the loan. The loan period could be up to ten years, depending on the payback nature of each individual package of Energy Conservation Measures. After the loan has been paid off, the full financial savings from reduced energy costs will be received by each school. Business cases would be put forward for consideration by school's governing bodies on a school-by-school basis.

- **Renewable energy scheme**

The plan proposes a scheme similar in principle to the RE-FiT scheme, but tailored to the technology, lifespan and financial drivers of renewable energy generation. Typically the agreement periods for renewables technologies such as Photovoltaic (PV) and Hydro (HEP) electricity generation, and Solarthermal and Biomass heat generation would be of the order of 20 to 25 years. These schemes would exploit income opportunities such as Feed-in-Tariffs (FiTs) for electricity and the forthcoming Renewable Heat Initiative (RHI), or capital grants where available.

Savings produced would exceed capital loan repayments so as to generate savings/income as well as reduced carbon outputs from the start of each project.

It is anticipated that, in order to achieve as quick an uptake as possible, delivery of hydropower to four sites in Leeds could be project managed either by PPPU, or by project teams from within Strategic Asset Management

8. Governance and Responsibilities

- The first section of Appendix 3 sets out a governance framework for data management and reporting. It includes a discussion on the role of the Carbon and Water Management Group. It then summarises the roles of data management and recording relating to both high level and more detailed indicators.
- The next section of Appendix 3 sets out a listing of all those bodies within the Council who have an interest in issues relating to carbon and water

management, with specific reference to the roles of Strategic Asset Management, Sustainable Development Unit and Corporate Property Management.

- The final section of Appendix 3 notes improvement priorities and governance responsibilities relating to carbon and water management.
- An Equality, Diversity, Cohesion and Integration screening process has been completed for this Plan from which it has been concluded that both current and proposed measures have given proper consideration to equality, diversity, cohesion and integration and a full impact assessment is not required.

9. Timetable

The timetable, set out below, for the range of corporate stakeholder consultations is focussed on seeking Executive Board approval on 30 March 2011.

Carbon and Water Management Plan 2010/11 Timetable		
Milestones	**Milestones**	**Milestones**
CDD 10 Nov 2010	(report by 5 Nov	Directorate support
CLT 23 Nov 2010	(report by 16 Nov)	Corporate clearance (Environment themed session)
Environment Programme Board 1 Dec 2010	(report by 24 Nov)	Corporate support
Children's Services SLT tbc	(report by tbc)	Directorate support re schools
Resources Performance Board 10 Dec 2010	(report by 3 Dec)	CRC Management / Terms of reference
Resources RLT 17 Dec 2010	(report by 10 Dec)	Directorate support
Strategic Investment Board 14 Jan 2011	(report by 6 Jan 2011)	Corporate support for investment implications
Environment Programme Board 16 Feb 2011	(report by 14 Feb)	Support for Environmental outcomes
Exec Board 30 March 2011	(Report by 28 Feb 2011	Approval of Carbon & Water Management Plan

Consultees:

- Strategic Asset Management – Christine Addison
- Sustainable Development Unit – Tom Knowland / Jon Andrews / George Munson
- Policy & Performance - Paul Maney
- Highways (Street Lighting and Transport Policy) – Gary Bartlett / Ian Moore / Liz Bennett / Richard Crowther
- Corporate Property Management – Anne Chambers
- Commercial Services (Fleet) – Julie Meakin / Terry Pyecroft
- Business Transformation – Jane Watson

- Education Leeds – Jacky Green / Alex Macleod / Steve Ruse
- Public-Private Partnership Unit – Dave Outram / Polly Cook / Dave Grooby
- Procurement – Malcolm Foster / Philippa Elliott
- Financial Management – Helen Mylan / Michael Everitt
- Financial Development – Maureen Taylor

10. Recommendations

It is recommended that:-

10.1. Support be given to the recommended aims of the Plan as set out in paragraph 4.1 and to the Objectives and Outcomes set out in paragraph 4.2

10.2. Support be given to the targets for Energy, carbon emissions, and water consumption set out in the table 3, so as to enable LCC to approach their aspirations in respect of 40% emissions reductions by 2020

10.3. The ten-year program of carbon and water measure set out in the Delivery Plan in Table 4 be endorsed

10.4. The processes relating to energy and carbon that are audited through the EMAS process should be extended to audit processes relating to water consumption.

Appendix 1 - Changes to Strategic drivers

1. Energy availability and price issues

1.1. During the next decade fossil fuels will become more expensive to extract from the earth, as existing sources become exhausted and replacement sources become more difficult to find and exploit. Current predictions (e.g. BP Statistical Review of World Energy – summer 2010; IEA World Energy Statistics and Balances – summer 2010) suggest that natural gas demand will exceed supply in 2014. This is a very significant "tipping point" at which the rate of consumption outstrips the rate of replacement of reserves. At that date natural gas market prices are likely to increase significantly, in line with the tripling of wholesale gas prices that the LCC Energy Strategy Group observed in summer 2008. That event arose from market-scale speculation as a result of the peak-oil tipping point predictions. Since very much of UK electricity is produced from natural gas, wholesale electricity prices are likely to follow in much the same way as was also observed in 2008, when they doubled in 6 months.

