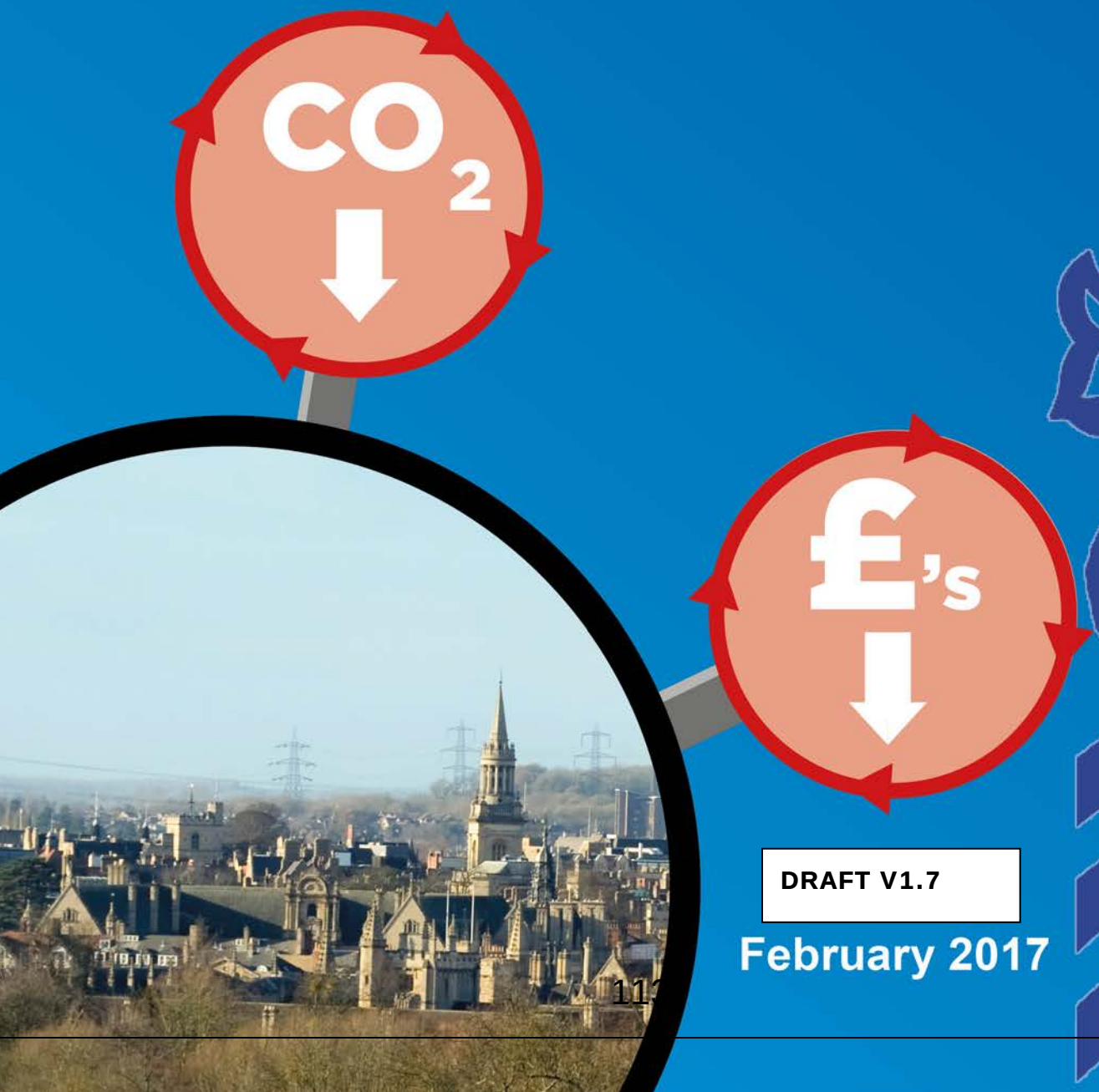
Carbon Management Plan 3

2017-22

www.oxford.gov.uk

OXFORD CITY COUNCIL

Continual improvement in carbon and cost reduction



DRAFT V1.7

February 2017

0. Executive Summary

Oxford City Council has successfully implemented Carbon Management Plans since 2008/09, implementing measures calculated to reduce CO_2 emissions by over 5000tCO_2 per year by 2015/16.

Reducing CO_2 emissions leads to reductions in the associated energy, water and fuel spend. It is estimated that the Council is spending approximately £500,000 less per year than it would have been spending if it had not been proactively targeting CO_2 emissions reductions across its estate and operations.

A refreshed and updated plan covering the next 5 years (2017/18 to 2021/22) is described in this document, outlining where continual improvement in carbon and energy management can drive down electricity gas, fuel and water spend and their associated carbon dioxide emissions. This will deliver progress towards the council's target of 5%/year minimum carbon reduction by implemented measures.

To date the Council's carbon targets have been achieved mainly through smart use of energy efficiency investment pots operating as revolving loan funds, and estate rationalisation. However, in the next 5 year phase, progress will be increasingly challenging, requiring a gearing up of energy, fuel and water management activity.

Crucial to achieving these aims will be the development of more formal procedures and awareness of energy management responsibilities of all staff that have control or influence over energy, fuel and water consumption. This can be significantly facilitated through the development and roll out of a council-wide Energy management system approach: ISO50001.

Building on best practice in carbon and energy management, the Plan for the next 5 years outlines an approach to foster further engagement of all staff through a phased programme of implementing the International Energy Management System (ISO 50001) in key buildings and operations.

Benefits of implementing ISO 50001 include:

- further embedding of energy and carbon reduction into core operations and responsibilities;
- strong top-down commitment to energy management;
- building resilience and commercial agility
- providing the framework for continual improvement in energy management

The Plan continues with the 5%/year minimum carbon reduction target through installed measures and that will be tackled via a range of measures and approaches over the 5 years to 2021/22.

A combination of Salix funding, further optimisation of use of the Council's buildings, and development of wider staff engagement in identifying and tackling excess or unnecessary energy, water and fuel consumption will be used. Further development of on-site energy generation through renewable energy technologies will also be continued where possible.

This needs to be achieved against a trend of increased commercial activity and revenue generation and numbers of people visiting our leisure centres, all of which provide upward pressure on carbon emissions.

Current resources within the core delivery team (Energy and Natural Resources team) will not be able to achieve these targets alone and full engagement will be crucial to delivering progress against the challenging 5%/year target.

Impact of the council's control and influence on local carbon emissions is wider than just those associated with its estate and operations and will play their part in contributing to the 5%/year target.

1. Introduction

Rising energy prices, budget constraints, and diminishing conventional energy resources mean it is imperative that we improve energy efficiency and reduce our reliance on fossil-derived energy across Oxford City Council. There is also established global consensus and supporting evidence that we need to act now to reduce the impact we are having on the rate of global warming through the burning of fossil fuels.

As local authority funding changes and demand for services increase, continual improvement in energy and carbon management will contribute towards controlling and reducing energy, fuel and water consumption, and spend, contributing to development of the Council's financial resilience, and protection of front-line services.

Towards this end the Council has proactively reduced CO_2 emissions and associated energy and water consumption from its own estate and operations through implementation of carbon management programmes over the past 8 years. It has also fostered development of city-wide approaches to the same aims through establishing the Low Carbon Oxford and other leading initiatives to reduce city-wide CO_2 emissions and reliance on fossil fuels.

Oxford City Council launched its first Carbon Management Strategy and Implementation Plan ("Getting Our House in Order") in 2008/09, mapping out a route to implementing a range of measures to achieve a reduction in CO_2 emissions by 25% by 2011 (on a 2005 baseline) and 3% year on year thereafter. The Plan was refreshed and updated in August 2012 (Carbon Reduction at the Heart of Everything we Do) with a stretched target of a 5% year on year implementation of CO_2 reduction measures, and an expanded scope (including supplies of electricity and gas in communal areas of council housing stock) bringing in more emissions sources that are under the Council's control.

Having met the target for the first plan, and expecting to meet the target set out in the second plan, a refreshed and updated plan covering the next 5 years (2017/18 to 2021/22) is outlined in this document. It maps a path to continual improvement in carbon and energy management, driving down energy, fuel and water spend and their associated carbon dioxide emissions.

The areas that contribute to the bulk of the Council's CO_2 emissions from the council estate and operations are:

- Heating and electricity consumption in Council operational sites (e.g. office buildings, depots, leisure centres, car parks, sports pavilions, public conveniences and other miscellaneous sites)

- Fuels consumed in Council fleet vehicles (e.g. refuse trucks, vans and pool cars), non-road going vehicles and plant (e.g. lawnmowers, chippers, and portable heaters)

- Travel for business purposes (e.g. fuel consumed in staff-owned vehicles, pool cars and from the use of public transport to conduct Council business)

- Operational waste deposited in landfill sites (generated from Council operations)

This new Carbon Management Plan ("***Continual improvement in carbon and cost reduction***") outlines our programme of activity for carbon management over the next 5 years building on the strong platform of achievement to date. It sets out the strategic context and the 'case for action', our carbon emissions scope and baseline, proposed projects and areas of activity and actions to reduce our emissions, as well as the governance arrangements (and escalation routes) to keep the programme on track.

Building on best practice in carbon and energy management, the Plan also aims to ensure Council buildings and major emissions sources (significant energy uses) meet the international energy management systems standard (ISO 50001) – see Section 7 and Appendix A for more details. A phased programme of rolling out the standard across key buildings and operations over the next 5 years is outlined. Benefits of ISO 50001 include:

- further embedding of energy and carbon reduction into core operations and responsibilities;
- strong top-down commitment to energy management;
- building resilience and commercial agility
- providing the framework for continual improvement in energy management

The Vision for carbon management 2017 to 2022:

Oxford City Council will instigate

"**Continual improvement in carbon and cost reduction**" and reduce carbon emissions in its estate and operations as efficiently and cost effectively as possible.

