# Carbon and Resource Smart Management Plan -

*'Towards a zero carbon, resource smart council'*

## 2015 – 2019


One Planet Council

CITY OF YORK COUNCIL

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## FOREWORD

TBC

(Written by Councillor Andrew Waller)

**Executive Summary**

This document outlines how the council will reduce carbon emissions and associated expenditure across its estate. It highlights the drivers for better carbon and resource management (i.e. energy, water and waste) and outlines the vision, aims and objectives of this new Carbon and Resource Smart Management Plan (CRSMP). These include:

- **Enable effective carbon management across the estate**
- **Coordinate actions to maximise efficiency and savings**
- **Allocate clear carbon management responsibilities across the Utilities Board, to govern the CRSMP and maximise efficiency and savings**
- **Establish the Council's carbon and expenditure baseline (for 2014/15), set interim reduction targets (up to 2019) and regularly review progress against targets.**
- **Raise staff awareness and involvement in corporate carbon and wider sustainability actions through increased communications and training**
- **Specify clear capital projects and actions needed to meet targets and routinely seek internal and external funding to deliver change**
- **Through the OnePlanetYork Programme, implement a corporate One Planet Policy that supports carbon management across the Council and embeds it into everything the Council does**

This management plan measures the baseline of our emissions for the financial year 2014 / 15. It outlines how much carbon, energy, water, transport fuel and waste we currently generate and the associated costs. It shows that we generated just over 15,000[1] tonnes of carbon dioxide across our corporate estate and street lighting. When we include the carbon emissions from our social housing stock (over 30,000 tCO2), our total carbon emissions would be nearer 45,000 tCO2.

We spent over five million pounds on energy, water, transport fuel and waste, with over 35 percent of our spend relating to corporate utilities (electricity, gas, water, waste).

This new CRSMP lists potential projects that will reduce the carbon emissions arising directly from council activities. It breaks these down into short, medium and long-term projects and includes some existing projects, and some new work aimed at improving buildings energy and water efficiency, increasing renewable energy generation, maximising vehicle efficiency and low emission vehicles, reducing waste and changing behaviours.

Once further work has been undertaken on the medium – long-term projects a new corporate carbon reduction target will be established to deliver savings by March 2019.

[1] Excluding gas consumption (CYC has been unable to obtain gas consumption for 2014/15 from British Gas due to errors on their side)

Existing and ring fenced budgets such as Salix are already established to pay for some of these projects. Other funding such as our capital programme or external funding will be needed to deliver the medium – longer-term projects.

Enabling actions have also been established to ensure we embed carbon, resource smart management practices across the council's corporate processes. They cover seven broad areas and specific actions and targets have been established to deliver change up to March 2019.

| CEMP Enabling Projects | Core Objective | 2014/15 & 2015/16 Baseline Score | 2019/20 Target Score |
|---|---|---|---|
| Corporate Strategy | I. Enable effective carbon management across the estate | 3 | 4-5 |
| Programme Management | II. Coordinate actions to maximise efficiency and savings | 2 | 4-5 |
| Responsibility | III. Allocate clear carbon management responsibilities across the Utilities Board, to govern the CRSMP and maximise efficiency and savings | 3 | 4-5 |
| Data Management | IV. Establish the Council's carbon and expenditure baseline (for 2014/15), set interim reduction targets (up to 2020) and regularly review progress against targets. i. Measure the renewable energy generated across the Corporate and Schools' estate | 3 | 4-5 |
| Communication and Training | V. Raise staff awareness and involvement in corporate carbon and wider sustainability actions through increased communications and training | 2 | 4-5 |
| Finance and Investment | VI. Specify clear capital projects and actions needed to meet targets and routinely seek internal and external funding to deliver change | 2.5 | 4-5 |
| Policy Alignment | VII. Through the One Planet York Programme, implement a corporate One Planet Policy that supports carbon management across the Council and embeds it into everything the Council does | 2 | 4-5 |
| Total | | 17.5/35 | 28-35/35 |
| Percentage | | 50% | 80-100% |

Progress against this management plan and targets will be monitored by the OnePlanetCouncil Board (formerly the Utilities Board).

Since writing this management plan the council committed to being a OnePlanetCouncil. This plan is an essential element to deliver the council's commitment to be a OnePlanetCouncil, specifically to work towards the zero carbon, sustainable water, zero waste and sustainable transport ambitions. It will support delivery of the OnePlanetCouncil Policy and has also been adapted and added into Phase 1 - OnePlanetCouncil Action Plan. It will also help show strong leadership across the city and within the emerging OnePlanetYork network.

## 1. INTRODUCTION

Typically in the UK we are using the resources of three planets when we only have one. This is not sustainable. There is also compelling global consensus and supporting evidence that we need to act now to tackle climate change. We are also seeing rising energy prices and diminishing conventional energy resources. We currently spend over £5 million annually on energy, water and waste disposal, and in light of on-going local government budget constraints, it is imperative that we take action as an organisation.

To address these challenges, City of York Council developed its first Carbon Management Programme (CMP) in 2007/08, to map out a path to a lower carbon council for the following five years. Through this programme, the Council made a commitment to reduce 25% of the total carbon dioxide ($CO_2$) emitted from the corporate and school's estate by 2013, against the original 2007/08 baseline. A large amount of projects were delivered to meet this target. When compared to the 2007/08 baseline the 2014/15 baseline shows a significant reduction of $CO_2$ emissions across council activities. Specifically, the corporate and schools' estate emitted 44.6% less $CO_2$ (12,647 $tCO_2$) and Social Housing 8.4% less of $CO_2$ (31,654 $tCO_2$)*[2]

Good progress has been made, but the Council is still emitting large amounts of CO2 annually, and paying more for the energy and resources it uses. There is still more work to do to reduce energy demand, and the associated expenditure and to use other resources smartly like using water more efficiently and reusing and recycling more of our waste. This new Carbon and Resource Smart Management Programme (CRSMP) represents our opportunity to step up our game and reduce the natural resources we use, our environmental impacts and operational costs. Therefore this management plan will build on existing initiatives and develop new projects that look towards 2019 and beyond.

This programme also supports the Council Plan 2015- 2019 ambitions to reduce city-wide carbon emissions and embed sustainability into everything we do. This CRSMP will enable the council to lead by example in tackling climate change and the refresh of the City's Climate Change Action Plan. In addition it will play a key role in delivering the Executive's commitment to becoming an OnePlanetCouncil, and will be embedded into the OnePlanetCouncil Action Plan – Phase 1. This will also help ensure the city can work towards becoming a 'One Planet' city through the OnePlanetYork programme.

## 2. CARBON AND RESOURCE SMART MANAGEMENT PLAN

### 2.1 **Context and Drivers – Environmental Impact**

As an organisation we use lots of energy and other natural resources such as water to heat and power our buildings, to get about on council business and to provide our services to the public. All can have a detrimental impact on our natural environment. Much of the energy we use is derived mainly from fossil fuels such as coal, oil and gas. When we burn fossil fuels to generate energy we also create carbon dioxide. There is also global scientific consensus and supporting evidence that the burning of fossil fuels is producing harmful greenhouse

[2] Please note - The data for 2007/08 baselines were based on the best data sets available at the time. We cannot be certain that they are 100% accurate and comparable with the 20014/15 data sets which are now more robust. The 2014/15 baseline also includes some levels of growth experienced by the organisation, the changing use of the estate and rationalisation of the estate between 2006 – 2014.

gases which are contributing to a warming of our climate, changing our weather patterns and causing more extreme weather events, like flooding and heatwaves.

Nationally and locally there is a number of existing policy drivers aiming to reduce the impact that organisations have on the natural environment. Many of these aim to help tackle climate change, reduce a basket of emissions including carbon, improve energy efficiency, increase renewable energy, sustainable modes of transport, recycling and reuse and build an circular economy (where we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life(Wrap 2016)). Table 1 below illustrates some of these.

**Table 1. Drivers for carbon management**

| |
|---|
| Climate Change Act 2008 |
| Carbon Reduction Commitment Energy Efficiency Scheme |
| Water Act 2014 |
| Feed-in Tariffs |
| Renewable Heat Incentive |
| Mandatory Display Energy Certificates |
| Mandatory greenhouse gas emissions from Local Authority own estate and operations |
| Nottingham Declaration on Climate Change |
| EC Energy Directive |
| EU Waste Directive |
| EU Circular Economy |
| Friends of the Earth 'Get Serious' Campaign |
| Council Plan 2015 – 2019 |
| OnePlanetYork |
| A Climate Change Framework and Action Plan for York |
| Low Emissions Strategy for York |
| Joint Municipal Waste Management Strategy |
| OnePlanetCouncil Policy |
| OnePlanetCouncil Action Plan |

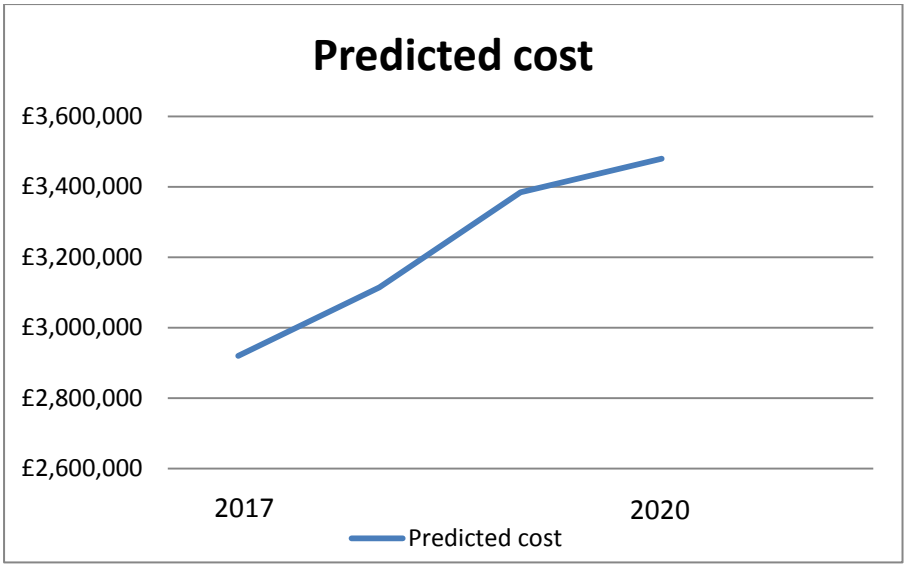
### 2.1.2 Context and Drivers – Future costs

There is also the potential risk that our energy bills will continue to rise and that the Council may stand to spend a significant quantity of money on its energy bills unless action is taken. If we use energy, water and waste more efficiently we can save our organisation money which could be used to safeguard future services.