1.2. Price increases for fossil fuels will enable suppliers to exploit known sources of currently expensive-to-extract fuels, thereby delaying the arrival of the so-called "peak-oil" and "peak-gas" scenarios. However, the summer 2010 oil spill in the Gulf of Mexico, leading to $billions of costs, clearly highlights the risks involved. All remaining sources of fossil fuel are accompanied by similar or worse potential environmental and financial risks.

1.3. Currently, (summer 2010,) quoted future energy prices, for winter 2012, available on the UK and European natural gas markets indicate that an increase of 50% in 3 years is very likely.

1.4. The measures in this plan to reduce carbon emissions by reducing consumption of fossil fuel and reducing consumption of mains water will reduce LCC exposure to the escalating costs of the fossil fuel market.

2. Carbon Reduction Commitment

2.1. The introduction of the compulsory Carbon Reduction Commitment Energy Efficiency Scheme (CRC) starting April 2010 requires LCC and other similar users of electricity to monitor and record its emissions. These emissions are based on LCC's ongoing CO_2 performance, and rated nationally against all other members of the scheme (both public and private sector). LCC has already taken early measures to reduce financial impact in the first two years. However, the impact of the changes in the Comprehensive spending review may well nullify this advantage. LCC must purchase emissions allowances at the start of each financial year at the going rate, approximately 120,000 tonnes of CO_2 at £12 per tonne, totalling £1,440,000/year for Leeds. These charges are now non-returnable.

2.2. Organisations are ranked each year in a league table in accordance with performance in CO_2 emissions. Those organizations performing better than their predicted levels will be able to sell their excess allowances on an open (monthly auction) market. Those performing below their predicted levels will be required to cover their excess emissions by purchasing allowances on the open market, thereby incurring cash penalties.

2.3. Each year the allowance that each CRC scheme participant will be able to buy initially will be reduced, perhaps by as much as 5% per year, requiring participants to purchase excess yet more emissions allowances on the open (monthly auction) market.

2.4. The government will peg starting carbon prices at £12 per tonne for an initial year. The monthly auction prices will be subject to market pressures. It is expected that these carbon prices will in general follow or exceed energy prices, so it is very likely indeed that while LCC's emissions are targeted to fall, the total cost of the allowance each year is unlikely to fall.

2.5. The scheme was subject to scrutiny under the Comprehensive Spending Review in October 2010. Some changes were announced, but more are yet to be announced as this paper is being produced.

3. Strategic context, financial and environmental drivers, and targets

3.1. In order to meet future carbon reduction targets, the Council needs to reduce the energy it uses in buildings, streetlights, travel and transport is 3%, year on year. Different forms of energy (electricity versus gas, for instance) produce different volumes of CO_2 emissions per unit of energy. 3% energy reductions, based on the City Council's consumption mix, will lead to reductions in CO_2 emissions of approximately 3.7%, year on year.

3.2. To comply with carbon reduction targets the Carbon and Water Management Group (formerly known as the NI185 Strategy Group) meets monthly to set targets, to oversee and report on activities and to deliver the cross-cutting energy and water management plan.

3.3. Major environmental issues regarding carbon and water are discussed in considerable detail in the Leeds Climate Change Strategy. LCC adopted the Climate Change Action Plan in December 2009 and committed to reduce carbon emissions by 40% between 2008/09 and 2020/21. This equates to a higher rate of reduction than the existing targets. The rate of emissions reduction should average 3.33% per year over these 12 years (compared to the 2008/09 baseline year), although the annual rate of reduction will vary over the period which will be reflected in performance reporting.

3.4. Reduction in water consumption has environmental benefits, but for the purpose of this plan the objective is to reduce the volume and cost of water consumed. The cost and carbon impact of heating it is also reflected in the plan in respect of energy efficiency. Bearing in mind difficulties in reducing water consumption previously, a target of 10% reductions by April 2020 is proposed, based on the levels of reductions that we understand are realistically achievable with existing technologies.

4. Drivers for Carbon reduction

4.1. Climate Change Act 2008

4.1.1. Following the Energy White Paper of 2007, the Government made clear its commitment to tackling climate change by introducing the Climate Change Act 2008. It established the Committee on Climate Change (CCC) to provide it with independent advice on establishing a low carbon economy.

4.1.2. The Committee on Climate Change inaugural report 'Building a low-carbon economy - the UK's contribution to tackling climate change' was published on 1st December 2008. The report recommends that the UK should reduce greenhouse gas emissions by at least 80% by 2050 and advises on the levels of the UK's first three legally binding carbon budgets for 2008-2022.