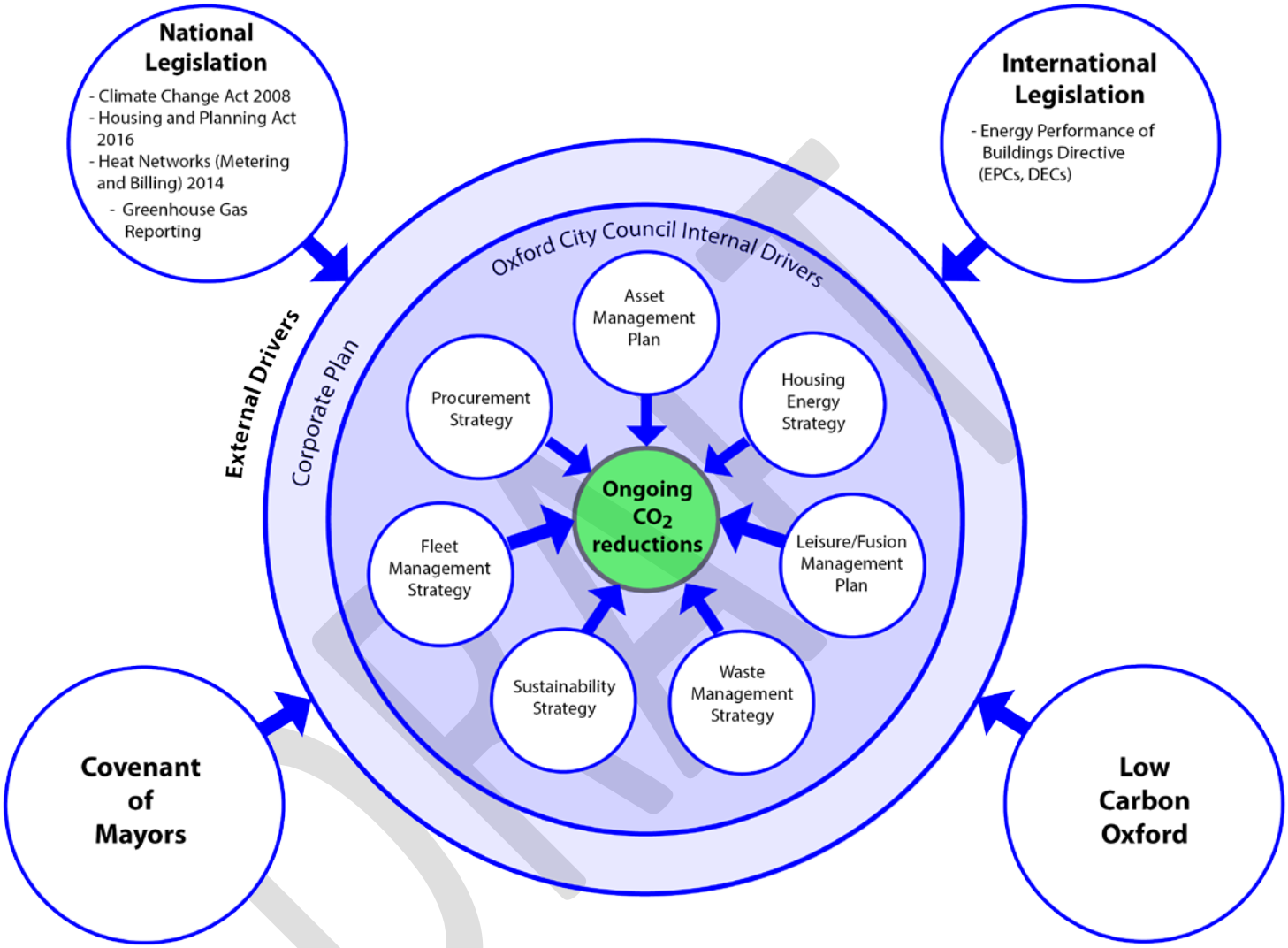
We will use our direct control and influence as a Council to enable and quantify local carbon emissions reductions.

By embedding our carbon management programme across the Council's operations we will prove ourselves capable of meeting the carbon challenge head on.

By doing so we will ensure our continued leadership and influence of local businesses, communities and residents to deliver a city that is more energy and water efficient and progress towards carbon neutrality for Oxford.

2. Drivers and Links to key programmes at the Council (external and internal)

The carbon management plan and reducing Council-wide CO_2 emissions year on year are driven and directly affected by a number of external and internal drivers depicted below and described in more detail in Appendix B.



3. Case for action and risks

Increasing budgetary pressures and rising energy costs continue to make the economic case for energy and carbon reduction action ever stronger with the added benefits of delivering improved operational efficiencies within the Council and value for money.

Building carbon reduction capacity, and by implication energy, fuel and water consumption reduction, has the direct effect of reducing energy, fuel and water spend which is crucial in providing effective resource management and mitigating risk against future expected energy price rises.

Oxford City Council's avoided annual energy related costs for its core buildings are calculated to be over £500,000 per year in 2015/2016 relative to 07/08 before the

Council began implementation of a carbon management programme i.e. if the Council was consuming energy at the same levels as it was in 2007/08 in its core buildings, the energy related spend would be over £500,000 higher than it is today.

Continual improvement in carbon (energy, fuel and water) management will assist with maintaining lower spend than would be the case without activity in this area and continue to make year on year reductions in carbon emissions.

Providing wider leadership in the emerging area of carbon reduction can assist in inspiring others to do the same and develop confidence in individuals and organisations to take action, supporting the overall aims of the Low Carbon Oxford initiative to reduce CO_2 emissions in Oxford City.

4. CO_2 emissions boundary and scope

The emissions boundary is focussed on areas that demonstrate significant carbon emissions and energy uses and where sufficient data is available; are in the direct influence/control of the City Council and could realise financial benefits as a direct result of carbon reduction and energy management initiatives.

The following sources of emissions (and significant energy uses) will be addressed:

- All Council (operational) buildings (existing and new) – including swimming pools, sports facilities, car parks, pavilions, and public conveniences.
- Vehicles/Fleet
- Staff travel/Travel at Work (i.e. business travel/staff owned cars used to conduct council business [grey fleet])
- Waste disposal to landfill (Council generated) – *(subject to adequate data availability)*
- Communal areas of Oxford City Council Housing stock that are the billing responsibility of the Council (including Temporary Accommodations sites)
- Other miscellaneous buildings/sites that now are the billing responsibility of the Council (e.g. new sites, misc. smaller sites not previously included in previous baseline)
- Water consumption (and related carbon emissions)

The scope for implementing carbon reduction measures in the new 5 year plan will be extended to cover areas of council control and influence outside of our estate and operations. These carbon reductions will contribute to the delivery of quantified progress against our 5%/year carbon target.

Table 1 gives a breakdown of the main sources of CO_2 emissions (and significant energy uses) at Oxford City Council during 2015/16. Figures 1 to 4 show the information graphically. *Table 1 is arranged by largest to smallest emissions sources*.

Table 1: *Main sources of CO_2 emissions (and significant energy uses) ranked by size at Oxford City Council (2015/16)*

Emissions source	tonnes CO_2	Cost (£s) (ex-VAT)	tCO_2 (%)	Cost £ (%)
Leisure Centres	3,051	£584,262	32%	24%
Fleet fuel consumption	1,970	£676,000	21%	27%
Main Offices & Depots	1,111	£236,129	12%	10%
Sheltered Housing	750	£132,300	8%	5%
HRA Housing Landlords	592	£137,624	6%	6%
Temporary Accommodation	561	£110,209	6%	4%
Community Centres	307	£55,103	3%	2%
Waste to landfill (Operational)	289	£300	3%	0%
Car Parks	247	£54,978	3%	2%
Public Toilets & Streetscene	187	£42,469	2%	2%
Water*	150	£318,037	2%	13%
Corporate Property (Misc. smaller buildings)	117	£24,712	1%	1%
Sports Pavilions & Pitches	102	£26,030	1%	1%
Business travel	43	£78,402	0%	3%
Parks & Cemeteries	33	£7,615	0%	0%
Air Quality mon.	3	£744	0%	0%
Totals	**9,513**	**£2,484,914**	100%	100%

**tCO_2e figure used as this is the only available CO_2 conversion factor for water*

Oxford City Council CO_2 footprint 2015/16

Figures 1 to 4 provide a breakdown of Oxford City Council's CO_2 emissions, significant energy uses and indicative costs:

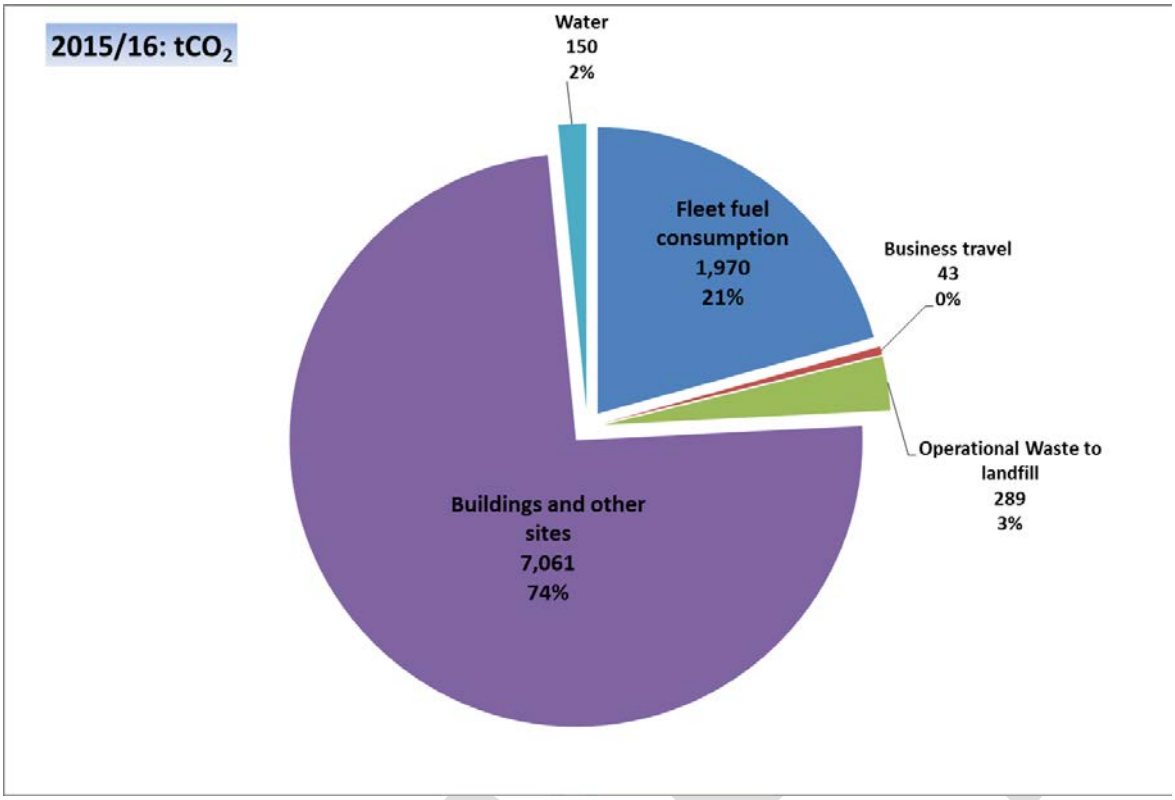


Figure 1: Breakdown of tonnes of CO_2 emissions per main category and percentage contribution (2015/16)