According to Yorkshire Purchasing Organisation (YPO), and relating to electricity only, npower forecast that over the next 4 years bill will increase. In 2014/15 we paid £2,765,679 and used 23,992MWh of electricity across our corporate estate, schools and street lighting. nPower predict that if we continued to use the same amount of energy each year over the next 4 years that we could be paying nearer to £3.5 million (or 20 percent more). This also assumes a stable price for the wholesale value of energy and significant increases in planned non-commodity elements such as transmission loses and various levies, tariffs and obligations.

General trends also suggest that gas prices are increasing frequently (YPO 2016).

**Figure 1. Forecasted Electricity prices 2017 – 2020**




**(Source YPO 2016)**

According to APSE Energy:

> It is inevitable that energy costs will rise and that local authorities are subject to further financial pressures. These will include changes in how local authorities receive their funding, greater local tax raising, reduced grants from central government and restrictions on rental income. By planning ahead, organisations will undoubtedly be better placed to meet these demands and energy is certainly an area where savings can be made and income generated.
>
> If an organisation directs its efforts and investment in towards energy efficiency, alongside wider energy issues and other utilities such as water, waste and transport, it can find a range of savings, positive impacts for the local community and social and environmental benefits.

**(APSE Energy 2016)**

### 2.1.3 Context and Drivers – Better coordination

Through enhanced engagement, participation and joint working this plan will ensure coordination of all carbon, resource smart actions. It will also help maximise opportunities to improve efficiency and savings and fully utilise current resources to deliver maximum results.

### 2.2.1 Vision

| **To work towards being a zero carbon, resource smart Council** |
|---|

Linked to the aims of the Council Plan and OnePlanetCouncil we will work towards being a zero carbon, resource-smart Council. We will create energy efficient buildings, get the most of our energy from renewable sources and ensure York is climate ready. We will minimise energy and water use, generate, where possible, renewable energy and reduce carbon dioxide emissions linked to range of our activities.

### 2.2.2 Aims

In line with the Council Plan, progress has been made towards embedding sustainability across the Council; however, more work needs to be done to demonstrate the Council's commitment in becoming a local authority that is carbon and resource smart and pays less for the resources it consumes. This CRSMP represents our opportunity to step up our game and evidence how, through effective carbon management, we can reduce our carbon footprint, cut costs, increase our resource-efficiency and improve our environmental impact. To accomplish this, this CRSMP will identify an accurate and up to date snapshot of the Council's carbon emissions and associated expenditure, and will subsequently develop a detailed action plan that will allow the Council to efficiently manage its resources and energy spend in the forthcoming years.

This CRSMP will aim to:

I. **Reduce carbon emissions and associated expenditure across the council's estate, schools and social housing by maximising energy and water efficiency**
II. **Measure Corporate carbon emissions and related expenditure:**
    - **Corporate estate – utility consumption (electricity, natural gas, oil and water)**
    - **Street Lighting – electricity consumption**
    - **Fleet Transport – fuel consumption**
    - **Employee Travel – miles travelled**
    - **Waste disposal – tonnes of waste disposed**
III. **Measure Schools' carbon emissions and related expenditure:**
    - **School Buildings – utility consumption (electricity, natural gas, oil and water)**
    - **Waste disposal – tonnes of waste disposed**
IV. **Measure Social Housing's carbon emissions (based on each household's energy performance, i.e. SAP rating)**
V. **Measure the renewable energy generated across the Corporate and Schools' estate**
VI. **Accelerate renewable and low carbon energy generation across the council's estate, schools and social housing**

### 2.2.3 Objectives

The objectives of the CRSMP are to:

- **Enable effective carbon management across the estate**
- **Coordinate actions to maximise efficiency and savings**
- **Allocate clear carbon management responsibilities across the Utilities Board, to govern the** CRSMP **and maximise efficiency and savings**
- **Establish the Council's carbon and expenditure baseline (for 2014/15), set interim reduction targets (up to 2020) and regularly review progress against targets.**
- **Raise staff awareness and involvement in corporate carbon and wider sustainability actions through increased communications and training**
- **Specify clear capital projects and actions needed to meet targets and routinely seek internal and external funding to deliver change**
- **Through the One Planet York Programme, implement a corporate One Planet Policy that supports carbon management across the Council and embeds it into everything the Council does**

## 3.BASELINE

3.1 Scope

The City of York Council generates carbon emissions directly and indirectly from the energy and water we use, when we travel about for work purposes, from the goods and services we provide and the waste we generate. To better understand how the Council can reduce its emissions, related environmental impacts and expenditure, we need to know what we are responsible for emitting. This section examines the Council's 2014/15 carbon baseline (carbon and costs) which is the best available dataset available to the council. (See Appendix A for more information on the methodology used).

The baseline measures the carbon emissions (and other greenhouse gases) from the following areas of council activity:

- Corporate buildings
- Schools
- Street lighting
- Council fleet transport
- Business travel
- Council's organisational waste
- Social housing

**3.2 Baseline (2014 – 2015)**

The baseline of the council is estimated at:

**15,200 tCO2 from our corporate estate, street lighting and transport fleet (2014/15)**

**47,353 $tCO_2e$ from our entire estate including social housing (2014/15)**

**Just under £5.5million on energy and other natural resources (£3,370,568 spent on energy across our corporate estate and £2,125,491 on energy across our schools)**

In 2014/15 it is estimated that the council emitted just over 15,200 [3]tonnes of carbon (tCO2) across the corporate estate, street lighting, fleet transport and business travel. However, when include a wider set of greenhouse gas emissions and convert these into a carbon dioxide equivalent metric, and include waste and social housing our emissions are estimated to be nearer 47,300 $tCO_2e$ [4](10,239 from its corporate estate, 5,460 from Schools and 31,654 from Social Housing). See Annex B for the detailed baseline and methodology.

It is also estimated that the council spent £3,370,568 on energy cross our corporate estate, (including street lighting and transport) and £2,125,491 on energy used across our Schools. See table 1 below.

From all activities carried out across the council (all scopes), energy (including water consumption) was the activity that generated the most carbon emissions and financial expenditure (Table 1a and 1b).

**Table 2a. Total costs(£), carbon and $tCO_2e$ emitted across all council activity**

[3]Excluding gas consumption (CYC has been unable to obtain gas consumption for 2014/15 from British Gas due to errors on their side)

[4] **$CO_2e$:** A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

| Scope | Costs (£) | kg CO2 | kg CO2e ** |
|---|---|---|---|
| Corporate Utility * | 1,227,398.79 | 3,785,559.21 | 3,866,216.10 |
| Schools Utility | 2,040,052.48 | 5,177,203.58 | 5,307,195.85 |
| Street Lighting | 905,686.01 | 3,895,816.24 | 3,927,842.31 |
| Fleet Transport | 813,598.25 | 2,120,299.92 | 2,144,949.00 |
| Business Travel | 352,785.69 | 225,553.12 | 226,951.67 |
| Corporate Waste | 71,099.21 | | 73,518.20 |
| Schools Waste and recycling | 85,438.57 | | 153,118.93 |
| GRAND TOTAL *** | 5,496,059.00 | 15,204,432.07 | 15,699,792.05 |
| **Tonnes** | | **15,204.43** | **15,699.79** |

** Excludes gas data (currently unavailable).** **$CO_2e$:** A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential. *** excludes social housing.*