4.2. **Part L2 of the Building Regulations** came into force on 6th April 2006 and is a minimum energy efficiency standard applicable to all buildings. The Government's 'Future Thinking' paper is looking at a further improvement to building regulations of 25% by 2010, as this represents the minimum improvement needed if the UK is to keep on track to achieve its 2050 target.

4.3. **The 'Big Idea' from the Council Business Plan** 2008 to 2011 is shown in the box to the right. It states an aspiration to meet high environmental standards in the management of the Council's own estate to reduce its carbon footprint. Strategic Investment Board subsequently agreed that the BREEAM Excellent policy is an aspiration, which is qualified by affordability, buildability and service requirements.

The Big Idea

We will take significant steps to reduce our carbon emissions

The vast majority of our CO_2 emissions come from our buildings and we want to take action now to shrink our carbon footprint far into the future. By doing this we will be making our contribution to reducing the carbon footprint of the city and the region, and setting an example to encourage others to do the same. We recognise that there is no one solution to achieve this but we are undertaking to:

- ensure all new buildings and refurbished buildings (where possible) commissioned by the council meet Building Research Establishment Environmental Assessment Method (BREEAM) **excellent** standards with maximum **energy credits;**
- invest strategically in energy efficiency and renewable energy technologies to reduce CO_2 emissions from the existing estate;
- reduce our overall office floorspace eg by the delivery of a corporate document records facility; and
- explore new ways of working that are more flexible and efficient to reduce CO_2 emissions, particularly from travel.

4.4. NI185

4.4.1. The Local Area Agreement included NI185 as the indicator which measures the CO_2 output caused by the operations of LCC. The CO_2 arises from heating and power used in buildings, street lighting, and travel on behalf of LCC and from transport operations. While NI185 is being phased out, LCC must target reductions every year. The target applies to every building operated by LCC including schools and buildings leased by LCC.

4.4.2. The Carbon and Water Management Group (formerly the NI185 Strategy Group) have set out a high level action plan comprising the following key areas of activity. This constitutes a more detailed work plan, based on the headline measures in table 4 of the report (page 7)

Carbon and Water Management Group Action Plan areas of activity	
1.1	Maintain EMAS accreditation
1.2	Corporate Carbon Reduction Framework
1.3	Sustainable Procurement
2.1	Carbon reduction targets and monitoring
2.2	Realise benefits of new energy database system
2.3	Carbon Reduction Commitment Energy Efficiency Scheme
2.4	Energy procurement and engagement with suppliers
3.1	Combined Heat and Power (Gas / biomass, energy from waste). First project Aire Valley Urban Eco Settlement
3.2.1	Develop a business case to establish the 'Energy Leeds' ESCO to provide a vehicle for low carbon energy infrastructure procurement.
3.2.2	Work with partners to bring forward the city centre CHP scheme as the first ESCO project.
3.3.1	Wind power, micro, small and large scale turbines
3.4	Hydro power, develop 4 small scale Archimedean screws on River Aire
3.5	Photovoltaic power, small and large scale
3.6.1	Heating (small biomass, ground source heat pumps)
3.7	Solar thermal, on leisure centres with pools
3.8	Introduce procurement model for self-finance of renewables schemes
4.1	Display Energy Certificates (DEC), Display Water certificates (DWC)
4.2	Energy Efficiency Programme to include:- • Building insulation • Draught-proofing • Pipework insulation • electrical lighting and lighting controls • IT equipment • BMS controls for heating and ventilation • Boiler sequencing controls • Voltage optimising devices • New heating plant
4.3	Sustainable construction techniques for planned maintenance and minor refurbishment
4.4	Grant / loan funding opportunities, involving:- Salix recycling fund Salix Capital fund ReFIT Capital Fund (Clinton Climate Initiative) Schools Energy Efficiency service
4.6	Sustainable design standards (BREEAM "Very Good" policy for all refurbishments)
4.7	Zero Carbon Schools
5.1	Energy Guardians, encouraging staff to reducing personal energy usage by providing a consistent message and useful tools and information.
5.2	Reduce energy consumption and CO2 emissions via physical actions taken by employees
5.3	Empowering site managers, workforce, occupiers and pupils to maintain high levels of interest in reduction of energy consumption and waste
6.1	New ways of working project - Reduction in the amount of space occupied.
6.2	New buildings added to portfolio will be to BREEAM Excellent Standard, accounting for Operational life and Whole Life Costing
6.3	Refurbished buildings provide opportunity to improve Co2 performance
6.4	New ways of working will encourage more efficient travel to work and travel during work arrangement.
7.1	Business Travel Policy