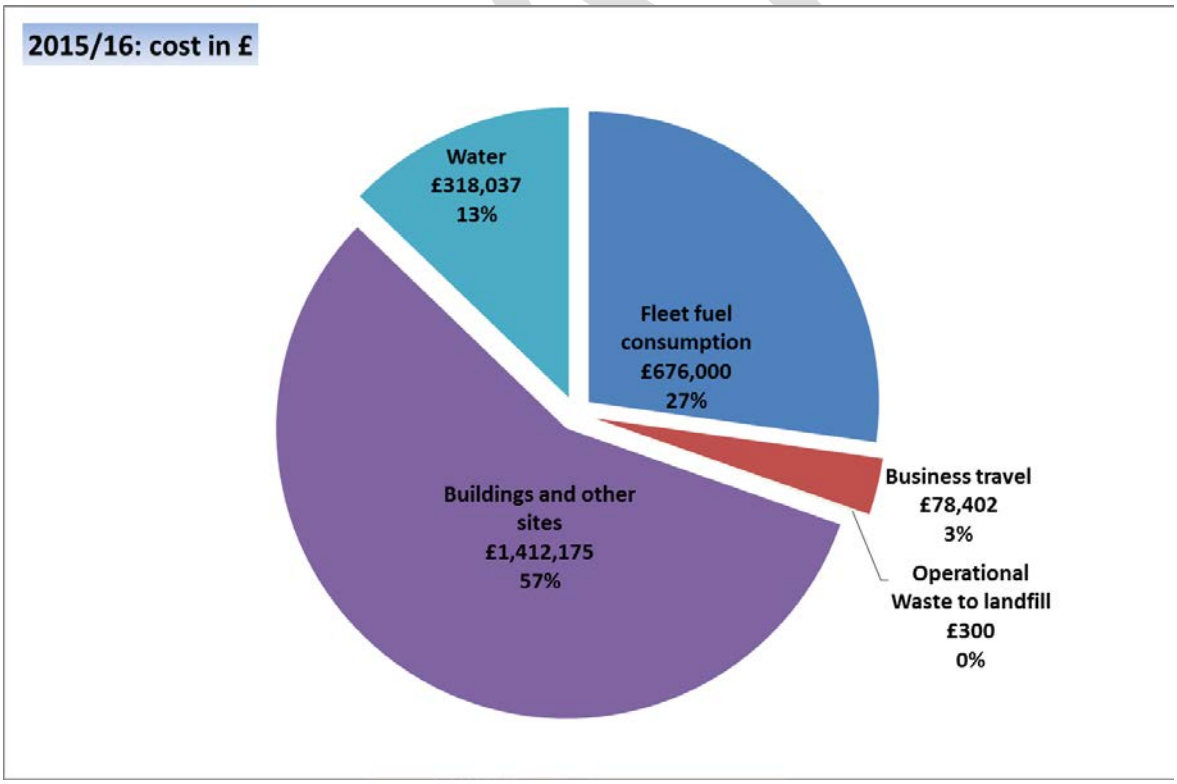


Figure 2: Breakdown of Energy (and water) cost per main category and percentage contribution (2015/16)

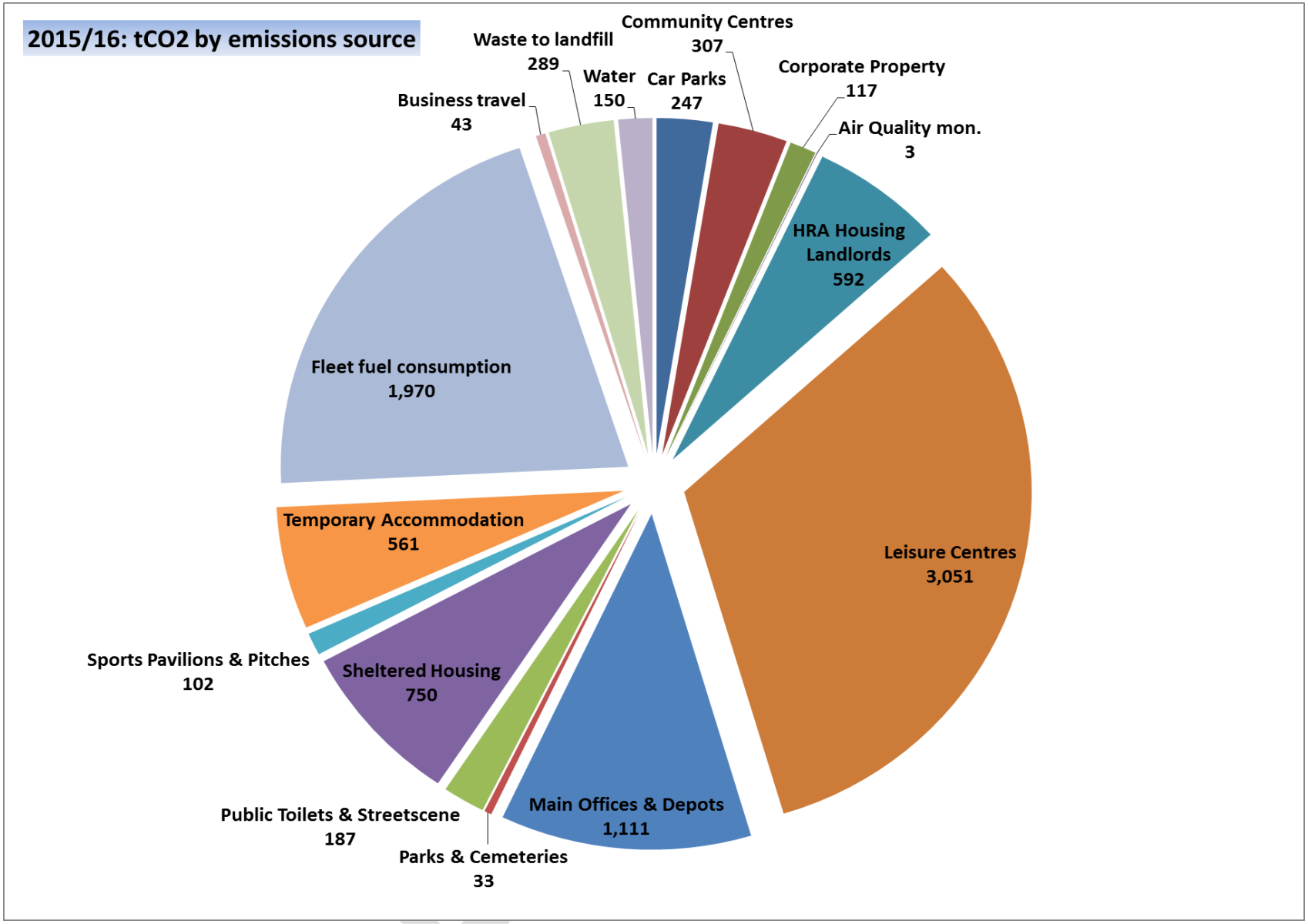


Figure 3: Breakdown of tonnes of CO_2 emissions sources by category (further detail) 2015/16

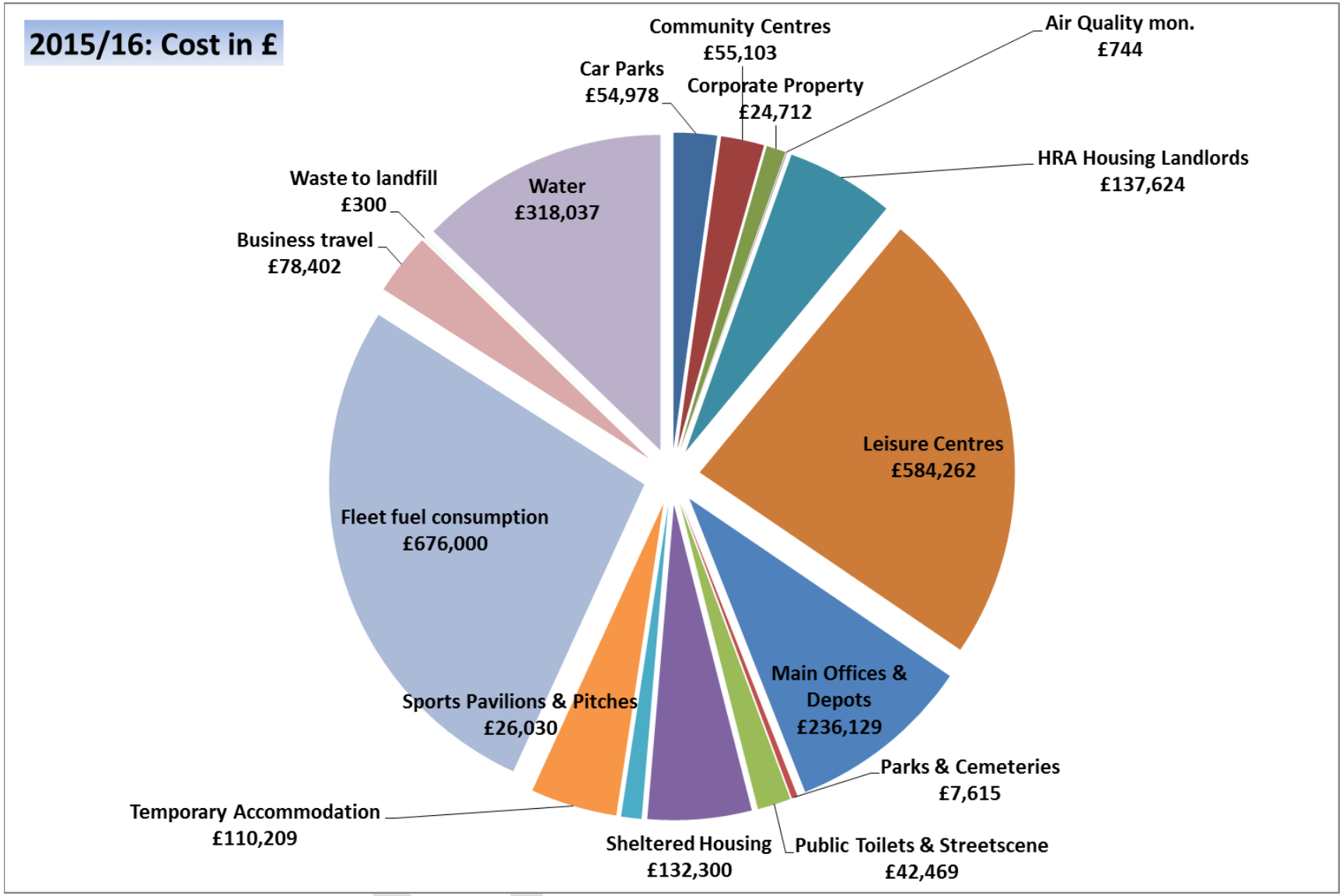


Figure 4: Breakdown of annual energy/water/fuel costs (£) per year by category for 2015/16. (Waste to Landfill refers to Council operational waste only, not municipal waste)

Aspiration to include in scope for future Plans

Procurement and CO_2: Estimates based on the assessment made by other local authorities suggest that procurement of goods and services can result in carbon emissions that can be as much as twice those arising from an authority's estate and operations, though it is not necessarily straight forward to focus in on carbon reduction opportunities.