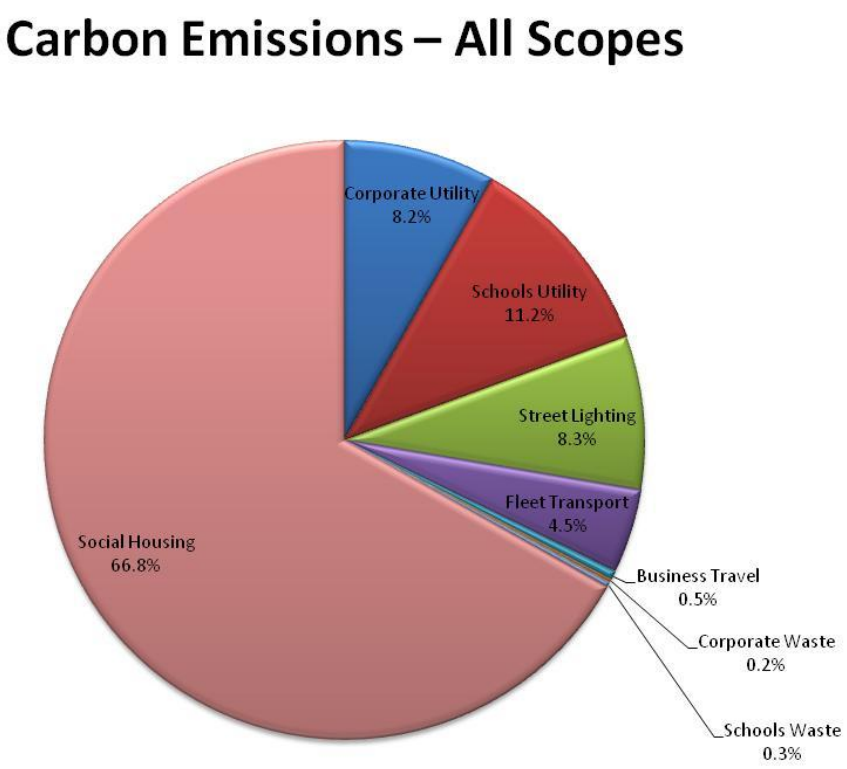
**2.b Wider estate carbon emissions including social housing and expressed as Carbon Dioxide equivalents** (** above)

| Emission Type | Scope | tCO2e | Proportion (%) | Costs | Proportion (%) |
|---|---|---|---|---|---|
| Direct Corporate Emissions | Corporate Utility * | 3,866.2 | 8.2 | 1,227,398.8 | 22.3 |
| | Street Lighting | 3,927.8 | 8.3 | 905,686.0 | 16.5 |
| | Fleet Transport | 2,144.9 | 4.5 | 813,598.3 | 14.8 |
| | Business Travel | 227.0 | 0.5 | 352,785.7 | 6.4 |
| | Corporate Waste | 73.5 | 0.2 | 71,099.2 | 1.3 |
| Indirect Emissions | Schools Utility * | 5,307.2 | 11.2 | 2,040,052.5 | 37.1 |
| | Schools Waste | 153.1 | 0.3 | 85,438.6 | 1.6 |
| | Social Housing Energy** | 31,653.5 | 66.8 | - | - |
| | **Grand Total** | **47,353.3** | | **5,496,059.0** | |

** Corporate and Schools' Energy data does not include emissions from natural gas consumption (as the data was not available) but does include costs (Appendix A).*
*** Social Housing's energy costs are not included as the tenants (and not the Council) record/pay their own energy bills (Appendix A).*

The largest proportion of carbon emissions came from the energy used across our Social Housing estate (66.8%), followed by Schools energy consumption (11.2%), Street Lighting's electricity consumption (8.3%) and Corporate energy consumption (8.2%). See Figure 2 and Annex B for the detailed baseline.

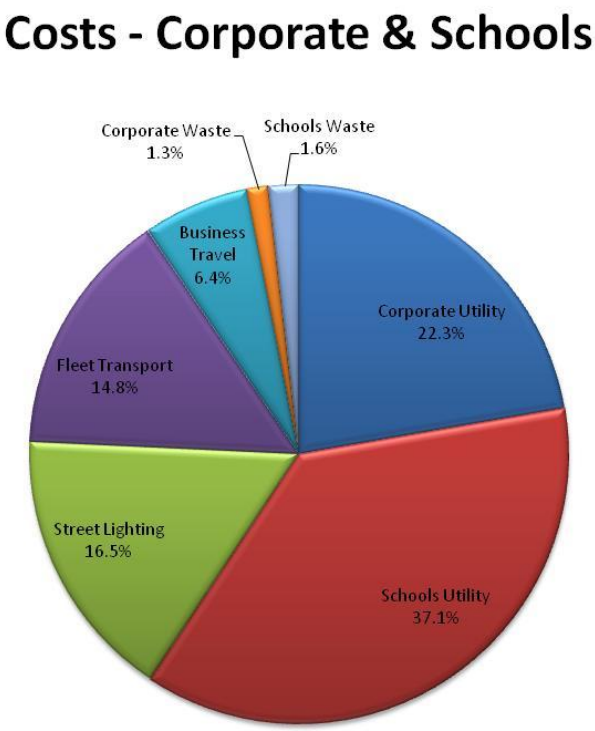
**Figure 2. Carbon Emissions – All Scopes**




**Financial expenditure**

It is estimated that the council spent just under £5.5m in 2014/15 on energy, water, waste disposal and fuel. The greatest financial expenditure came from Schools' energy consumption (37.1%), followed by Corporate energy consumption (22.3%) and then by Street Lighting's electricity consumption (16.5%). See Figure 3. Please note we do not pay the energy bills of our social housing stock, hence they are excluded from this summary.

**Figure 3. Corporate and Schools Costs**




**Corporate Estate**

During 2014/15, the Council's corporate estate was responsible for emitting 10,239 $tCO_2e$ and spent £3,370,568 on the energy used across it. Street Lighting emitted the most carbon across the corporate estate (38.4%) followed closely by Corporate buildings (37.8%) Fleet Travel (20.9%), Business Travel (2.2%) and Corporate Waste (0.7%). See Figure 4.

The largest financial expenditure came from Corporate Energy (36%) and Street Lighting (27%), followed by Fleet Travel (24%), Business Travel (11%), and Corporate Waste (1%). See Figure 5.

**Figure 4. Corporate Carbon Emissions**

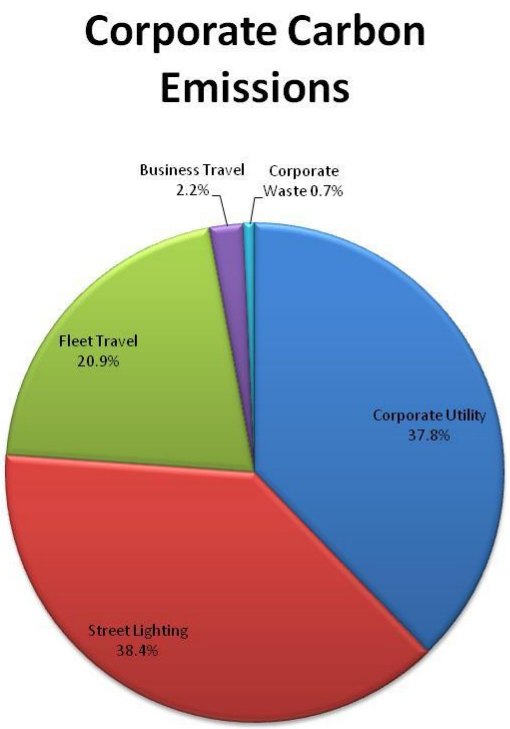
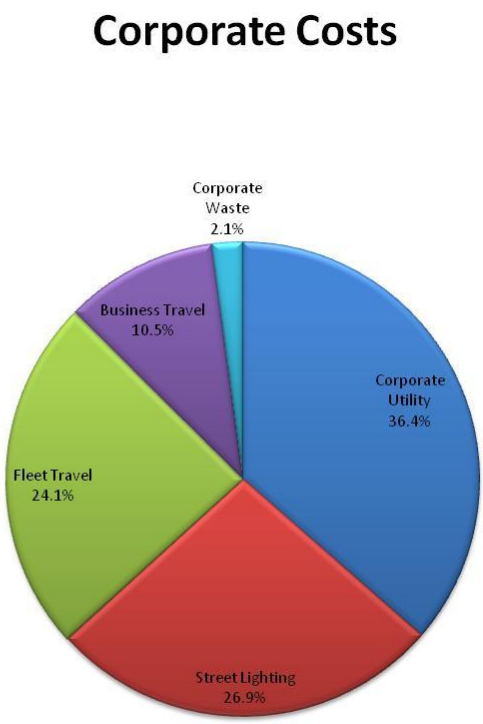



**Figure 5. Corporate Cost**




**Renewables**

Renewable energy can greatly reduce our reliance on fossil fuelled energy sources, can generate income for the council and can reduce our energy bills by enabling us to generate our own clean, free energy. It is estimated that the annual amount of renewable energy generated across the corporate and schools' estate is 1,574,648 kWh and 1,330,600 kWh respectively. To put this into context the city uses 2,574 GWh/yr of energy a year (amec 2014) and the city generates around 40.5 GWh/yr or 1.6% of total existing energy demand (amec 2014) from renewable energy sources.

As mentioned in Appendix A, the portfolio for renewables is not complete, but it is expected that as the CRSMP progresses, the quality of the data will improve in the following years (see section 6 for the recommendations proposed).

## 4. CARBON SAVING TARGETS AND PROJECTS

### 4.1 Targets

The aim of this CRSMP is to reduce carbon emissions and associated expenditure across the council.

A wide range of initiatives have been undertaken across the council since the previous carbon management programme. These included the replacement of illuminated bollards with retro-reflective ones to reduce energy consumption and maintenance costs in street lighting, various renewable energy schemes including 208 solar panels installed on West Offices, loft insulation, LED lighting, upgrades of boilers and energy management controls across schools and offices. See Appendix C for details.

This new CRSMP continues this work and identifies ongoing and new projects to deliver carbon savings between 2015 – 2019. These actions form the foundation upon which the carbon and financial reduction targets are to be set.

Through consultation with the Utilities Board and due to a lack of fully developed data on the proposed projects, a carbon saving target for the whole programme is yet to be set. We will review these projects and develop them further before setting a target within 1- 2 years of the programme commencing.

### 4.2 Projects

Table 2 lists the proposed carbon saving projects according to their implementation date (see Appendix C for more details on the projects). A summary is provided below in table 2.