Carbon and Water Management Group Action Plan areas of activity	
7.2	Corporate Travel Plan Strategy
7.3	Council Fleet Initiatives
7.4	Council Fuel Usage
8.1	Street lighting PFI scheme.
8.1.1	Trimming
8.1.2	Remote monitoring including dimming
8.1.3	LED street lighting (trial)
8.1.4	LED sign illumination
8.1.5	Dimming
8.1.6	Lantern innovation

Appendix 2 - Cost increases in Energy, Carbon and Water

1.0 ENERGY PRICE INCREASES

1.1. Procurement of Energy

1.1.1. **Post-Credit Crunch carbon and energy procurement – In energy and carbon terms the effects of the credit crunch have been largely beneficial. The credit crunch has temporarily reduced world-wide demand for fossil fuels, which lead to energy** prices and carbon prices running dropping significantly. However it is widely anticipated that, as the various world markets regain confidence, energy consumption will rise, prices will rise and speculation will once more dominate. Energy prices are expected to fluctuate significantly but to follow a general upward trend. Joining a collective buying group would protect us from much of the instability

1.1.2. **Risk Management Based Utility Purchasing -** Risk-management-based flexible purchasing of gas and electricity allows for procurement of these utilities to benefit from fluctuations in the wholesale markets, while avoiding risk of excess prices. LCC has been carrying out this function internally, for the last five years. However, LCC has the opportunity to join collaborative procurement arrangements that meet the existing risk-management based approach.

1.1.3. **Pan-Governmental Energy Procurement – All public bodies are now required** to change to procurement processes that comply with the current Treasury Rules. Effectively, LCC must buy energy collaboratively for all substantial new contracts, in order to comply.

1.1.4. **Security of cost – The use of a collaborative agency will ensure that, on a** "risk-management" basis, cost of supply will be lower than any other current method.

1.2. Renewable generation

1.2.1. **Security of Supply** – as the energy market becomes more stressed and unstable, there are possibilities that there may be interruptions to supplies. Transition to alternate fuel sources (such as wood fuel from LCC-owned woodland feeding biomass boilers) would insulate LCC, to an extent, from such possibilities. In general terms, it is considered very unlikely that energy supplies will actually run out in the next decade. As prices increase, expensive-to-extract resources will be exploited, and the so-called "balance" point will be pushed back year-by year. As prices rise, it will become much more credible to consider alternative renewable energy sources. By the end of the decade Department of Energy and Climate Change (DECC) anticipate that perhaps 50% of new heating installations will use a combination of techniques, from ground-source to air-source heat pumps, with top-up provided by solar thermal and photovoltaic systems, and back-up provided by biomass systems.

1.2.2. **Larger Scale Opportunities** – Changes to local government law (August 2010) now allow local authorities to become electricity generators. The carefully programmed use of assets such as the proposed residual waste plant and the further proposed food waste anaerobic digestion plant provide opportunities to work with National Grid Co. and large scale generators to provide electricity onto the grid at peak times,

enabling LCC to access highly rewarding tariffs and achieve favourable agreements for security of supply.

1.2.3. **Climate Change Levy -** All fossil-fuelled electricity is subject to Climate Change Levy (CCL). This levy is set to rise during 2010/2011 to approximately 10.4%. Purchase of Green electricity or electricity from Quality Approved Combined Heat and Power (QACHP) enables LCC to gain exemption from CCL. Green electricity is generated from accredited renewable sources, such as wind, wave or solar power. Under NI85 rules, however, LCC is not allowed to count such energy as zero-carbon. LCC would prefer to increase substantially the amount of green electricity that it procures, however this aspiration is tempered by two factors:

- The market may not be able to supply green electricity to meet the Council's demand
- The price of green electricity, even when accounting for the Climate Change Levy, may be cost prohibitive

1.2.4. Bearing the above in mind, a view has been taken that the electricity portfolio should include at least one of the three main contracts to be from renewable or QACHP sources. Any further investment should be directed inwards to council assets:-

- To reduce LCC's demand for power
- To install building-based renewable generation to take advantage of Feed-in-Tariffs
- Introduce large scale generation to exploit advantages from feed-in-tariffs and to exploit recent changes in law regarding on-site generation.

1.3. Reduced consumption through behavioural awareness of managers and staff

1.3.1. Use of buildings and targeting and monitoring of energy consumption.

It is within the remit of building managers across LCC to encourage best practice in the use of buildings. Relatively low-cost and no-cost activity in the use of these resources can achieve savings in energy and water use, and carbon emissions through a range of common-sense activities. The Energy Guardian Group of volunteers exists to provide a communication network disseminating practical advice and help. It is proposed that the work of this group is reinforced and given more formal status, with some training input, so as to recognise the considerable worth of such activity across the Council. It is proposed that energy Guardians should have a presence in all of the "Top 100" buildings, i.e., the largest energy consumers)

1.3.2 The TEAM energy management system will provide tailored reports at a building level of energy consumption at all Council properties. Managers and operators of buildings will be encouraged to use these reports to support energy reduction activity.