The Council aspires to assess the carbon impact of its procurement decisions and seek ways to reduce CO_2 levels associated with this key area. This can be achieved through consideration of the embedded energy, fuel and water costs of the products and services it procures including major refurbishment and construction projects. The Council will develop pilot projects with the procurement team to establish the carbon and cost savings case through procurement of goods and services and develop greater understanding of the opportunities in this area of scope.

Staff commuting: Staff commuting is another area that the council will seek to influence in order to encourage shift to a lower carbon option for getting to work. Incentive schemes such as zero interest travel pass loans and the salary sacrifice scheme enable staff to purchase bicycles to commute to work. Home working also helps. Data for this area is difficult to access however, and staff travel surveys will help develop a better understanding of current commuting patterns and modes of transport.

The Council will aim to establish a relevant council team for implementing a travel plan and how this will be governed to ensure the full benefits can be realised in this area of scope.

5. Performance to date

The Council has continued to meet its 5% year on year target for implementing measures to reduce carbon emissions. At the time of writing the Council is on track to meet the ca 2396tCO_2 reduction target by the end of 2015/16 for implemented measures, outlined in the previous Plan. Most carbon reduction in Oxford City Council has come from a range of technical fixes and approaches such as:

- LED Lighting and controls upgrades;
- Boiler replacement and controls;
- Reductions in council generated waste sent to landfill;
- Significant deployment of renewable energy technologies over the past 4 years - now meeting over 8% of the Council's electricity requirements through Solar PV on-site generation, and
- Building disposals/office rationalisation (this represented approximately a 16% contribution towards total CO_2 emissions reductions figures during the Carbon Management Plan period to end 15/16)

Technical fixes have largely been funded using the Salix Energy efficiency revolving loan fund with renewable energy installations supported with the council operated Salix Plus revolving loan fund (See Section 8 and Appendix E for more information on Salix and Salix Plus funding).

To compare performance now with that of the original baseline period (2005/06) given expansion of scope over time, we can broadly estimate that our carbon footprint would have been about 42% larger (14,070tCO_2) than under a business as usual scenario.

Our actual emissions at end of 2015/16 are expected to be ca.9040t CO_2 – which equates to an absolute decrease of 25% over the period 2005/06 to 2016/17.This is presented simplistically in Figure 5.

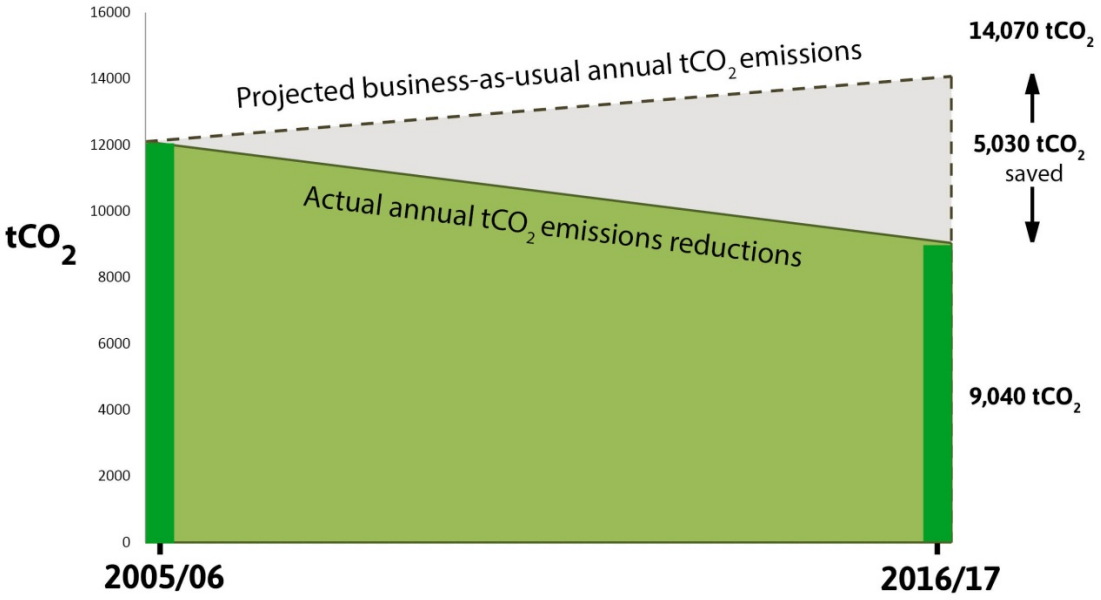


Figure 5: Emissions reductions compared to business-as –usual scenario

The 25% reduction in absolute emissions has been achieved against an upward pressure on carbon emissions from increased leisure centre user numbers (going up by approximately 7% over the last 3 years), increased recycling (extra vehicle movements) and commercial activity that has a direct impact on Council energy, fuel and water use.

6. CO_2 reduction targets for period 2017/18-2021/22

The Council wants to continue to demonstrate leadership in carbon reduction across Oxford by maintaining an average 5% minimum reduction year on year, by implementing measures where it has control and influence.

Based on the best available data for the baseline year (2016/17), Table 2 (below) shows the way the target builds over the period to 2021/22. It can be seen that this results in an overall target for the period to end

2012/22 of implementing measures to reduce carbon emissions by **2044**tCO_2 (ca 23% reduction over the period).

The following table shows the projected annual emissions in tCO2 per year and a breakdown of annual reductions in CO_2 emissions to meet the 5% minimum year on year reduction target over the 5 year period:

Table 2: *Breakdown of year on year projected carbon reduction targets: Oxford City Council Carbon Management Plan 2017/18 to 2021/22*

Baseline year 2016/17*	9037tCO_2/yr**	Average to achieve 5% min. target/yr, tCO_2/yr	Cumulative reduction (min.), tCO_2/yr
2017/18	8585	452	452
2018/19	8156	429	881
2019/20	7748	408	1289
2020/21	7361	387	1676
2021/22	6993	368	**2044**

** based on 5% less than 2015/16 total (9,513tCO_2) as a projection of 2016/17 total*

*** 9037tCO_2 is the baseline figure for 2016/17– subsequent years show projected total annual emissions*

This is an ambitious target that it is anticipated will not be possible to be delivered with existing resources available to the Energy & Natural Resources team, in Environmental Sustainability. It is recognised that to get near to this target each year there will need to be full and sustained corporate engagement, building upon the earlier experience and picking up wider staff engagement and support across the council.

The additional individual initiatives necessary to achieve the carbon targets are outlined in the following section.

How we will deliver progress against the carbon reduction target
Progress will be increasingly challenging requiring a gearing up of energy management activity and investment.

Crucial to achieving these aims will be the development of procedures and awareness of energy management responsibilities of all staff that have direct control or influence over energy, water and fuel consumption. This can be significantly facilitated through the development and roll out of a council-wide energy management system approach: ISO 50001. This is described in section 7 and in more detail in Appendix A.

Progress towards our 5% minimum reduction target by implemented measures will be made via a range of measures and approaches over the 5 years to 2021/22 as outlined in Table 3 below.

Table 3: Summary of the range of areas that will contribute to the Council meeting its min. 5%/year CO_2 reduction target by implemented measures.

Carbon Reduction measure	Description	est tCO2
Salix funded projects -revolving loan fund provides c.£100- £160k/y	Government match fund used to fund installation of energy efficiency upgrades. E.g. LED lighting upgrades, implementation and upgrade of building energy management systems, variable speed drives, more energy efficient boilers, and insulation measures.	450
Salix Plus funded projects revolving loan fund provides c.£50-65k/y	Use of Salix-Plus fund for projects with paybacks beyond 5 years and for use on non-building related carbon reduction saving projects (e.g. Fleet fuel reduction measures, water efficiency and renewable energy installations - including innovative approaches such as installation of Solar car ports feeding Council owned or third party sites (supermarkets/retail parks) with large onsite demand, Anaerobic digestion using city wide food waste, Vertical axis wind turbines).	150
Decarbonisation of heat and leisure centres - unfunded work.	Heat supply in our operational buildings and particularly leisure centres is delivered by burning of fossil fuels (biomass boiler at Leys Pool is the only exception). We need to assess options with heat pump and other appropriate technology (generally low carbon heat plant is high capital cost, low running costs). £50k feasibility bid made for 16/17.	450
Active energy management – monitoring and targeting	Dynamic energy management approaches using smart meter data to assess expected versus actual consumption at City Council sites. Continual assessment and communication of building energy consumption data and escalation of consumption anomaly issues as they are identified.	100
Estate rationalisation	Continue to look at ways to rationalise the Council's building footprint for carrying out Council operations, consolidating buildings and moving to modern working styles.	100
Waste reduction activities	Reducing the amount of waste generated by the Council being sent to landfill sites. This requires some work to develop systems to measure actual tonnage of waste to landfill each year.	100
Fleet fuel reduction *(towards ultra-low emission and zero carbon vehicles)*	Installation and use of vehicle monitoring systems to optimise fleet performance and ongoing eco-driver training courses to ensure optimal use of vehicles by Council staff. Continue to investigate use of lower carbon fleet technologies and drive down annual fuel consumption in fleet vehicles (*see Electric Vehicle Fleet note p. 16*). Provide incentives to staff to use bicycles or public transport to conduct council business rather than the use of fossil-fuel powered vehicles where possible.	150
ISO 50001: Energy Management Systems across OCC significant Energy uses	Implement the ISO50001: Energy Management Systems standard over 5 years covering all significant energy uses at the Council. This will contribute towards achieving continual improvement in energy management, reducing carbon emissions, energy and water spend and gaining wider Council engagement in ways of reducing energy and water consumption across the Council's estate.	300
CO_2 reduction driven by council direct control and influence	CO_2 reduction where the Council has direct control and influence (examples could be food waste collection benefits, tree planting carbon sequestration, Solar PV on OCC domestic properties where tenants are paying the energy bills, OCC energy audits in businesses leading to reductions in city-wide CO_2 emissions; influencing planning conditions of new developments) – *see below for more details*	250
Total		**2050**

Electric Vehicle fleet: towards ultra-low emission and zero carbon

The current Motor Transport (MT) strategy is to operate an emissions hierarchy when procuring vehicles, with all vehicle specifications first exploring the potential for Electric Vehicle/Hybrid replacements. MT look at existing and future technological solutions to achieve the commitments of the Council's Low Emission Strategy. All procurements of vehicles have telematics data capture installed (where possible) to provide driver and operator information to refine driver behaviours and optimise fleet management approaches to further reduce emissions.