**Table 3. Types of Carbon Saving Projects – Summary**

| Types of Carbon Saving Projects | Description | Total annual carbon savings ($tCO_2$) | Total annual costs savings (£) |
|---|---|---|---|
| Ongoing / Short-Term | Projects implemented throughout 2014/15 - 2016/17. | 1,294.1 TBC | 75,262.8 TBC |
| Medium-Term | Projects to be implemented throughout 2017/18 and 2018/19. | 276.6 TBC | 38,314 TBC |
| Long-Term | Projects to be implemented from 2019/20 onwards. | TBC | TBC |
| Totals | | 1,570.7 TBC | 113,576.8 TBC |

Currently Table 2 does not reflect all of the potential carbon and financial savings from the proposed/developed projects. This is because many of the schemes are in their initial planning and approval stages and therefore do not have, at this moment, concrete implementation plans/specifications. Whereas other projects are waiting to finalise trials in order to get quantifiable savings from a whole financial year. Nevertheless this programme (as explained in section 6) will be updated continuously and will therefore reflect any changes/new information accordingly.

### 4.3 Ongoing Short-Term Projects (April 2014 – March 2017)

The carbon saving projects to be implemented throughout the short-term period relate to energy and transport efficiency and the period 1st April 2014 – 31st March 2017. They include an audit on water and wastewater expenditure, upgrade of boilers and energy management controls, installation of LED lighting, refurbishments, tenant energy efficiency awareness programmes, as well as switching Street Lighting's billing system from dynamic to half-hourly billing (to increase billing accuracy). The transport projects include the Travel Management Unit's Council Fleet work (to improve driving behaviour and fuel efficiency), the addition of a special fuel trails (to decrease fuel consumption and engine maintenance costs), and the restructuring of the Business Travel patterns (Table 3).

**Table 4.1 Ongoing Short-Term Projects – Corporate Utility (April 2014 – March 2017)**

| Scope | Core Objective | Project Description | Lead Officer | Timescales |
|---|---|---|---|---|
| Corporate Utility | Improve water efficiency | West Bank Park: Installation of urinal controls to control excess water consumption - urinal cisterns. Cost £190+vat, estimated annual savings £649.91 - Schneider water efficiency audit | GC | 2016/17 |
| | | East Parade Gardens: Installation of urinal controls to control excess water consumption - urinal cisterns. Cost £190+vat, estimated annual savings £649.91 - Schneider water efficiency audit | | 2016/17 |
| | Financial savings (water bill) | Potential water rebate on 26 sites due to incorrect billing, This could result in a total refund of up to £20k. Subject to CYC demonstrating that rainwater from their property does not enter a public sewer / that site areas are smaller than Yorkshire Water records - Schneider water efficiency audit | | TBC |
| | Improve lighting levels and energy efficiency | Piccadilly Car Park: Replacement of LED lighting. T12/T8 to LED including new fitting, loan £68,509.08. Savings: £13,633.92/year, 113,616 kWh/year, 52.5 tCO2e/year. Payback 5 years - Salix fund | | Committed 09/02/2015 |
| | | ECO-Depot: Lighting Upgrade (replacement external floodlighting / work bays / canteen with LED lighting), project cost £ 58,870, loan £67,700.5, savings: £14,938.2/year, 124,485 kWh/year, 57.5 tCO2e/year, payback 4.5 years - Salix fund | | Subject to approval |
| | | Glen Lodge: LED lighting, loan £19,368.84. Savings: £6,596.7/year, 65,967 kWh/year, 30.5 tCO2e/year. Payback 2.9 years - Salix fund | | |
| | | Libraries: LED lighting, loan £23,813.37. Savings: £4,219.56/year, 35,163kWh/year, 16.3tCO2e/year. Payback 5.6 years - Salix fund | | |
| | | Haxby Hall: LED lighting, loan £28,644.9. Savings: £5,047.8/year, 42,065 kWh/year, 19.4 tCO2e/year. Payback 5.7 years - Salix fund | | |
| | | Yorkcraft: Lighting Upgrade. Loan £10,297.02. Savings: £2,289.84/year, 19,082 kWh/year, 8.8 tCO2e/year. Payback 4.5 years - Salix fund | | |
| | | Energise Sports Swimming Pool: Change Flood lighting to LED. Loan £21,925.05. Savings: £4,763.4/year, 39,695kWh/year, 18.3tCO2e/year. Payback 4.6 years - Salix fund | | |
| | | Community Equipment Loan Store: Change Flood lighting to LED. Loan £19,317.19. Savings: £4,493.16/year, 37,443kWh/year, 17.3tCO2e/year. Payback 4.3 years - Salix fund | | |
| | Improve energy efficiency | Burnholme Community Hub Redevelopment Project. Improve the overall energy efficiency of the building. | LR2 | Ongoing |
| | Generate renewable energy | Through the Leeds City Region, apply for EU ELENA technical support to help develop approx. 10 - 15 feasible and viable low carbon projects across our estate and the wider city. | JW | 2016/17 |

**Table 4.2 Ongoing Short-Term Projects – Schools Utility (Salix Projects) (April 2014 – March 2017)**

| Scope | Core Objective | Project Description | Lead Officer | Timescales |
|---|---|---|---|---|
| Schools Utility | Improve lighting levels and energy efficiency | Huntington School: Replacement halogen lighting with LED. Loan £13,800. Savings: £2,402.79/year, 18,483kWh/year, 8.5 tCO2e/year. Payback 5.7 years - Salix fund | GC | Committed 30/01/2015 |
| | Improve energy efficiency | Osbaldwick School: Heating, loan £3,188.66. Savings: £634.47/year, 14,824 kWh/year, 6.9tCO2e/year. Payback 5 years - Salix fund | | Subject to approval |
| | | St Lawrence CE Primary School: Building Management Systems, loan £8,096, £1,685.55 annual savings, 38,308 kWh saved/year, 17.7tCO2e/year. Payback 4.8 years - Salix fund | | |
| | | Hempland Primary School: LED lighting. Loan £15,834.07. Savings: £3,250.3/year, 32,503kWh/year, 15tCO2e/year. Payback 4.9 years - Salix fund | | |
| | Improve comfort level, building fabric and energy efficiency | Westfield Primary Community School: Insulation - Building Fabric. Loan £14,943.96. Savings: £3,064.92/year, 51,082kWh/year, 23.6tCO2e/year. Payback 4.9 years - Salix fund | | |
| | | Headlands School: Insulation - Building Fabric. Loan £4,837.48. Savings: £1,211.1/year, 34,603kWh/year, 16tCO2e/year. Payback 2.8 years - Salix fund | | |
| | | Clifton Green Primary School: Insulation - Building Fabric. Loan £5,988.18. Savings: £1,590/year, 30,000kWh/year, 13.9tCO2e/year. Payback 3.8 years - Salix fund | | |
| | | Tang Hall Primary School: Insulation - Building Fabric. Loan £22,492.8, Savings: £4,141.27/year, 125,493 kWh/year, 58tCO2e/year. Payback 5.4 years - Salix fund | | |

## Table 4.3 Ongoing Short-Term Projects – Schools Utility (Other Maintenance Projects) (April 2014 – March 2017)

| Scope | Core Objective | Project Description | Lead Officer | Timescales |
|---|---|---|---|---|
| Schools Utility | Improve energy efficiency | Huntington Secondary: Replaced old biology block with a new modernised block | AK | Completed 2014/15 |
| | | Burton Green Primary: Roof repairs | CM | |
| | | Canon Lee Secondary: Roof repair | | |
| | | Danesgate Community: Replacement TCU, roof and window repair | | |
| | | Copmanthorpe Primary: Rewire | AK | |
| | | Fulford Secondary: Window replacement | | |
| | | Huntington Secondary: Science Labs | | |
| | | Millthorpe Secondary: Roof repairs phase 1 | | |
| | | Millthorpe Secondary: Windows | | |
| | | Stockton on the Forest Primary: Windows | | |
| | | Yearsley Grove Primary: Rewire | | |
| | | York High: Roof repairs phase 1 | | |
| | | Tang Hall Primary: Rewire / DB replacement | | |

## Table 4.4 Ongoing Short-Term Projects – Street Lighting (April 2014 – March 2017)

| Scope | Core Objective | Project Description | Lead | Timescales |
|---|---|---|---|---|
| Street Lighting | Reduce energy consumption/costs, reduce maintenance costs | Conversion of street lighting lanterns from 35w sox to 25w LED. Cost: ~£200,000, savings: 252,150 kWh/year, 116.5 tCO2e/year, £25,215/year, payback <8 years. | DG, LD | Completed Oct 2014 - Feb 2015 |
| | | Conversion of 6,900 street lighting lanterns (predominately in residential areas across the city, 50-60% reduction in street lighting between midnight and 6am, and up to 75% reduction in arterial roads). Cost: £1.7 million, Savings: 1,725,259.5 kWh/year, 797.4tCO2e/year, £203,302/year (after installs), payback 8.5 years. | | Ongoing - end March 2016 |
| | Increase financial savings and billing accuracy | Installation of a Photo-Electric Cell Unit (on the Eco Depot's rooftop) to accurately assess and monitor the streetlight's switching times. This unit has allowed Street Lighting to go from passive billing to dynamic half-hourly billing. (Savings to be estimated by April 2016) | | Apr-15 |
| | Reduce energy consumption and maintenance costs | Bollards De-Illumination: Replacement of illuminated bollards with LED and retro-reflective bollards. | | TBC - subject to HSE risk |