1.4. Business travel

1.4.1. It is within the remit of budget holders across LCC to encourage best practice in business travel. Relatively low-cost and no-cost activity in the use of this resource can achieve savings in fuel use, and carbon emissions through a range of common-sense activities, including, for instance, Car Allowance budgets.

1.4.2. In just that same way that every planning permission application requires an accompanying travel plan, it is proposed that every section of LCC should consider and provide a business travel plan to cover its activities. It should be noted that a travel plan is not be an ad-hoc consideration about single journeys, so much as a plan regarding the travel needs of a whole section over time.

1.4.3. Business travel should be replaced if possible by the use of teleconferencing and web based seminars and conferencing. If travel is essential then public transport should be used where possible without reductions in efficiency. Car based transport should be periodically reviewed by managers and should be shared where possible. As lower-carbon forms of travel become available they should be considered as part of travel plans

1.5. Implementation of ICT Hardware and Software Systems and Information and Knowledge Management (IKM) Systems which are energy efficient and which enable new/agile ways of working

- Roll-out of laptop PCs / PDAs or other hardware to staff who can operate more efficiently by 'New Ways of Working';
- Remove UPS except critical applications, and then specify off-line rather than on-line UPS except where absolutely mission-critical. Modern hybrid UPS give very low running losses;
- Use free cooling in server rooms wherever possible – e.g. duct cold fresh air from outside during autumn, winter, spring (control via BMS);
- Ensure server rooms are not overcrowded;
- Ensure server rooms are not unnecessarily cold;
- Ensure server room controls have at least 3ºC dead-band to avoid thermal overlap – close control is unnecessary for modern servers;
- Consider 'thin client' applications;
- Consider server virtualisation;
- Consider network/user monitoring software to remind users of computer idle time;
- Use rejected heat from server air-conditioning units to provided HWS and heating to remainder of building;
- Ensure client is aware of energy consumption of computers, phone chargers, left turned-on;
- Switch to Flat-screen technology (LCD, not plasma) displays.

1.6. Reduced back-office floor space requirement enabled through more efficient New Ways of Working by staff (phases 1 & 2)

1.6.1. Changing the Workplace expands on the theme of footprint reduction by introducing techniques such as mobile working, hot-desking and teleworking, effectively achieving high productivity from new and refurbished properties.

1.7. Service review and rationalisation of public-facing buildings leading to disposal of surplus buildings and those with poor environmental performance

1.7.1. Service review is an on-going process where property needs of services are considered from corporate and strategic points of view. Processes such as development of Joint Service Centres and replacement of Leisure Centres have enabled significant rationalisation of buildings. This process is mirrored in the

Building Schools for the Future (BSF) programme in Education where unsuitable schools properties have been replaced by higher performance modern properties combining the rolls of groups of smaller less energy efficient properties.

1.8. Replacement new and refurbished buildings built to high environmental standards

1.8.1. Where indicated, new buildings should be constructed to standards in excess of the requirements of current buildings regulations. The use of the BREEAM "Excellent" sustainability standard, wherever possible, is called for in the Council Business Plan as part of a "Big Idea" to reduce the Council's carbon footprint. Affordability, buildability and service requirements may limit the ability to achieve BREEAM Excellent standards but the use of whole life costing techniques must be used to test whether an additional investment in energy efficiency measures could be justified by savings in operational running costs. A suggested checklist of measures to reduce energy and water consumption is set out on the Asset Management Strategy Unit Intranet Site.

1.9. Retrofitting buildings for energy efficiency

1.9.1. Retrofitting buildings to enable energy efficient performance where they are to be retained for a sufficient period to satisfy the financial payback criteria represent the largest opportunity to achieve carbon reduction across the property portfolio.

1.9.2. Those buildings deemed to have a service life long enough to benefit from retrofit activities, for instance because of "Heritage" status (e.g. Civic Hall), would be susceptible to a considerable range of possible techniques. A suggested checklist of measures to reduce energy and water consumption is set out on the Asset Management Strategy Unit Intranet Site. Retrofit energy efficiency schemes have been progressed on a number of high energy using corporate buildings, subject to the funding criteria of the Salix / Carbon Trust initiatives. However, the Council owns 900 major buildings, including 270 schools, many of which would benefit from energy retrofitting. Therefore it is proposed to bring about a step change in the rate at which retrofitting takes place so cost and carbon savings can begin as soon s possible through whicheever outcome-driven programme is appropriate.