Oxford City Council was awarded membership of the *Go Ultra Low Companies* scheme at the end of 2016 based on MT's performance to date. The initiative recognises UK organisations that have made significant efforts to embrace electric cars and vans as part of their vehicle fleets. It is run by campaign group *Go Ultra Low*, the Government Office for Low Emission Vehicles and the automotive industry. It currently has around 70 members.

Membership requires the council to commit to reach at least 5% electric fleet vehicles by 2020. Achieving this would be a strong public statement of the council's commitment to carbon reduction and clean air, offering leadership to others across Oxford and the wider region.

In this five year phase of the Carbon Management Plan, Motor Transport will continue to reduce fleet emissions. Performance of low and zero emission vehicles that are already in the fleet will be assessed and, along with continual review of potential technologies for different classes of vehicle, will inform future purchasing decisions. This will result in:

- enhanced fleet vehicle procurement based on an emissions hierarchy,

  This would mean that whatever vehicle needs buying or replacing, our policy would be to select the lowest emission option. This approach is outlined in the Council's Low Emissions Strategy (LES) and Air Quality Action Plan (AQAP).

- an increased proportion of zero emission vehicles in our fleet.

  The LES commits the Council to promote zero emission vehicles in the light duty fleet and to facilitate a 10% uptake of electric vehicles in the light duty sector by 2020. It also includes an action to explore further opportunities for introducing EVs across all our fleet.

The above will all contribute to continual improvement in carbon and cost reduction in this key area of Council operations.

Wider options for Carbon reduction: further discussion on CO_2 reduction driven by Council direct control and influence

The Council will seek to quantify Council driven initiatives that can lead to CO_2 reduction where it has direct control and influence and may not necessarily be within the scope of the Council's own carbon footprint. The rationale being that carbon reduction would not have taken place without proactive initiatives carried out by the Council. Examples are listed below and described in more detail in Appendix C:

- Diversion of organic municipal waste from landfill
- Tree planting as a carbon offset measure
- Purchasing Green electricity
- Solar PV on the Council's domestic properties
- Council-delivered energy audits for local businesses
- Influencing planning conditions of new developments
- Air quality initiatives with a carbon benefit

7. Developing an Energy Management System (ISO 50001)

Developing an ISO 50001 Energy Management system (EnMS) will help to further embed Carbon reduction/energy management capacity at Oxford City Council (see Appendix A for more details on ISO 50001).

This will cover all significant energy uses at the Council and contribute towards achieving continual improvement in energy management, reducing carbon emissions, energy and water spend and gaining wider Council engagement in ways of reducing energy and water consumption across the Council's estate.

This energy management system aligns with and is structured in similar ways to those recently achieved by Environmental Sustainability (ES), namely ISO 9001 (Quality Management System) and ISO14001 (Environmental Management System) standards at the Council. All are underpinned by the principle of continual improvement.

ES were one of the first organisations to gain certification for the updated ISO 14001(2015), where continual improvement was introduced. There is therefore good experience and capability around introducing continual improvement standards to the Council.

It is proposed to roll out the ISO 50001 approach initially across two flagship buildings (St Aldates Chambers and the Town Hall) in year 1 and then progress with further roll out over the 5 year carbon management plan time frame, bringing in other significant energy users such as leisure centres (working with Fusion), fleet fuel consumption and depot buildings.

Self-certification and benchmarking with other local organisations will be the proposed approach, rather than full certification which is costly.

Opportunities linked to Energy Management

The energy and water sector is fast changing and developing and it will be important to capture opportunities that emerge and continue to develop and to improve systems related to the Council's use of energy, water and fuel. This demonstrates continual improvement and best practice in energy management. Examples are described in Appendix D and listed below:

- Demand side response
- Centralised electronic processing of energy and water invoices
- Energy and Water procurement to 2020 and beyond
- Energy Service Companies
- BREEAM environmental certification standard "Very Good" as minimum for new construction and refit projects.
- BREEAM-in-Use ratings for major buildings
- International Performance Measurement and Verification Protocol

8. Funds and resources

The main mechanisms currently identified for funding low carbon technology fixes across the estate in the period to the end of 2021/22 will be:

i) The continued use of our revolving loan funds:

Salix - providing approximately £100-£160k available per year to spend on energy efficiency improvements in buildings which have a payback of 5years or less;

and

Salix-PLUS - providing £50-£65k available per year to fund measures with longer paybacks – up to 15 years – including renewable energy technologies and fleet fuel reduction measures.

Further information on Salix and Salix Plus funding, the way it is used - including in council construction projects - and a building check list outlining the types of measures that can be explored for funding is outlined in Appendix E and Appendix F.

Though revolving loans funds have been used successfully to fund carbon reduction measures over the last few years - and this will continue - it is anticipated that the existing resource will not fully fund the implementation of measures to meet the 5% minimum carbon reduction target over the 5 year period of the new plan.

ii) Seeking additional funding

Additional funding bids will be made internally and to government as opportunities arise, to continue to deploy renewable energy installations and improve energy efficiency across the Council and in the local area.

For example, for 2016/17 a £50,000 internal budget bid was made for feasibility funding to explore ways of achieving a step up in decarbonisation of our leisure centres which represent the largest energy and water consuming sites in the Council's estate.

Given the more complex nature of larger scale projects, progress is likely to be challenging with longer lead in times to realise carbon reductions. Robust and detailed business plans for significant additional match funding requests will be required with all key staff expected to support their development. Innovative funding models will be also considered where appropriate using community share offer funding models such as those developed by the Low Carbon Hub.

Programme coordination

Based on experience and expertise built up during the most recent Carbon Management programme, the new Carbon Management Plan and energy management systems will be driven and delivered by the Energy and Natural Resources team (ENR) in Environmental Sustainability (ES).

This will require continued support and crucial input from key staff in Housing & Property, Leisure & Parks and Direct Services (Fleet and waste management) teams. This will follow the current pattern of regular Salix and carbon reduction review meetings with the Housing and Property team and re-instigating carbon management meetings between the Council and Fusion Lifestyle Ltd.

The Energy Management system (ISO 50001) will require creation of new energy management teams made up of key stakeholders in the council including a senior sponsor and management representative as the main link in the chain between the energy management delivery team and senior management.

The Energy and Natural Resources team will coordinate delivery of progress against this key corporate priority of the carbon management programme, average 5%/year minimum target described above. This will be alongside other targets that ES deliver progress on: 3%/year reduction in water use across the estate; and 40% carbon reduction across the city by 2020 via Council management of the Low Carbon Oxford programme and other initiatives– e.g. heat networks projects.

Project Management tools and techniques (based on PRINCE2) will be applied where appropriate such as in the development of Project Initiation Documents for larger scale projects, use of product-based planning techniques, and highlight reports to appropriate reporting boards.

9. Governance and ownership

All employees are responsible for contributing to the ongoing reduction of carbon emissions and to meeting targets in line with the Corporate Plan's aspirations.

The ISO 50001 energy management system will inform the make-up of energy management teams for significant energy uses (specific buildings or functions) following the framework recommended by the standard.

This will be coordinated and driven by the Energy and Natural Resources team in Environmental Sustainability though full ownership would need to be taken by key stakeholders representing, and with influence over, energy consumption linked to the significant energy use.

The plan will be owned and governed by the Clean Green Oxford or equivalent Board, with critical input from the Carbon and Natural Resource Members Board (key officers, 'A Clean Green Oxford' portfolio holder and representatives from the other main parties).

Regular highlight reports to Boards will assess progress against the Carbon Management Plan objectives in the Environmental Sustainability Team Milestone Plan. Any blockages with progress on specific areas of the plan will be escalated through 'A Clean Green Oxford' Board or equivalent without delay.

Capturing impacts of projects on carbon emissions through the Forward Plan, City Executive Board and other major Council reports will identify any potential impacts on or opportunities for the carbon management plan and 5% target. These could include planned building disposals (which lead to a reduced CO_2 footprint), refurbishments or other changes to estate operations that may present Salix or Salix-Plus funding options or any measures that may lead to an increase in annual CO_2 emissions such as building extensions, and fleet fuel consumption increases due to changed collection rounds. It will be crucial that all areas of the Council are proactive in considering these impacts and alerting the Energy & Natural Resources team.

The impacts of any CEB proposals should also be quantified in terms of their CO_2 impacts with a total tCO_2 figure estimated (e.g. if there is a proposed change of business operations to be able to assess the potential scale of overall increase or reduction in CO_2 emissions)

The plan will be reviewed quarterly for progress against target and reviewed quarterly by the governance board and periodically by CNRMB each September of the following year outlining overall progress towards meeting the year on year targets.

Monthly reporting on progress with installed measures and associated CO_2 emissions as well as water reduction will be continued via the Council's CORVU reporting system. Greenhouse Gas reporting will be continued annually to Government which will report on absolute CO_2 emissions from Council buildings and operations.

10. Engagement and communications

Raising awareness of energy, fuel and water efficiency improvements that the organisation is seeking can lead to all staff being able to make a valuable contribution to year on year CO_2 emissions reduction - tapping their knowledge and expertise in their immediate work area.

The ISO 50001 Energy Management Systems standard places a strong emphasis on staff and senior management engagement. The standard encourages the development of energy management teams focused on specific energy uses so that a targeted approach, development of specific energy performance indicators and continual improvements can be achieved.

Regular review meetings with energy management teams and communications to all staff on progress towards meeting targets will all assist with fostering wider engagement in delivering the overall aims of the carbon management plan.

Stakeholder communications will be carried out to get key messages across more consistently and also to seek ideas and input to shape the development of the plan and Energy Management System (See Appendix G).

Key stakeholder workshops will also be held to raise awareness of the carbon management plan and energy management systems approaches and to assist with continual improvement in carbon reduction and energy management.

Appendix A:

ISO 50001:2011, *Energy management systems – Requirements with guidance for use*

ISO 50001 — What is it?

ISO 50001:2011, *Energy management systems – Requirements with guidance for use,* is a voluntary International Standard developed by ISO (International Organization for Standardization).

ISO 50001 gives organizations the requirements for energy management systems (EnMS) and provides benefits for organizations large and small, in both public and private sectors, in manufacturing and services, in all regions of the world.

The standard establishes a framework for industrial plants; commercial, institutional, and governmental facilities; and entire organizations to manage energy. Targeting broad applicability across national economic sectors, it is estimated that the standard could influence up to 60% of the world's energy use.