## Table 4.5 Ongoing Short-Term Projects – Fleet Transport (April 2014 – March 2017)

| Scope | Core Objective | Project Description | Lead Officer | Timescales |
|---|---|---|---|---|
| Fleet Transport | Reduce fuel use, vehicle wear and risks of accidents | Trials carried out to test the efficiency of two Travel Management Units: Lightfoot and Green Road. If successful, the chosen TMU will be installed into the Civil&Highways, Building Maintenance and Waste Services vehicles. Estimated fuel savings: approx. 10-12% | CS | Ongoing |
| | Reduce fuel consumption, emissions and maintenance costs | Trial (with Unipart Rail) to test the efficiency of Diesel additive on 34 vehicles at Hazel Court. The additive increases diesel combustion efficiency, safely cleans the engine, mitigates water contamination issues, fuel blockages and vehicle failures. Additive costs: 1p/litre. It is estimated to save between 3-5% of fuel consumption and costs. | | Dec 2015 - Jun 2016 |
| | Reduce atmospheric pollution (Nox emissions) and costs | Purchase of fuel in bulk. Addition of Adblue into the fuel mixture to convert harmful nitrogen oxides, from the exhaust of diesel vehicles, into harmless nitrogen and steam. | | Ongoing |
| | Reduce fuel consumption and costs | Reduced fuel consumption due to the increased use of efficient vehicles and decreased use of total number of vehicles used throughout various departments in the Council. Recorded savings (period 10 2015/16): 17,706L, £114,428. | | Ongoing |

## Table 4.6 Ongoing Short-Term Projects – Business Travel (April 2014 – March 2017)

| Scope | Core Objective | Project Description | Lead Officer | Timescales |
|---|---|---|---|---|
| Business Travel | Restructure business travel patterns to reduce GHG emissions and costs | Reduction in the number of fuel allowances given to staff for travelling on taxi and private cars; and encourage the increase usage of train, bus, hire cars and bicycles. | MH, JW3 | 18/04/2016 |
| | Encourage use of zero carbon & low maintenance cost vehicle | Introduction of a pool bike scheme in West Offices. | | Ongoing |

**Table 4.7 Ongoing Short-Term Projects – Social Housing (April 2014 – March 2017)**

| Scope | Core Objective | Project Description | Lead Officer | Timescales |
|---|---|---|---|---|
| Social Housing | Reduce fuel poverty and improve households' energy efficiency | Energy efficiency retrofits to the Council's Social Housing stock: loft insulation, cavity wall insulation, air source heat pumps, non-traditional refurbishments (walls), doors enhancement, window double glazing, internal wall insulation, installation of A-rated gas boilers and controls upgrade, LED communal lighting, upgrade of central communal boilers, remediation of damp properties (with insulation and boiler ventilation), tenant training programmes on energy efficiency. | NR, LR | Ongoing |
| | Enable Carbon Management | Development of a new Green Business Plan to provide a cohesive framework for planning sustainable improvements to the housing stock. | | 2016/17 |

### 4.4 Medium-Term Projects ( April 2017 – March 2018)

Between 2017/18 and 2018/19, the Council to date has plans relating to fleet transport including the purchase of transport fuel in bulk (to save costs) and schemes to potentially reduce fuel consumption, emissions and maintenance costs through use of fuel additives or other technologies. The Business Travel Management Unit is planning to replace existing pool cars with electrically-powered cars that will be charged with renewable energy (from a PV installed at Hazel Court) (Table 4). Plans also include estate carbon saving projects including the Burnholme redevelopment project and possible ECO-Depot improvement scheme.

**Table 5. Medium-Term Carbon Saving Projects (April 2017 – March 2018)**

| Scope | Core Objective | Project Description | Lead Officer |
|---|---|---|---|
| Corporate Utility | Financial savings (water bill) | Water deregulation competition (between suppliers) - lead by the YPO. | GC |
| Corporate Utility | Improve energy efficiency and generate renewable energy | Retrofit programme for improving the energy efficiency of the surrounding buildings at York ECO-DEPOT and explore additional solar PV. Estimated CAPEX: 50,000. | GC |
| Street Lighting | Reduce energy consumption/costs, reduce maintenance/routine lamp changes costs | 1,050 LED lighting conversions. Costs: £388,272, Savings: 598,395kWh/year, 276.6 tCO2e/year, £38,314/year, payback 10 years. | DG, LD |
| Business Travel | Generate renewable energy and reduce fuel consumption | Replacement of existing pool cars with EV charged with electricity from the national grid. | MH, JW3 |

### 4.5 Long-Term Carbon Saving Projects (Post April 2018)

The long-term projects proposed involve improvements to the energy efficiency of the corporate estate (taking into account the changing operational models of the council and estate) and the wider city's assets such as community assets and schools. They also include projects to integrate renewable energy technologies across our estate and the city's growing electric vehicle charging infrastructure. All are currently subject to further work and securing funding.

**Table 6. Long-term carbon saving projects (Post April 2018)**

| Scope | Core Objective | Project Description | Lead Officer |
|---|---|---|---|
| Corporate Utility | Improve energy efficiency and generate renewable energy | Deliver a pipeline of low carbon projects based on the Energy Accelerator funding from ELENA (subject to approval 2016) | JW |
| | | Retrofit, refurb and possible integration of renewable energy in 10-12 locations in the city of York. | GC |
| Schools Utility | Improve energy efficiency and generate renewable energy | Build on Salix scheme to accelerate energy efficiency and solar schemes on Schools across York. Estimated | JW2 |
| Fleet Travel | Improve air quality/reduce vehicle emissions | Introduction of electric vehicles as part of normal vehicle replacements where cost effective and practical. | CS |
| Business Travel | Zero carbon vehicles | Charge EVs with renewable energy generated from the Council estate. | MH, JW |
| Renewable Energy | Improve energy efficiency, generate renewable energy and reduce fuel consumption | Integration of renewable energy in the built environment - development of 7 HYPER hubs with, where viable, solar PV to power the charging Electric buses / fleet / cars. | DM JW |
| | | Apply for EU ERDF funding to support the development of 7 HYPER hubs with solar PV and energy storage | DM JW |
| | | Electric buses using ultra fast terminal charging systems (to enable all day running). 2 full electric Park and Ride sites in York plus retrofitted City Sightseeing electric bus plus University route representing 11% of bus movements in York. Ambition to take this to 80% of bus movements. | DM |
| | | Part retrofit / part new build at The Guildhall. Creating high / exemplar / innovation in terms of energy efficiency standards and integrated renewable energy i.e. water heat pump / solar. | DW |

## 5. EFFECTIVE CARBON MANAGEMENT AND ENABLING PROJECTS

This section discusses the steps that the Council will take to ensure that carbon and energy management becomes a core consideration in all corporate function from strategic to operational levels. It will also enable the council to rapidly be in a position to set quantifiable carbon targets.

In the absence of a local authority standard reporting tool, we have chosen to use the Carbon Trust's carbon management self-assessment matrix (Appendix D). This considers the extent to which an organisation has embedded carbon management, through seven indicative areas:

- Corporate strategy
- Programme management
- Responsibility
- Data management
- Communication and training
- Finance and investment
- Policy alignment

A maximum score of 5 is achievable in each area with 0 scoring worst performance and 5 best. We have carried out a self-assessment of how the council currently scores against this matrix. The score is set out below in Table 6. We have also set some targets to reach (for the short, medium and long-term) to demonstrate how we will improve carbon management across the estate (see Tables 7, 8 and 9). It is hoped that the new approach will enable the Council to further progress against this matrix over the coming years, enabling a score of between 4 - 5 to be achieved for all areas (where feasible and subject to resources).

**Table 7. Qualitative Assessment Summary**

| CEMP Enabling Projects | Core Objective | 2014/15 & 2015/16 Baseline Score | 2019/20 Target Score |
|---|---|---|---|
| Corporate Strategy | **I. Enable effective carbon management across the estate** | 3 | 4-5 |
| Programme Management | **II. Coordinate actions to maximise efficiency and savings** | 2 | 4-5 |
| Responsibility | **III. Allocate clear carbon management responsibilities across the Utilities Board, to govern the** CRSMP **and maximise efficiency and savings** | 3 | 4-5 |
| Data Management | **IV. Establish the Council's carbon and expenditure baseline (for 2014/15), set interim reduction targets (up to 2020) and regularly review progress against targets.**<br><br>**i. Measure the renewable energy generated across the Corporate and Schools' estate** | 3 | 4-5 |
| Communication and Training | **V. Raise staff awareness and involvement in corporate carbon and wider sustainability actions through increased communications and training** | 2 | 4-5 |
| Finance and Investment | **VI. Specify clear capital projects and actions needed to meet targets and routinely seek internal and external funding to deliver change** | 2.5 | 4-5 |
| Policy Alignment | **VII. Through the One Planet York Programme, implement a corporate One Planet Policy that supports carbon management across the Council and embeds it into everything the Council does** | 2 | 4-5 |
| **Total** | | **17.5/35** | **28-35/35** |
| **Percentage** | | **50%** | **80-100%** |

In line with the Carbon Trust's carbon management standards, the following section sets out how we are currently performing and how we will create effective carbon management across the council (including energy, water, transport fuel and waste):

**6.1 Corporate Strategy**

Our aim is to embed carbon management within the Council.

Through the self-assessment matrix we currently scored 3/5 because we already made a commitment, in the Climate Change Action Plan (2010) and in the Council Plan (2015), to embed sustainability across the organisation and to reduce carbon emissions. Through this CRSMP, we will work towards a score of 4-5 (by 2019) by setting top level reduction targets and annually reviewing this management plan.

**6.2 Programme Management**

For this programme to be successful and maximise efficiencies and savings, it is essential to coordinate all carbon and resource management activity across the Council.

Through the self-assessment matrix assessment, programme management is one of the weakest areas, scoring 2/5. Even though the Council has established a Utilities Board to oversee and drive forward the CRSMP, reviews of carbon management are done on an ad-hoc basis. To address this and to coordinate the delivery of corporate carbon and financial savings by the end of 2019/20 (and raise the score to 4-5), the Utilities Board will meet no less than between two to four times a year to review progress against targets, identify areas for improvement and adapt this management plan and remove blockages. As a result of this coordinated approach, we are aiming to annually publish (from 2016/17) the Council's progress towards delivering this CRSMP.