1.9.3. **RE-FiT** (formerly known as Buildings Energy Efficiency Programme - BEEP) – Strategic Investment Board has agreed to a pilot retrofit exercise on ten properties. This is in partnership with Sheffield City Council, working with London Development Agency and Core Cities. Subject to satisfactory appraisal of options and financial approvals, it will lead to joining the RE-FiT Energy Efficiency Programme for retrofitting all suitable Council buildings (including schools) with Energy Conservation Measures (ECMs) under a rolling programme. RE-FiT is a flagship international initiative to reduce the carbon footprint of cities globally. It is a cost neutral means for organisations to reduce energy expenditure and the carbon footprint of their buildings. RE-FiT involves Suppliers (contractors) guaranteeing a set level of annualised energy savings - therefore providing a financial saving - over a defined time period. The Supplier's financial guarantee will be a key factor in persuading school governing bodies to take part and in securing unsupported borrowing.

1.10. Procuring and maintaining fuel efficient fleet vehicles

1.10.1. LCC operates and maintains commercial vehicles with sizes ranging from light vans through to refuse collection vehicles. These vehicles are replaced on a rotating schedule ensuring that the very latest environmental criteria are met. LCC is the first local authority in the UK to fuel refuse collection vehicles with bio-gas. A trial has been very successful and a project is being considered to roll out bio-gas fuelling to more vehicles.

1.11. Procuring and maintaining energy efficient street lighting – currently LCC has a PFI contractor providing this function throughout the city. Some experimentation in reducing lighting operating time has taken place. However there are many opportunities to reduce energy consumption through modern light sources and control gear. While some mechanisms exist for this process in the existing PFI contract it is strongly recommended that future PFI contracts need to support the ability to reduce energy input.

2. CARBON EMISSIONS COST INCREASES

2.1. New build or major refurbishment

2.1.1. Incorporating low or zero carbon technologies in new or refurbished buildings and within retrofitting programmes subject to agreed financial criteria

2.1.2. Primarily the design team should aim to bring energy demand down to a minimum through the building's passive design e.g. incorporation of Passivhaus design techniques to super-insulate, super-seal, use passive heating and daylight, and approach zero added energy.

2.2. Generation of renewable energy

2.2.1. Taking advantage of standalone or partnership opportunities to generate or use low or zero carbon energy from district CHP, residual waste and solar water or wind generation subject to agree financial criteria

2.2.2. The previous plan made very little note of sources of renewable energy for two main reasons. Renewable energy in the context of the British market place was relatively immature, and it was expensive to the point where business cases were difficult to justify. Currently, and more so during the next decade, technologies are becoming more mature, and benefiting from growing market exposure.

2.2.3. Renewable energy obtained from indigenous resources contributes both to the reduction of carbon emissions and reducing our reliance on fossil fuels transported from overseas. This will improve the security of supply of energy, as well as providing some insulation from the world energy market fluctuations.

2.2.4. Solar thermal energy, heating domestic hot water is offered by major manufacturers, and should be designed to provide approximately half of a building's domestic hot water supply each year. The financial payback for solar thermal hot water for leisure centres with pools is now well established, since such properties need hot water all year round.

2.2.5. Photovoltaic panels, producing electricity directly, have matured to the point where large scale arrays on buildings are achieving satisfactory cash paybacks. The recent provision of feed-in tariffs for renewable electricity has provided strong incentive for considering the use of this technique.

2.2.6. LCC has four sites on the River Aire where electricity could be produced by Archimedean screw turbines. Plans are in process of preparation to exploit this resource. Paybacks for these units are generally longer than the two solar techniques above, but novel funding/partnership packages organised, possibly, as part of the proposed Energy Leeds ESCo may enable LCC to achieve earlier paybacks.

2.2.7. Wind turbines, in the British onshore climate are not as predictable as we might wish. Preliminary studies have taken place, demonstrating that LCC might successfully site a small group of large (2.25MW) turbines on its own land, benefitting from the income, electricity and carbon reductions they provide. Such an action would also promote the use of wind turbines in the area. Small and micro-wind turbines also have a part to play, however the economics of turbines below 15kW rating is such that they are only really of use for the purposes of illustrating the school curriculum.

2.2.8. Biomass is generally regarded as the use of solid fuels derived from wood or plant material for the purpose of heating. Leeds City Region has a significant area of woodland which could be managed for fuel as well as amenity value so as to provide a significant alternative to gas and oil. There are now two manufacturers of wood pellets within the region who provide suitable quality of fuel for automatic unattended boilers providing almost zero-carbon heating, at running costs similar to gas-firing. It is almost inevitable that at least some of our portfolio of properties should use this type of heating as part of the so-called mixed economy of energy reduction measures.

2.2.9. At the time of production of this plan negotiations are underway for the provision of a residual waste management plant which has the ability to derive heat and electrical energy from waste streams. It is understood that a further plan for conversion of food waste to bio-gas through anaerobic digestion is under discussion. There are strong commercial cases for these schemes to go forward in such a way that they will dovetail with schemes to provide district heating in the lower Aire Valley.