ISO 50001 — Why is it important?

Energy is critical to organizational operations and can be a major cost to organizations, whatever their activities. An idea can be gained by considering the use of energy through the supply chain of a business, from raw materials through to recycling. In addition to the economic costs of energy to an organization, energy can impose environmental and societal costs by depleting resources and contributing to problems such as climate change.

The development and deployment of technologies for new energy sources and renewable sources can take time. Individual organizations cannot control energy prices, government policies or the global economy, but they can improve the way they manage energy in the here and now. Improved energy performance can provide rapid benefits for an organization by maximizing the use of its energy sources and energy-related assets, thus reducing both energy cost and consumption. The organization will also make positive contributions toward reducing depletion of energy resources and mitigating worldwide effects of energy use, such as global warming.

ISO 50001 is based on the management system model that is already understood and implemented by organizations worldwide. It can make a positive difference for organizations of all types in the very near future, while supporting longer term efforts for improved energy technologies.

ISO 50001 — What will it do?

ISO 50001 will provide public and private sector organizations with management strategies to increase energy efficiency, reduce costs and improve energy performance. The standard is intended to provide organizations with a recognized framework for integrating energy performance into their management practices.

The standard is intended to accomplish the following:

• Assist organizations in making better use of their existing energy consuming assets

• Create transparency and facilitate communication on the management of energy resources

• Promote energy management best practices and reinforce good energy management behaviours

• Assist facilities in evaluating and prioritizing the implementation of new energy-efficient technologies

• Provide a framework for promoting energy efficiency throughout the supply chain

• Facilitate energy management improvements for greenhouse gas emission reduction projects

• Allow integration with other organizational management systems such as environmental, and health and safety.

ISO 50001 — How does it work?

ISO 50001 is based on the ISO management system model familiar to more than a million organizations worldwide who implement standards such as: ISO 9001 (quality management), ISO 14001 (environmental management), ISO 22000 (food safety) and ISO/IEC 27001 (information security).

In particular, ISO 50001 follows the **Plan-Do-Check-Act** process for continual improvement of the energy management system (see below). These characteristics enable organizations to integrate energy management now with their overall efforts to improve quality, environmental management and other challenges addressed by their management systems.

ISO 50001 provides a framework of requirements enabling organizations to:

• Develop a policy for more efficient use of energy

• Fix targets and objectives to meet the policy

• Use data to better understand and make decisions concerning energy use and consumption

• Measure the results

• Review the effectiveness of the policy

• Continually improve energy management.

ISO 50001 can be implemented individually or integrated with other management system standards.

ISO 50001 — Who can it benefit?

Like all ISO management system standards, ISO 50001 has been designed for implementation by any organization, whatever its size or activities, whether in public or private sectors, regardless of its geographical location.

ISO 50001 does not fix targets for improving energy performance. This is up to the user organization, or to regulatory authorities. This means than any organization, regardless of its current mastery of energy management, can implement ISO 50001 to establish a baseline and then improve on this at a rhythm appropriate to its context and capacities.

ISO 50001 — To certify or not

Like all ISO management system standards, ISO 50001 can be implemented solely for the internal and external benefits it provides the user organizations and the latter's stakeholders and customers. Certification by an independent auditor of conformity of the user's energy management system to ISO 50001 is not a requirement of the standard itself. To certify or not is a decision to be taken by the ISO 50001 user, unless imposed by regulation.

Alternatives to independent (third party) certification are to invite the organization's customers to verify its implementation of ISO 50001 in conformity with the standard (second party verification), or to self-declare its conformity.

The Plan Do Check Act Cycle

The basis of the Plan Do Check Act approach is outlined below and the continual improvement cycle of an Energy management system (EnMS) is shown in Figure 1.

Plan: *conduct the energy review and establish the baseline, energy performance indicators (EnPIs), objectives, targets and action plans necessary to deliver results in accordance with opportunities to improve energy performance and the organization's energy policy.*

Do: *implement the energy management action plans.*

Check: *monitor and measure processes and the key characteristics of its operations that determine energy performance against the energy policy and objectives and report the results.*

Act: *take actions to continually improve energy performance and the EnMS.*

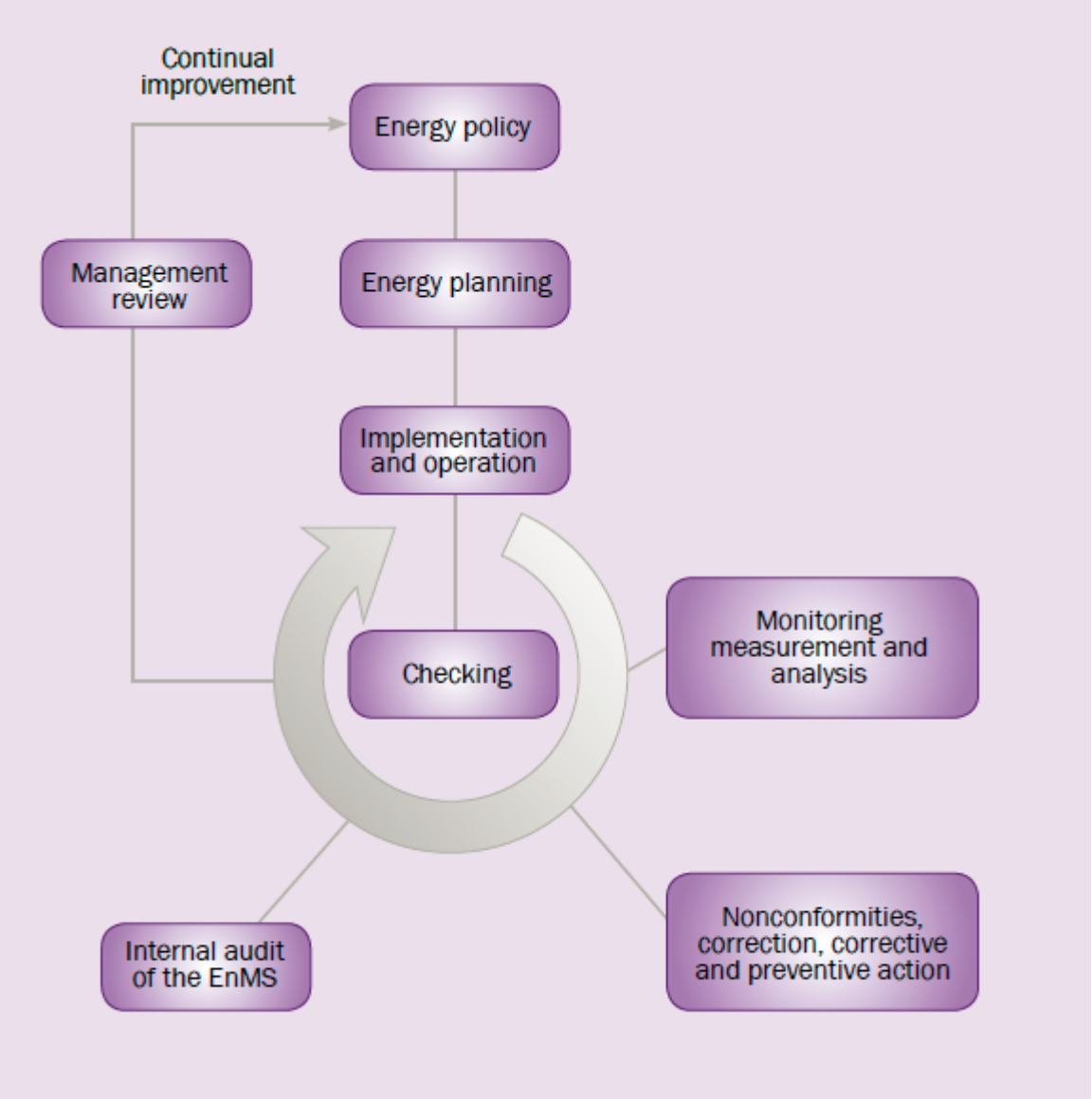


Figure 1

Information published in 2011 by the International Organization for Standardization PDF available for download here

Appendix B

Drivers and Links to key programmes at the Council (external and internal)

The carbon management plan and reducing Council-wide CO_2 emissions year on year are driven and directly affected by a number of external and internal drivers described here.

External drivers

National and international legislation and initiatives

Continuing progress in the area of energy and carbon reduction is key to meeting requirements such as those emerging from international and national legislative backdrops e.g. Climate Change Act 2008, Housing and Planning Act 2016, Heat Networks (Metering and Billing) 2014, UK requirements under the Energy Performance of Buildings Directive (Energy Performance Certificates, Display Energy Certificates), and Government Greenhouse Gas Reporting requirements.

Low Carbon Oxford

In 2010, the City Council launched the Low Carbon Oxford (LCO) Charter on behalf of the Oxford Strategic Partnership, bringing together organisations from across the City to tackle climate change and its impacts. This pioneering approach brings together private and public sector bodies, the universities and community groups as Pathfinders in a collaborative approach to creating a sustainable, low carbon economy in our city.

Each organisation has committed to a 3% year on year reduction in CO_2 emissions. Signatories include Oxford City Council, University of Oxford, Oxford Brookes University, Oxfordshire County Council, Mini Plant Oxford, Unipart, Thames Valley Police, Grosvenor Estates, Oxford Student Hubs and the Hub Commercial Venture, Stagecoach, Marks & Spencer, B&Q, Buildbase, Serco, a2dominion, 2degrees, Blake Lapthorn and community groups such as Low Carbon West Oxford. Oxford City Council continues to lead and develop this programme and continual improvement in carbon reduction and energy management will complement the aims of this city-wide initiative.

Covenant of Mayors

Oxford City Council has signed up to the Covenant of Mayors global initiative so continual improvement in carbon reduction will be a key driver in meeting the pledges agreed. Heralded as the “world’s biggest urban climate and energy initiative” by Commissioner Miguel Arias Cañete, the Covenant of Mayors for Climate & Energy brings together thousands of local and regional authorities voluntarily committed to implementing EU climate and energy objectives on their territory.
New signatories now pledge to reduce CO_2 emissions by at least 40% by 2030 and to adopt an integrated approach to tackling mitigation and adaptation to climate change.

Internal drivers

Corporate Plan 2016-2020

A Clean, Green Oxford is one of the Council's key overarching corporate priorities recognising that "environmental sustainability is key for the planet, the nation and the city". The Council's vision is for a city that is "energy efficient, rich in biodiversity and has a growing resource of fossil-free energy and a demonstrably lower environmental footprint".