**6.3 Responsibility**

There are already some responsibilities for carbon management across a number of departments, but the Council acknowledges that for embedding carbon management into the organisation, it is important to engage with all the staff and through a network of champions, the members of the Utilities Board. The score for this section is currently 3 as there is an individual that provides full time focus for carbon reduction and coordination across the Council (Sustainability Officer), a Senior Sponsor actively engaged in the process (Head of Planning and Environmental Management and Chair of the Utilities Board), as well as 22 other members involved through the Utilities Board (Appendix D). Nevertheless, staff involvement needs to be increased to further support the delivery of this CRSMP and attain a score of 4-5 by 2019. To achieve this, we are aiming to: integrate carbon management responsibilities into all service areas (including the Directorate's Service Plan), strengthen our Champion Network by widening it across all areas of the Council, as well as reinforce availability of our central carbon-reduction advice. This work will deliver the council's commitment to be an OnePlanetCouncil, specifically the zero carbon ambitions. It will also help show strong leadership across the city and within the emerging OnePlanetYork network.

**6.4 Data Management**

The main objective of this CRSMP is to measure and manage the carbon (and other GHG's where possible) that the Council is responsible for emitting, to set reduction targets up to 2020 (against a 2014/15 baseline) and to monitor progress towards targets regularly. To successfully achieve this, data needs to be reliable as the outcome and quality of this programme depends in part on how well the data is managed. The baseline score given for this section was 3 /5 on the self assessment matrix. This was mainly due to the fact that the Council was collating carbon emissions for a limited scope (i.e. data compiled excluded water consumption, renewable energy generation, landfill waste disposal, etc.), some of the data was of poor quality (incomplete or estimated) or even absent (i.e. no gas consumption data). Despite this, we believe that the work carried out through this CRSMP and the recommendations proposed, already represent an effort towards improving data management. Therefore by 2019, we aim to improve data quality by creating a complete and up-to-date energy portfolio (that systematically records activity and costs data into an online portal/database), continuously keep track of progress against targets (on a project log) to annually publicise the results, and (more importantly) verify the quality of the data externally. Additionally we aim to continue to update the Display Energy Certificates and Annual Reports (for buildings >1000$m^2$), and generate new ones for all corporate buildings with floor area between 250-999$m^2$ that are visited by the public (as per new legislation).

Given that the quality of the data requires more work, and the fact that we have incomplete information on the proposed carbon saving projects', we can not set realistic carbon reduction targets yet. Nevertheless, we hope that with the recommendations proposed in this section, we will be able to set reduction targets and monitor progress against these by 2016/17 and work towards reaching level 4-5 of the carbon trust's effective carbon management matrix by 2019/20.

**6.5 Communication and Training**

The Council's core objective for this section is to create a commitment to publicly report progress towards delivering the programme annually, celebrate success and work carried out across teams and to empower and increase staff involvement, all under the banner of the new OnePlanetCouncil programme and associated OnePlanetCouncil Communication Plan.

This section received scored 2 on the assessment matrix as currently staff are given carbon management information on an ad-hoc basis and there is no formal communications programme to increase staff and public's awareness of the Council's carbon related work. To improve the score to 4-5 by 2019, we are planning to regularly publish the Council's progress towards targets (on a quarterly basis through internal communications, staff suggestion schemes, newsletters and on an annual basis through progress reports), give staff (as part of their induction) sustainability and carbon training, and assess staff awareness and sustainability culture through surveys (to identify areas for improvement). This work will also align and be delivered in part through the new OnePlanetCouncil work programme and associated OnePlanetCouncil Communication Plan.

**6.6 Finance and Investment**

To meet the future targets imposed, it is essential to specify clear capital projects and actions needed to meet targets, and to routinely obtain internal and external funding**.**
The baseline score obtained for this section was 2.5/5 because even though there is a couple of ring-fenced funds available for financing projects related to energy efficiency and renewable energy, financing for corporate carbon reduction projects (for all scopes) still remains ad-hoc and siloed across teams. To increase this score to 4-5 by 2019, we will need to coordinate actions and secure funding for a range of carbon reduction initiatives and routinely obtain external funding to achieve them. (See Appendix D for possible sources of funding).

**6.7 Policy Alignment**

Through the self-assessment matrix assessment, policy alignment scored 2/ 5. This was because currently the Council is drafting a Corporate OnePlanetCouncil policy to support, in part, carbon management across the Council. To raise the score to 4-5, we are planning to publish this Policy in 2016. It will enhance the Council's commitment to tackling climate change, embedding sustainability into all working procedures and into the organizational culture of the Council, and increase staff's awareness and involvement in sustainability matters. To ensure that this policy is being correctly implemented, we plan to continuously review the CRSMP and ensure that all actions are aligned to it. This work will also align and be delivered in part through the new OnePlanetCouncil work programme.

To demonstrate how we are going to achieve a score of 4-5 in all areas of the carbon trust's embedding matrix by 2019 (Table D1), the following section draws out (from Table D2) the main actions that need to be implemented during the short, medium. Long-term actions will be developed post 17/18 of this programme**:**

**Table 8. CRSMP Enabling Projects – Ongoing / Short-Term (2014/15 – 2016/17)**

| CEMP Enabling Projects | Description | Lead Officer | 2016/17 Target Score |
|---|---|---|---|
| Corporate Strategy | • CRMP endorsed and publicised with staff | JW | 4 |
| Programme Management | • Report progress of CRSMP to the Utilities Board (quarterly) | JW | 4 |
| Responsibility | • Reinforce commitment and involvement of all members of the Utilities Board<br>• Integrate carbon management in the responsibilities of most Service Areas to enhance staff engagement | JW | 3.5 |
| Data Management | • Create a complete and up-to-date corporate and schools energy portfolio | GC | 3 |

| | | | |
|---|---|---|---|
| | ○ Complete renewable energy portfolio<br>• Update the status of the carbon-saving projects and monitor progress towards targets (quarterly)<br>• Develop longer term management system to ensure energy efficiency and carbon reduction<br>○ Update the DECs and ARs (buildings >1000m$^2$)<br>○ Generate DECs & ARs for all corporate buildings with floor area between 250m$^2$ - 999m$^2$ that are visited by the public, as per new legislation<br>• Work with npower to finish rolling out the smart meters installs on all corporate buildings | JW<br><br>GC | |
| Communication and Training | • Publish (internally and externally) the new CRSMP once it is endorsed by the Utilities Board<br>• Meet with officers across the Council to discuss progress made against targets and CRSMP recommendations, and identify opportunities for improvement (quarterly) | JW | 3.5 |
| Finance and Investment | • Streamline energy bills<br>• Specify clear capital projects and actions needed to meet targets (including renewable energy generation) and allocate more centralised resource for carbon saving projects<br>• Identify additional (internal and external) funding opportunities for subsidizing ongoing and future carbon-saving projects (quarterly) | JW & DG<br><br>All Utilities Board | 3 |
| Policy Alignment | • OnePlanetCouncil Policy and CRSMP adopted and implemented by Council departments<br>• Comprehensive review of CRSMP and Utilities Board to identify and remove barriers to GHG reduction (annually) | JW<br><br>All Utilities Board | 3.5 |

**Table 9. CRSMP Enabling Projects – Medium-Term (2017/18 – 2018/19)**

| CEMP Enabling Projects | Description | Lead Officer | 2018/19 Target Score |
|---|---|---|---|
| Corporate Strategy | • Carry out the annual review of progress against targets | JW | 4-5 |
| Programme Management | • Provide quarterly / half yearly performance reports to the Utilities Board and CMT (as required) | JW | 4 |
| Responsibility | • Explore carbon and resource smart management as part of all staffs roles.<br>• Reinforce availability of carbon-reduction advice<br>• Share this work with the wider city to encourage local action (subject to resources) | JW | 4-5 |
| Data Management | • Regular collation of baseline data and reduction targets for all sources<br>• Systematic recording system in place for energy consumption and renewable energy generation<br>• Data externally verified (if appropriate) | GC | 4 |
| Communication and Training | • Regular staff updates<br>• Annually publish progress of the CRSMP and progress against targets | JW | 4 |
| Finance and Investment | • Commit financial resources for a +2 year programme<br>• Routinely seek external funding<br>• Increase the ring-fenced funds for carbon reduction initiatives | JW & DG<br><br>All Utilities Board | 4-5 |
| Policy Alignment | • Comprehensive review of the One Planet Policy with the CMT and Utilities Board to identify and remove barriers to GHG reduction (quarterly)<br>• Embed sustainability into all procedures<br>• Sustainability team provide advice and review, when requested | JW | 4 |

## Acronyms

| | |
|---|---|
| **CEMP-SIP** | Caron and Energy Management Programme – Strategic Implementation Plan |
| **CO2** | Carbon dioxide |
| **CO2-eq** | Carbon dioxide equivalent |
| **$CH_4$** | Methane |
| **CHP** | Combined heat and power |
| **CYC** | City of York Council |
| **DEC** | Display Energy Certificates |
| **DEFRA** | Department for Environment, Food and Rural Affairs |
| **FIT** | Feed-in tariff |
| **GHG** | Greenhouse gases |
| **GSHP** | Ground source heat pump |
| **$N_2O$** | Nitrous oxide |
| **PV** | Photovoltaic |
| **SIP** | Strategic Implementation Programme |
| **WRAP** | Waste and Resources Action Programme |

## Glossary

**Activity Data:** Data that indicates the level or quantity of an emissions-generating activity, e.g. kWh of electricity consumed, or kilometres travelled by a lorry. Emissions levels are usually calculated by collecting activity data, which are then converted into emissions data using conversion factors or tools.