2.2.10. At the time of production of this plan early negotiations are underway for the extension of an existing city centre district heating scheme in the Civic quarter. LCC has an aspiration to acquire surplus heat from this scheme to serve its city centre buildings. It would also improve the commercial and carbon reduction potential of the system for the other partners involved (Leeds Teaching Hospitals Trust and the University of Leeds and possibility of others). At this stage LCC is also aware of a further district heating and power scheme to the east of the city centre which could serve LCC properties close to the markets area. LCC is actively promoting the potential to join the above schemes together to further increase resilience of the network and reduce operating costs and emissions.

3. REPLACEMENT OF FLEET VEHICLES WITH LOW OR ZERO CARBON FUEL SYSTEMS

3.1. LCC is the first local authority in the UK to fuel refuse-collection-vehicles with bio-gas. A trial has been very successful and a project is being considered to roll out bio-gas fuelling to more vehicles. During the lifetime of this plan it is anticipated that all of the LCC commercial vehicles would transition to bio-gas fuel. There is a strong commercial case for LCC to produce suitable bio-gas fuel at a future proposed anaerobic digestion waste management plant, mentioned above.

3.2. Consideration has been given to the provision of electrically driven and hybrid vehicles. LCC are maintaining an awareness of such techniques including hydrogen fuel, fuel-cell and battery-electric and hybrid vehicles. Some small scale trials have been conducted and will continue as technology and reliability continue to improve.

4. WATER COST INCREASES

4.1. As mentioned above, high level measures will be used highlight good and poor performance, prioritising action to specific properties.

4.1.1. Actions should take place at every site, however, most importantly – watching for leaks, and monitoring consumption levels at every monthly bill. Any changes should be subject to immediate investigation. (Most leaks cost more in water charges than repair charges unless they are caught early).

4.1.2. Toilet flushing and hygiene uses more than 50% of all mains water used in LCC properties except leisure centres. Flush volumes can be reduced by use of retrofit innovations such as “Hippos” and “Hogs” in toilet cisterns.

4.1.3. On refurbishment and new build:

- Hydraulically-efficient design of toilet bowls with dual-flush cisterns should be used.
- Waterless urinals should be considered
- Water using appliances should be A-rated
- Tap aerators and sprays should be fitted to reduce flow rates
- Flow and pressure-regulation at each floor level of each building, along with reduction of overall pressures.
- Properly collected, filtered and stored, rainwater is generally accepted as suitable for use in WCs, urinals, washing machines and for garden irrigation use. Typically these account for around 50% of domestic use.
- Generally flow rates are too high leading to splashing. Timed turn-off and electronic taps offer savings as well a real or perceived hygiene benefit.
- A wide range of fittings are available, see Environment Agency Fact Cards. Regulated sprays and aerators allow easy specification of flow rates. Hot and cold must be clearly and indelibly marked and operation should be obvious to avoid wastage as users try to find which position provides hot water. The widespread use of standard threaded outlets on tapware would allow the use of sprays, aerators and innovations. ‘Waterbrake’ cartridges and integrated adjustment of flow rate and hot water flow could become standard features at little extra cost.

1. Carbon Management Governance and Accountability

Strategic Plans	Improvement Priority	Accountable Director	Lead Officer
Council Business Plan VP-5a	Reduce the carbon emissions arising from our buildings, vehicles and operations - BIG IDEA	Resources Alan Gay	Corporate Property Management Anne Chambers
Leeds Strategic Plan ENV-1b	Reduce emissions from public sector buildings, operations and service delivery, and encourage others to do so.	City Development Martin Farrington	Planning Steve Speak
NI 185 National Indicator	Reduction in carbon emissions from council operations	City Development Martin Farrington	Sustainable Development Tom Knowland
CRC	Carbon Reduction Commitment (Energy Efficiency Scheme)	Resources Alan Gay	Finance Doug Meeson

The following structures within Leeds City Council inform decision making on the various aspects relating to carbon management:

The Executive Member for Resources

- Has overall elected member responsibility for energy and water management and receives regular officer briefings on progress with energy efficiency.

Scrutiny Board

- Elected members receive six-monthly reports on progress of improvement priorities in the Leeds Strategic Plan and the Corporate Business Plan which are informed by Action Trackers and the Carbon and Water Management Group Action Plan.

Environment Programme Board (Chaired by Director of Environment & Neighbourhoods)

- Carbon & Water Management Group (formerly NI185 Strategy Group) acts as a project team reporting to Environment Programme Board on major issues. Six monthly CBP and LSP carbon emission trackers are reported to Scrutiny Boards.