Continual improvement in carbon/energy management within the City council's own estate and operations will play a key role in meeting this critical corporate priority to aspire towards reaching world class performance in energy and carbon management. This also sets a leadership approach for influencing similar within Oxford city and further afield through employees actions at home and both public and private sector organisations in the County and UK.
https://www.oxford.gov.uk/downloads/file/1756/corporate_plan_2016-20

Council internal strategies and plans that will have key dependencies or should have close links with the carbon management plan include:

Asset Management Plan

Driven by Corporate Property, the Asset Management plan provides a statement of how the Council is managing its land and buildings, setting future direction and provides a framework for Corporate decision making on property. This will be important for planning and prioritising carbon reduction and management approaches in Council owned and operated buildings, providing clearer understanding of the priorities and identifying potential areas of cross-over with the Carbon Management Plan – eg development/regeneration projects, Council housing development and leisure centre development substantive work programmes.

Housing Energy Strategy 2016 - 2020

As a social landlord, the Energy Act 2011 places a number of responsibilities on Oxford City Council, primarily to ensure that all properties in the portfolio reach Energy Performance Certificate level E or above by April 2018. Energy is also a major concern for Council housing tenants, a sign that the fear of energy bills is a key issue for them.

The three main drivers to this strategy are:

1. Meeting our responsibilities under the Energy Act 2011 and future obligations (such as the Housing and Planning Act)
2. Improving the energy efficiency of and carbon reduction in council homes
3. Further reducing fuel poverty in Council housing tenants.

Whilst outside of the scope of the Council's carbon and energy management plan which focuses on the buildings that the council owns and operates and pays energy/water bills for directly, there are close synergies which complement both approaches. For example, learning and

sharing approaches taken to continue to drive down energy and water consumption and making use of housing stock as potential sites for further development of renewable energy generation capacity in the city.

Leisure (Fusion Lifestyle) Management Plan

Leisure centres, currently being managed by Fusion Lifestyle Ltd, account for over 30% of the Council's carbon footprint. Continuing cooperation from Fusion in reducing energy consumption and carbon emissions in these buildings will be crucial to the Council keeping on track with its year on year targets. The revised Carbon Management plan will be a key source of reference for on-going City Council and Fusion energy and carbon management project collaboration. This will help to drive and review progress on implementation of Salix funded and other carbon reduction initiatives in leisure buildings. Leisure centres are significant energy use areas that will also be clear targets for incorporating into a ISO 50001 energy management system.

Waste Management Strategy (including internal recycling)

Development of the Council's latest Waste Management strategy should give due consideration to potential impacts on carbon emissions from municipal waste collection approaches. Any changes in round collections or waste disposal routes may have an impact on fleet fuel consumption (e.g. from refuse trucks and tippers) and hence affect Council carbon emissions.

There are very good carbon emissions reduction reasons for expanding the collection of waste/recycling to reduce the amount of the municipal waste stream going to landfill (as well as the usual economic and wider environmental reasons). Whilst overall carbon emissions may decrease for Oxford in such a scenario, the operational footprint of Oxford City Council could increase.

Consolidation and continuation of the council-wide internal recycling scheme (with review of roles/responsibilities for ongoing delivery and improved data collection systems) will ensure that the Council's own generated waste sent to landfill is continued to be reduced (waste to landfill is one area of scope of the Council's CO_2 emissions, see Section 4 below).

Sustainability Strategy: Oxford City Council

The Sustainability strategy is much broader in scope and coverage than the Carbon Management Plan and outlines approaches for improving air quality, biodiversity, land quality, flood defences in the City of Oxford and reducing carbon emissions. The Carbon and Energy Management plan is a key daughter document feeding into the overall sustainability strategy.

Fleet Management Strategy

The Council fleet is managed by the Direct Services fleet management team. Good progress has been made in developing the electric vehicle stock in the fleet and implementing fuel efficiency initiatives (eg technical fixes like rev limiters and staff driver-training). Developing closer links with fleet management within the overall Carbon and Energy management approach (including scope of an Energy management system – ISO50001) will assist with developing continual improvement in fleet fuel efficiency and performance.

Procurement Strategy

Continued engagement with the procurement team on developing a sustainable procurement strategy will be crucial in driving down energy, water and fuel spend and associated carbon emissions as a result of our purchasing decisions. Continual development of the Council's sustainable procurement strategy and raising awareness of the carbon implications of our purchasing decision across the Council will assist with continual improvement in energy management and carbon reduction. For example specifying A+++ white goods, and driving suppliers to improve their environmental standards (e.g. by adopting 14001 or 50001 environment or energy management systems.)

Appendix C

Wider options for carbon reduction

Further discussion on CO_2 reduction driven by Council direct control and influence

The Council will seek to quantify Council driven initiatives that can lead to CO_2 reduction where it has direct control and influence and may not necessarily be within the scope of the Council's own carbon footprint. The rationale being that carbon reduction would not have taken place without proactive initiatives carried out by the Council. Examples are described below:

Diversion of municipal waste from landfill: This could include food and other waste collection benefits leading to diversion of waste from landfill to generate renewable power or heat via anaerobic digestion or incineration. Where the council is directly increasing collection of such waste streams (and having to consume additional fleet fuel to do so) then net CO_2 savings will be quantified and reported against the Council's overall carbon reduction target.

Tree planting as a carbon offset measure: Council-driven efforts planting additional trees across the city than would have been present otherwise will lead to carbon sequestration that could be quantified and reported as a CO_2 reduction measure. Additional benefits could include reduced heat island effects in the City environment where lack of trees and vegetation in an urban setting can lead to higher than normal localised temperatures.

Purchasing Green electricity: The Council's current energy purchasing strategy allows for scope to purchase renewable energy. Where available, and if accompanied with Renewable Energy Guarantee of Origin Certification (REGO), the council will seek to secure renewable energy supplies and quantify and report net CO_2 savings from such activity. A 2% premium compared to conventional energy prices is allowed in the current energy purchasing strategy.

Solar PV on OCC domestic properties: The Council has installed Solar PV on a number of its own domestic properties where tenants are paying the energy bills (i.e. not currently included in the Council's carbon footprint) and may continue to do so in future where funding and resources allow. This could be included as a CO_2 reduction measure as renewable energy generation and associated carbon reduction would not have happened without Council intervention.

OCC energy audits in businesses: The Council may in future conduct energy audits in local businesses and facilitate carbon reduction projects in the buildings. The work may lead to reductions in CO_2 emissions that would not have happened without Council intervention. The Council will

seek to quantify and report the estimated emissions reductions from such initiatives.

Influencing planning conditions of new developments: The Council's planning conditions currently call for a minimum of 20% on-site energy production through the use of renewable energy or low-carbon technologies on developments over a certain size (2000m2 or 10 units residential). This leads to reducing the environmental impact and CO_2 emissions the buildings would have had without the Council's conditions in place. Quantification of carbon benefits will be assessed on future larger scale developments and considered as a Council CO_2 reduction initiative in future reporting.

Air quality initiatives with a carbon benefit:

The Council's introduction of the Low Emissions Zone in the Oxford City Centre and other air quality initiatives has lead to a significant increase in lower carbon forms of transport – such as hybrid buses. There is a direct causal link between the LEZ and reduced CO_2 emissions which could be considered as a Council CO_2 reduction initiative in future reporting.

Appendix D

Related areas and opportunities linked to energy management

The energy and water sector is fast changing and developing and it will be important to capture opportunities that emerge and continue to develop and to improve systems related to the Council's use of energy, water and fuel.

Examples are described below:

- **Demand side response** (DSR) opportunities to reduce carbon emissions and also to earn potential revenue for the council. This is where the Council could get a financial reward from the grid operator for reducing energy demand at peak times of the day. For example, slightly reducing loads at the Ice Rink at peak times of grid demand could earn annual revenue (estimated to be approximately £16,000 per year) without compromising ice quality or rink operations. This has been successfully employed at major operators like Planet Ice & Silver Blades national chain of ice rinks.

- Maintain **Centralised electronic processing of energy and water invoices** to ensure energy and water billing is accurate and that significant billing errors are avoided. The Energy and Natural Resources team has introduced and is leading on the delivery of a new energy and water bill validation system that has been in place since January 2016. The team now processes over 8000 invoices electronically per year which are validated now prior to payment (a process that was not in place before hand). This is returning bill savings on average of around £70,000 per year as well as significantly reducing staff time in processing invoices. The side benefits include improved energy and water consumption data for future budgeting and forecasting accuracy. This activity will be continued and built upon in future. It may also present possible revenue opportunities where the Council can provide Energy Bureau type services to other public sector organisations or businesses.

- **Energy and Water procurement to 2020**. The Energy and Natural Resources team currently manages and coordinates the council's energy and water contracts as outlined in CEB report from February 2016 (Energy & Water Supply Procurement – 2016 to 2020). Within this process purchase of energy from renewable energy sources will be sought where available and with agreement each year from the lead member and senior management team with supplies only validated with Renewable Energy Guarantees of Origin (REGOs) being considered.

- **Energy procurement after 2020**: continue tracking developments in the energy and water markets in preparation for

contract renewals in October 2020 and developing an appropriate procurement approach for the council.

- **Energy Service Companies (ESCos)**: consider as a carbon reduction mechanism for any major new build or refurbishment projects without the need for major capital outlay. ESCos can fund the capital cost and take on the risk of operation and maintenance of low carbon power and heating retrofit or new build solutions in buildings, typically over a 20 year period. In return the user would pay an agreed unit energy price for the energy consumed at the start of the project. At the end of the 20 year period the plant is paid for and passed back to the user.

- Implement a requirement for a minimum "Very Good" **BREEAM certification standard** for new construction and refit projects. This covers improved energy performance but also covers a number of other environmental indicators. BREEAM certification focuses on the whole lifecycle impacts of buildings meaning that it goes beyond the focus of the project budget and can lead to much improved environmental and financial performance over the lifetime of the building.

- Attain **BREEAM-in-Use** ratings for all major buildings in the Council estate to help bridge the gap between theoretical and actual environmental performance of new build and retrofit projects.

- International **Performance Measurement and Verification** Protocol (IPMVP). In line with aspirations to achieve ISO 50001 standards of operation, continued use of Measurement and Verification techniques such as IPMVP will be employed where appropriate to assess more robustly the impacts of Energy conservation measures implemented as part of the Carbon Management plan. This also demonstrates continual improvement and best practice in energy management.

Appendix E:

Salix and Salix-Plus funding for carbon reduction

There are two funding pots available that can be used to fund energy (and water) efficiency upgrades and installing renewable energy technologies across Oxford City Council's estates and operations:

Salix

Salix is a revolving loan match fund that the Council has had in place since 2008 following successfully winning a fund application to create a £405k funding pot (i.e. £200k match funding received from government). The fund can only be used on energy efficiency projects that meet certain criteria e.g. maximum of 5 years payback and at a cost of no more than £100 per tCO2 saved over the lifetime of the project.