**Baseline year (or base year):** The year against which a company's emissions are tracked over time.

**Carbon baseline:** is a record of approximate carbon emissions in a chosen year. Targets and performance in reducing emissions are measured against this figure as a percentage of the baseline value.

**$CO_2e$:** A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

**Conversion Factor:** Conversions factors enable conversion of activity or energy use data (e.g. kWh of electricity consumed), into the amount of carbon dioxide emissions that will result.

**Costs:** Indicates the amount charged for consuming a good and / or a service.

## Appendix A: Methodology

This section describes the methodology used for compiling the baseline, carbon saving projects and for setting relevant reduction targets. It covers:

1) scope
2) different sources used for collating the activity[5]
3) costs data
4) calculating carbon emissions (whilst pointing out the difficulties encountered when gathering the data)
5) form used for compiling carbon saving projects.

**Scope**

To better understand how the Council can significantly reduce its carbon emissions and related expenditure, this work measured the carbon baseline from the major emission sources/activities within the Council:

A. Direct corporate emissions: Emissions the Council has direct control and responsibility for managing

- Corporate energy consumption
  - Electricity
  - Natural gas
  - Gas oil
  - Water
  - Renewables
    (Consumption of renewable sources to generate electricity and heat – through photovoltaic, solar thermal, biomass, and heat pumps technologies)
- Street Lighting electricity consumption
- Fleet Transport fuel consumption
- Business Travel
  - Cars
  - Train
- Corporate waste disposal

B. Indirect emissions: Emissions the Council does not have direct control over but can exert a level of (financial) influence for reducing them.

- Schools Energy Consumption
  - Electricity
  - Natural gas
  - Gas oil
  - Water
  - Renewables

[5] Activity refers to all carbon emitting actions (fuel consumption, waste disposal, car travel, etc

- Schools waste disposal
- Social Housing Energy Consumption
  (For generating heating, hot water, lighting and ventilation)

## A. EMISSIONS AND COSTS BASELINE

To determine the baseline, activity and costs data were compiled from the Council's 2014/15 financial year (01/04/2014 – 31/03/2015) as it is the last full year for which figures are available. (See Table A1 for the various data sources used). The activity data was converted into carbon emissions equivalent ($CO_2eq$) (and into $CO_2$, $CH_4$ and $N_2O$ wherever appropriate), using the conversion factors and guidelines provided by DEFRA for the year 2014 (Table A2).

Although we used the most comprehensive data sources that the Council had available, we identified several data management issues that need to be addressed so as to improve the quality of the data in the future. Specifically, the data that was compiled from the utility reports/invoices may: reflect both actual and estimated meter readings, represent bill re-adjustments and/or include/exclude between two to three months of data for more/less the full baseline year (as some bills are sent on a quarterly and not on a monthly basis). Hence the data collated from these sources do not necessarily reflect the precise utility consumption and associated costs for the baseline year. It is unclear if all of the items listed on the reports/bills should be included on the baseline, as some accounts could be managed by others. Data is missing for natural gas (Table A1) and renewable energy generated (Table A6). Nevertheless, the Council is currently working with the utility companies and relevant officers to address these concerns (see Section 6 for the recommendations proposed).

## Table A1. Data Source

| Scope | Activity | Activity Data Source | Costs Data Source | Comments |
|---|---|---|---|---|
| **Corporate & Schools Energy Consumption** | Electricity | Npower report on billed amounts | | Whilst we have a substantial amount of information relating to the corporate electricity billing, it is difficult to reconcile building descriptions held by the Council and their status (e.g. rented/managed by the council, etc.) with descriptions provided by npower. |
| | Natural Gas | British Gas (but data is not currently available) | Council's financial records (compiled from the British Gas bills) | Bills have been received for all of our buildings but with the exception of West Offices. Moreover, consumption data from the bills whilst is being checked and recorded, it is not being recorded in a way that can be made immediately available. |
| | Gas Oil | GB Oil report on billed amounts | | |
| | Water | Yorkshire Water report on billed amounts | | |
| | Renewables | N/A | Finance's records | A number of projects have been initiated and implemented from a variety of different sources. Whilst data is held, limited information is available on installed capacity and generation. |
| **Street Lighting** | Electricity | Npower report on billed amounts | | Data is held but unclear if its complete. |
| **Fleet Transport** | Fuel Consumption | Allstar Central Fuel Account | | The baseline for Fleet Transport and Business Travel have duplicated some vehicles (i.e. pool cars owned by the Council and Enterprise hire cars) record their fuel consumption on the same Allstar Central Fuel Account used by Fleet. It is currently proposed that the Pool Cars owned by the Council will be disposed of by the end of the financial year and a separate Allstar account will be allocated for the Business Travel team, erradicating therefore the duplication. |
| **Business Travel** | Car travel | Business Travel's Central Account and Allstar Central Fuel Account | | As above. Also some of the costs paid for car and train travel were estimated as not all the data had been fed-back to the central account (through the expenses claim process), at the time the data was compiled for this report. The baseline does not include taxi and bus travel, as currently there is no system put in place to record this. However the Business Travel team is planning to record these journeys in their central account by December 2015. |
| | Rail travel | Business Travel's Central Account | | About 15% of the rail travel journeys are 'client travel', the rest is Employee Travel. |
| **Corporate & Schools Waste** | Waste disposed in the landfill and recycled | Waste Department's records | Finance's records | The information on tonnage and financial costs are provided by two different sources. Specifically, the tonnes of waste have been estimated from the total litres collected (using conversion data from the government organisation WRAP), and the costs were compiled from the internal recharges done to the council's Commercial Waste department. |
| **Social Housing** | Energy performance (SAP ratings) | Social Housing's SAP inventory records | N/A (energy costs are not recorded by the Council) | The carbon emissions were estimated using the SAP ratings of each individual household. A baseline from actual consumption and billed amounts cannot be obtained as the Council does not record this data (as the tenants receive and pay their own energy bills). |

**Table A2. DEFRA Conversion Factors**

| Scope | DEFRA Conversion Factor | kg CO2e | kg CO2 | kg CH4 | kg N2O |
|---|---|---|---|---|---|
| **Energy** | | | | | |
| Electricity (kWh) | UK electricity | 0.49426 | 0.49023 | 0.00033 | 0.00369 |
| Natural Gas (kWh) | Gaseous Fuels - Natural Gas | 0.184973 | 0.184557 | 0.000304 | 0.000112 |
| Gas Oil (L) | Liquid Fuels - Gas Oil | 2.92577 | 2.726496 | 0.00253 | 0.196745 |
| Water (m3) | Water Supply | 0.3441 | | | |
| **Street Lighting** | | | | | |
| Electricity (kwh) | UK electricity | 0.49426 | 0.49023 | 0.00033 | 0.00369 |
| **Fleet Transport** | | | | | |
| Diesel (l) | Liquid Fuels - Diesel (average biofuel blend) | 2.6024 | 2.5813 | 0.0007 | 0.0204 |
| LPG (l) | Gaseous Fuels - LPG | 1.502252 | 1.500031 | 0.000631 | 0.00159 |
| Gas Oil (l) | Liquid Fuels - Gas Oil | 2.92577 | 2.726496 | 0.00253 | 0.196745 |
| Super Unleaded (l) | Liquid Fuels - Petrol (average biofuel blend) | 2.1914 | 2.1833 | 0.003 | 0.0051 |
| Unleaded (l) | Liquid Fuels - Petrol (average biofuel blend) | 2.1914 | 2.1833 | 0.003 | 0.0051 |
| **Business Travel** | | | | | |
| Car Distance (mi) | Business Travel - Car (average size, unknown fuel) | 0.304858 | 0.302975 | 0.000161 | 0.001722 |
| Rail Distance (mi) | Business Travel - National Rail | 0.029440567 | 0.029266583 | 2.48548E-05 | 0.000149129 |
| **Waste** | | | | | |
| Landfill General Waste (t) | Waste Disposal - Commercial and Industrial Waste | 199.00 | | | |
| Recycling (t) | Waste Disposal - Commercial and Industrial Waste | 21.00 | | | |

These factors were taken from the 'advance option' in the following link: http://www.ukconversionfactorscarbonsmart.co.uk/?wb48617274=4A437CFE

## CORPORATE BASELINE (DIRECT EMISSIONS)

The Corporate baseline for the year 2014/15 includes all of the buildings, facilities and sites that the council uses to deliver a service to the public (in its widest sense) and where the council has responsibility for paying the bill. The following are the range of facilities that were included on the Corporate Energy Consumption baseline:

**Types of Corporate Sites**

- Admin Accommodation
- Car Parks
- Community Buildings
- Crematorium
- CCTV Metered
- CCTV Unmetered
- Education Buildings
- Markets
- Miscellaneous
- Parks / Leisure
- Park & Rides
- Public Libraries
- Pumping Stations
- Social Care Properties (Day Centres, Hostels, Residential Homes, Training Centres)
- Sports Facilities
- Toilets
- Vacant
- Waste Recycling Facilities
- Youth Centres

Please note that Business Centres and Travellers' Sites have not been included on the baseline, as the Council does not directly manage/occupy the sites and thus is neither responsible for controlling the carbon emissions nor for paying the bills.

It is also important to note that several properties that were included on the baseline were vacated during 2014/15 (Table 3) and as a consequence the emissions and costs trends changed throughout the year.