Strategic Investment Board (Director of Resources chair**) / Asset Management Board** (Chief Asset Management Officer Chair)

- Major investment or asset issues (eg investment in energy efficiency, BREEAM and low / zero carbon cost implications taking account of whole life costing)

Finance Performance Group (Chief Officer Financial Management chair)

- Strategic financial monitoring
- Business case evaluation
- Borrowing

Carbon and Water Management Group: (Chaired by Chief Officer CPM and reports back to Director of Resources re his accountability for Business Plan

- co-ordinates collection of quarterly NI185 data on carbon emissions from all operations arising from LCC buildings;
- develops and monitors progress on Carbon and Water Management Group Action Plan projects to reduce CO_2 emissions;
- Does not include partnership working or influencing others – LSP tracker picks this up;

Carbon Reduction Commitment Forecasting Group (Chaired by Chief Officer Financial Management:

- Major impacts on CRC trading performance will be:
  - Registration for CRC scheme with baseline data, contact with Environment Agency and carbon performance data reporting (SAM lead)
  - Strategy and funding for credit purchasing and penalties (if any) and carbon credit trading (Corporate Financial Management – Treasury Management lead with support from SAM)
  - Funding or borrowing for energy efficiency schemes and receipt of any financial rewards (Corporate Financial Management lead in liaison with SAM)
  - Asset rationalisation through CTW / Vision for Sport / School replacement / disposals etc (SAM lead on major projects)
  - Retrofit of assets to be retained (SAM - client lead for all LCC buildings on strategic and technical guidance, option appraisal, prioritisation; CPM – lead on business cases and implementation for corporate buildings; Education lead on schools with support from SAM)
  - Renewable energy initiatives (SAM lead)
  - Behaviour / awareness (SDU lead)
  - Programme management for energy efficiency / renewable energy schemes where required (PPPU)

2. Delivery of Carbon & Water Management Reduction Measures

The following services within Leeds City Council have responsibility for delivery of the various carbon and water reduction measures in LCC buildings and operations:

- **Sustainable Development Unit - City wide policy role** (SDU - Environmental Policy Team):
  - LCC Environment Policy and Climate Change Action Plan;
  - Co-ordination and auditing of NI185 and EMAS performance data;
  - Promotion of strategic carbon and water reduction and renewable energy initiatives on a city wide basis
  - Seeking external funding opportunities
  - Influencing other public sector organisations and partnership working
  - Raising environmental awareness of LCC staff and residents of Leeds.

- **Strategic Asset Management – All Council owned land and buildings** (SAM – Energy Unit as part of Asset Management Strategy Unit):
  - Develop the Carbon & Water Management Plan for all operational Council buildings, fleet transport, street lighting & business travel operations for comprehensive planning purposes;
  - Monitoring and reporting on the level of all energy / water consumption and carbon emissions arising from activities within Council owned buildings for energy and water management, NI185 carbon reduction and the Carbon Reduction Commitment;
  - Procurement of corporate energy contracts;
  - Lead on major property review / rationalisation in consultation with Services and Corporate Property Management
  - Initiation and prioritisation of major carbon and water reduction and renewable energy initiatives for LCC buildings or on LCC land;
  - Provision of strategic guidance for carbon reduction projects, including use of Salix, Local Authority Energy Fund (LAEF) or other funding mechanisms;
  - Procurement of Display Energy Certificates (DECs) for all LCC buildings (over 1,000sm), inc. schools;
  - Promotion of sustainable design and procurement for new build and refurbishment schemes

- **Corporate Property Management – Corporate buildings** (CPM)

- Review of corporate properties / rationalisation in consultation with SAM and Services;
- Implementation of energy and water efficiency schemes for corporate buildings as part of planned maintenance and refurbishment;
- Development of business cases for Salix or other funding on corporate buildings where appropriate, and management of the Salix Funded projects;
- Responsibility for carbon, energy and water accounting for multi-use 'civic buildings' as part of facilities management (otherwise Services are responsible for their own energy consumption;
- Chairs Carbon & Water Management group (formerly known as NI185 Strategy Group)

- **Commercial Services - Fleet transport**
  - Commercial vehicle procurement
  - Fuel consumption
  - Route planning
  - Exploration of alternate fuels

- **Highways**
  - Street lighting and illuminated signs
  - Travel policy and data in respect of council business travel
  - Flood prevention / attenuation in respect of council assets

- **All Council Services**
  - Responsibility for energy and water consumption in single-service buildings

- **Children's Services / Education Leeds – School estate**
  - Schools review / replacement / closures;
  - Zero carbon target for DfE investment in new build / major refurbishment of schools;
  - Promotion of sustainability issues / environmental awareness in schools through staff awareness and curriculum development.

- **Schools – Governing Bodies**
  - Funding and implementation of school energy and water efficiency schemes as part of planned maintenance or refurbishment from delegated budgets
  - Responsibility for water and energy consumption
  - Potentially, responsible for carbon emissions

- **Corporate Finance**
  - Overall allocation of council budgets, including carbon, water and energy;
  - Corporate energy efficiency investment budget;
  - Unsupported borrowing;
  - Salix and LAEF borrowing;
  - Lead on carbon trading and governance as part of Carbon Reduction Commitment (Energy Efficiency Scheme)

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