The fund remains in a ring-fenced reserve at the Council that must be operated to strict scheme rules. The Council is required to submit annual fund statements signed off by the Head of Finance each year to the fund administrator, Salix Finance Ltd.

Given the Council's success in the use of the fund, further money has been won from government to grow the funding pot in recent years to a total of £605k. As the fund is a recycling fund, the total annual loan payments coming back in to the fund each year from projects already installed yields around £100k to £160k per year. This can be used on energy efficiency upgrade projects within Council assets that consume electricity and gas (i.e. emit CO_2 emissions), are on the Council's carbon footprint and where the Council is the bill payer.

The fund is designed to be energy budget neutral in that the annual energy savings from any energy efficiency upgrade implemented in a building fund the cost of the installation over the payback period.

Since the start of the use of the match fund in 2008, the Council's £305k investment has levered in £300k of government match funding enabling the council to invest over £1m on energy efficiency upgrades across its estate, reducing carbon emissions by over 1700 tonnes per year and energy savings of ca. £350k per year.

The Energy & Natural Resources team (ENR) manage the fund, identify energy efficiency projects, develop the business case for any upgrades and coordinate installation of the energy efficiency projects. The fund is focused on energy efficiency upgrades in buildings and can contribute up to five year's worth of annual estimated savings from energy efficiency upgrades.

ENR has the resource to do the majority of the energy assessments and calculations required (or engage appropriate assistance where required), though potential Salix-funded projects need to be rapidly identified by relevant teams managing the projects and factored in to considerations where work is underway on buildings or being considered for upgrade, refurbishment or replacement of old kit being planned. Alerting the Energy and Natural Resources team at early design stages of any projects will ensure maximum use of the Salix fund and also help drive further reductions in Carbon emissions and associated whole-life cycle energy spend.

Salix Plus

Salix Plus is a council owned recycling fund pot – that is operated in a similar way to the Salix match fund but is operated and owned solely by OCC (i.e. nothing to do with Salix Finance ltd but the Salix name has been used to indicate that it is operated in a similar manner).

This can be used to boost funding on Salix projects that go beyond a 5 year payback period (up to a maximum of 15 years) and also directly for funding carbon reduction measures not viable from the Salix fund. This means funding can be used on other carbon reduction measures such as improving water efficiency, installing renewable energy technologies as well as reducing fleet fuel consumption and waste sent to landfill sites.

Approximately £600k of Salix Plus money has been committed to date since 2013/14 and has predominantly been used to fund the installation of renewable energy technologies in Council-operated buildings such as leisure centres, sheltered housing blocks, offices and depot buildings. The Council now generates the equivalent of over 8% of its own electricity through onsite generation.

A further £200k is available during 2017/18 which will be targeted for use on additional renewable energy investments and also as client contributions to boost the Salix projects where the paybacks go beyond 5 years.

Use of Salix and Salix Plus funding in buildings

Salix and Salix Plus can be used both in the new build elements and refurbishments in buildings with slight variations in how the fund is used.

New buildings - use of Salix fund

Salix can fund the on-cost to a lower energy solution in new building projects. In order to calculate an estimated annual saving it is necessary to consider the technology cost and estimated energy consumption per year if a minimum building regulation solution was installed and to compare this with a lower energy solution that goes beyond building regulations.

Salix can fund the on-cost to the lower technology solution excluding the installation cost as this has already been costed into the project and would be happening anyway. For example, comparing what annual energy consumption would be in a building with standard compact fluorescent lighting versus an LED equivalent and controls. Contributions of up to 5 years of savings are possible with Salix, and Salix Plus can be used as a client contribution where paybacks are beyond 5 years – up to a maximum of 15 years payback (subject to availability of funds).

Refurbishments or Upgrades – use of Salix fund

Salix can be used to fund the supply and install of lower energy solutions in existing buildings. Again Salix Plus can be used as a client contribution as described above. See Appendix F for a list of possible measures.

Appendix F:

Building energy efficiency and lower carbon measures check list

The following is a list of possible low carbon measures that could be incorporated and potentially funded or part-funded with Salix and Salix Plus in buildings. The list is not exhaustive but gives an indication of the main areas of opportunity.

- Boilers – upgrade to gas condensing (or see renewable energy technology options below)
- Building management systems and controls
- Cooling techs - e.g. evaporative cooling (if there is any cooling requirement - otherwise employ natural ventilation strategies)
- Hand-driers – low energy/improved efficiency – e.g. Dyson
- Heating – heat recovery, TRVs, zone control valves
- Hot water – point of use
- Insulation
    - Building fabric – Cavity Wall Insulation (inc going beyond building regulations in new build)/internal wall insulation (old school building); roof/loft insulation, double or secondary glazing
    - Draught-proofing
    - Pipework insulation (retrofit or beyond building regulations)
    - Other – radiator reflective foil, air curtains (ambient/heated)
- LED Lighting and controls (including wireless controls)
- Metering and monitoring (install meters to measure energy and water consumption, possibly down to the level of power, lighting, heat and other – e.g. 'modbus' or pulse enabled metering – with remote monitoring platform)
- Renewable energy technologies for providing power and heating e.g. in new buildings consider Solar PV (plus possibly battery storage) and Ground Source/Air source Heat pumps.
- Time–switches (e.g. on small equipment)
- Ventilation – heat recovery, distribution/presence controls
- **Other:** Solar control film; light pipes, water efficiency measures – low flow WCs, percussion/PIR controlled spray taps; grey water recycling

Fleet fuel reduction measures

The Salix Plus fund can be used for funding of fleet fuel reduction measures such as in-cab fuel efficiency systems (eg rev limiters, or driver awareness devices).

Waste to landfill reduction measures

The Salix Plus fund can be used for funding of measures to reduce the amount of operational waste (i.e. the Council's own generated waste) that is sent to landfill. Greenhouse Gas emissions arising from landfill sites are some of the most damaging to the environment.

Appendix G:

Stakeholder communications

The following table defines the key parties anticipated to have an interest in the Carbon Management Plan and Energy Management System and the means and frequency of engaging them. This list is not exhaustive and may be developed further following further input from stakeholders during the project implementation phase

Stakeholder	Information/interest Requirements from Project (two way)	Communication Channel	Date or Frequency	Responsible individual
Internal stakeholders				
Chief Executive and Senior Management Team (Peter Sloman, Caroline Green, and the directors)	Key sponsor/senior user- two way – key stakeholders	1-2-1, team meetings, emails/phone calls	Quarterly/ad-hoc as required	Jo Colwell
Tim Sadler/Jo Colwell (Environmental Sustainability)	Key sponsor/Senior User – two way – key stakeholder	1-2-1, team meetings	Fortnightly/ad-hoc as required	Paul Spencer/Paul Robinson
Stephen Clarke (HoS), Martin Shaw, Keith Reynolds; Housing & Property and relevant Board (CAMAC)	Senior Supplier – two way – key stakeholder	Board/Project Team meetings/liaison meetings (Salix)/email/phone calls	Monthly minimum/ad-hoc as required	Jo Colwell/Paul Robinson
Ian Brooke (Hos); Lucy Cherry; Stuart Fitzsimmons, Leisure and Parks	Senior Supplier – two way – key stakeholder	Project Team meetings/liaison meetings (Salix)/email/phone calls	Monthly minimum/ad-hoc as required	Jo Colwell/Paul Robinson
Jane Winfield (HoS); Nick Twigg, Regeneration & Major Projects and relevant Board (CAMAC)	Senior Supplier – two way –key stakeholder	Board/project Team meetings/liaison meetings (Salix)/email/phone calls	Monthly minimum/ad-hoc as required	Jo Colwell/Paul Robinson
Graham Bourton (HoS); Bruce Thompson, Ian Direct Services, Ian Bourton (Fleet)	Senior Supplier – two way – key stakeholder	Project Team meetings/liaison meetings (Salix)/email/phone calls	Monthly minimum/ad-hoc as required	Jo Colwell/Paul Robinson
Caroline Wood; Neil Lawrence; Business Improvement & Technology	Keep informed (input on large value procurement requirements)	Email/phone calls/council matters/intranet	monthly	Paul Spencer/Nathan Kirwan
Human Resources & Facilities; (HoS);)	Keep informed/two way key stakeholder on facilities side	Email/phone calls/council matters/intranet	Twice yearly	Nathan Kirwan
Law& Governance, (HoS)	Keep informed – general info – advise on any legal issues with contracts etc	Email/phone calls/council matters/intranet	Twice yearly	Nathan Kirwan
Customer Services, Helen Bishop	Keep informed – low level	Email/council matters/intranet	Twice yearly	Nathan Kirwan

Finance, Nigel Kennedy (HoS); Lyn Barker, Tracy Cheng, Anna Winship	Keep informed – input on budget / -salix/salix admin	Team meetings/liaison meetings (Salix)/email/phone calls/ Quarterly review meetings (energy billing)	Monthly minimum/ad-hoc as required	Paul Spencer/Andrew Sunderland
Policy, Culture & Communications; Peter Mc Quitty/Tom Jennings	Keep informed – website/	Email/council matters/intranet	Twice yearly/launch event/external comms	Nathan Kirwan
City Development (Planning); Patsy Dell (Hos); Mark Jaggard/Rich Wyatt (policy, NRIA etc)		Email/council matters/intranet	Twice yearly	Jo Colwell
Elected members (Executive - Bob Price, John Tanner; Van Coulter, Greens, Lib Dem and other party reps	two way – key stakeholder /Keep informed – website/	Early drafts to Exec Board member (John T as per CEB process)/liaison meetings CNRMB/email/phone calls/ launch event	Quarterly board meetings (CNRMB); November and April	Jo Colwell/Paul Spencer
All OCC staff	Keep informed – website/	Email/council matters/intranet/launch event	March 2017 (launch of new CMP)	Nathan Kirwan/Paul Spencer
External stakeholders				
Fusion lifestyle ltd (operating OCC leisure centres)		Team meetings/liaison meetings (Salix)/email/phone calls	Nov 2016 draft, March 2017 launch and quarterly thereafter	Paul Spencer/Lucy Cherry
Salix Finance Ltd		Email;/phone calls	March 2017 after launch	Paul Spencer
Carbon Trust		email	March 2017 after launch	Paul Spencer
University Estates Dept /Oxford Brookes/Oxfordshire Environment partnership group/Low Carbon Oxford pathfinders	Benchmarking	Face to face meeting, email/phone calls	Early draft end Nov 2016 and March 2017 after launxh	Nathan Kirwan/Paul Spencer
APSE		Email	March 2017 after launch	Nathan Kirwan/Paul Spencer
General Public		Your Oxford./internet	March 2017 after launch	Nathan Kirwan/Paul Spencer

This page is intentionally left blank