**Table A3. Properties vacated during 2014/15**

| Type | Date | Property Name | Address |
|---|---|---|---|
| Disposal | 01/08/2014 | 4 Lindley Road | York, YO30 4TE |
| Disposal | 12/08/2014 | Monk Bar Garage | Lord Mayors Walk, YO31 7HB |
| Disposal | 14/01/2015 | Parkside Commercial Centre | Terry Avenue, YO23 1JP |
| Disposal | 03/02/2015 | Theatre Royal | St Leonards Place, YO1 7HD |
| Disposal | 30/05/2015 | St Antonys House | Brook Street, York, YO31 7QQ |
| Lease Terminated | 26/09/2014 | 20-24 Swinegate | York, YO1 8AZ |

**STREET LIGHTING BASELINE**

The baseline includes the metered and unmetered street lights that are installed across the city of York, which the council has responsibility of paying the electricity bills for. The following are the types of metered and unmetered streetlights included in the baseline:

**Metered Streetlights**

- Variable message signs
- Feeder pillars
- Traffic lights
- Streetlights
- Pedestrian crosswalk lights
- Lighting kiosks

**Unmetered Streetlights**

- Door entry systems
- Telemetry weather station
- Lighting at:
    - car parks and clocks
    - staircases
    - bus shelters
    - communal areas
- Warden call systems
- TV amplifiers
- Bollards and signs
- Streetlights
- Traffic lights

**FLEET TRANSPORT BASELINE**

Fleet Transport refers to the use of specialised vehicles (e.g. refuse freighters, caged vans) and a variety of standard vehicles larger than a car (minibus, transit van, etc), that are used for either travel (for people) or transport (for equipment or goods) purposes. Hence, the baseline for Fleet Transport includes all of the vehicles that record their fuel consumption on the Council's Allstar Central Fuel Account.

**BUSINESS TRAVEL BASELINE**

Business Travel refers to the use of the following vehicles, by staff, for work-travel purposes:

- Pool cars (either from the council-wide scheme or from a car dedicated to a particular team or service)
- Pool bikes
- Fleet bikes (which are dedicated to specific teams)
- Staff owned bikes (used at work)

- Taxis (either Fleetways or any other provider)
- Trains
- Buses
- Hire cars
- Staff own cars used for work (with, or without, claims for mileage)

However, the Business Travel baseline does not include bus, taxi and bicycle travel (as explained in Table A1).

**CORPORATE WASTE BASELINE**

The waste baseline is an estimation of the tonnes of waste compiled from all of the corporate offices (by the Council's Commercial Waste Department), which are either taken to the landfill or recycled at the Council's Waste Recycling Centre. And the costs reflect the value paid by the Council for the size of the bins collected and the frequency of this service.

The types of waste collected are as follows:

- Waste disposed in the landfill
    - General waste
- Recycled waste
    - Co-mingled (paper, cardboard, plastic bottles and cans)
    - Cans and plastic bottles
    - Cardboard and paper
    - Glass bottles and jars

## BASELINE – INDIRECT EMISSIONS

### SCHOOLS BASELINE

The Schools baseline includes all of the state schools that are funded and were funded by the Council throughout the 2014/15 baseline year (academies have been excluded) (see Table A4 & A5).

**Table A4. 2014/15 Schools Included on the Baseline**

| Name | Comments |
|---|---|
| **Nursery School** | |
| St Pauls Nursery School | |
| **Primary Schools** | |
| Acomb Primary School | |
| Archbishop Of York`s C Of E Junior School | |
| Badger Hill Primary School | |
| Bishopthorpe Infant School | |
| Burton Green Primary School | To become academy in the next 3 years |
| Carr Infant School | |
| Carr Junior School | To become academy in the next 3 years |
| Clifton Green Primary School | |
| Clifton with Rawcliffe Primary School | |
| Copmanthorpe Primary School | |
| Dringhouses Primary School | |
| Dunnington C Of E Primary School | |
| Elvington C Of E Primary School | |
| Fishergate Primary School | |
| Headlands Primary School | |

| | |
|---|---|
| Hempland Primary School | To become academy in the next 3 years |
| Heworth CE Primary School | |
| Hob Moor Community Primary School | To become academy in 2016 |
| Huntington Primary Academy | Became academy in 01/04/2015 |
| Knavesmire Primary School | To become academy in 2016 |
| Lakeside Primary School | |
| Lord Deramore`s Primary School | |
| Naburn C Of E Primary School | |
| New Earswick Primary School | |
| Osbaldwick Primary School | Previously Derwent Infant School |
| Osbaldwick Primary School The Leyes Site | |
| Our Lady Queen of Martyrs RC Primary School | Formerly called English Martyrs RC Primary School |
| Park Grove Primary School | |
| Poppleton Ousebank Primary Academy | Academy since 01/04/2015 |
| Poppleton Road Primary School | |
| Ralph Butterfield Primary School | |
| Rufforth Primary School | |
| Scarcroft Primary School | To become academy in 2016 |
| Skelton Primary School | |
| St Aelred`s RC Primary School | |
| St Barnabas` CE Primary School (PFI) | |
| St Georges RC Primary School | |
| St Lawrence`s C Of E Primary School | |
| St Mary`s C Of E Primary School | |
| St Oswalds C Of E Primary School | |
| St Pauls C Of E Primary School | |
| St Wilfrid`s RC Primary School | |

| | |
|---|---|
| Stockton On Forest Primary School | |
| Tang Hall Primary School | |
| Westfield Primary Community School | Includes Westfield County Junior School and Westfield Infants School |
| Wheldrake With Thorganby C Of E Primary School | |
| Wigginton Primary School | |
| Woodthorpe Primary School | |
| Yearsley Grove Primary School | Includes Yearsley Grove Infants School and Yearsley Grove Junior School |
| **Secondary Schools** | |
| All Saints RC Secondary School | |
| Burnholme Community College | School closed in August 2014, now called Burnholme Community Hub |
| Canon Lee Secondary School | Includes Canon Lee The Arts but it may be demolished next year |
| Fulford Secondary School | To become academy in the next 3 years |
| Huntington Secondary School | |
| Joseph Rowntree Secondary School | To become academy in the next 3 years |
| Millthorpe Secondary School | To become academy in 2016 |
| York High School | To become academy in the next 3 years |
| **Special Schools** | |
| Applefields School | |
| Danesgate | Npower's electric report did not include this school |

(Source: Schools Planning Team 2015)

**Table A5. Institutions Not Included On the Schools Baseline**

| Type | Name | Description |
|---|---|---|
| Primary School | Haxby Road Primary Academy | Academy since 01/02/2014 |
| | Robert Wilkinson Academy | Academy since 01/04/2014 |
| Secondary School | Archbishop Holgate's C Of E Academy | Academy since 01/04/2011 |
| | Manor C of E Academy Buildings & Land | Academy since 01/04/2011 |

**SCHOOLS WASTE BASELINE**

The school's waste baseline is compiled by an estimate of the tonnes of waste collected from all of the schools that used the Council's waste collection service (excluding academies). As with the corporate waste, the waste disposed in the schools is also taken to the landfill and recycled in the Council's Waste Recycling Centre, as follows:

- Waste disposed in the landfill
  - General waste
- Recycled waste
  - Cans and plastic bottles
  - Cardboard and paper

**SOCIAL HOUSING**

The baseline of the Council's social housing stock reflects the potential carbon emissions that could be generated based on each household's energy performance through an assessment know as SAP (Standard Assessment Procedure).

The housing stock includes just over 8,000 dwellings. For all of these dwellings, the Council (acting as a landlord) is responsible of implementing energy efficiency improvements (through roll-out based programmes) and of calculating their individual SAP ratings. These SAP ratings provide an accurate and reliable assessment of dwelling energy performance and thus can be used for estimating the household's carbon emissions (related to energy consumption).

For this reason, the Housing Asset Management Team used the SAP ratings of each individual household to estimate the total carbon baseline of the Council's housing stock (using AutoAssessorPRO).

However, it is important to note that an energy baseline, calculated from the household's actual consumption and billed amounts cannot be obtained because the tenants and not the Council receive and pay the energy bills.

Similarly, a baseline for the carbon emissions and related costs of the waste generated in the housing stock cannot be calculated, as this type of data is not recorded in a way that is immediately available.

**RENEWABLES BASELINE**

A number of projects have been initiated and implemented on the corporate buildings, schools and social housing stock. Whilst some data is held, limited information is available on installed capacity and generation (Table 12). It is also not coordinated and held in one central place.
Specifically, the corporate baseline only includes the costs for the usage of biomass boilers in West Offices and not for the operation of the other renewable energy technologies (such as other boilers installed across the estate). Also, given that the renewable energy portfolio has not been updated in a while, it is unclear if the costs provided for the schools' baseline is in any sense complete.
There is limited information on the total renewable energy that is being generated on the housing stock and on the savings being made by the tenants, as the Council has no feasible way of recording this (as mentioned in the previous section).

In conclusion, given the lack of available data on renewable energy (mainly on the Council estate and schools), opportunities could potentially be missed out with financial incentives and procuring better energy contracts, as well as in generating more accurate DECs.

**Table A6. Renewable Energy Portfolio**

| Type | Site | Technology | Installed Capacity (kW) | Estimated / Actual Output (kWh/yr) | FIT / RHI Registered | Comment |
|---|---|---|---|---|---|---|
| Corporate | Acomb Explore Library | Biomass Boiler | 2x50 | 120,000 | No | Not eligible |
| | Energise | Biomass Boiler | 2x450 | 1,071,088 | No | Not eligble |
| | West Offices | PV | 49.92 | 25,000 | No | Not eligible |
| | | Biomass Boiler | 2 x 160 | 328,560 | No | |
| | | CHP | 65 | Out of action | | |
| | ECO-Depot | PV | 52 | 30,000 | No | Not eligible |
| School | Clifton with Rawcliffe Primary School | Biomass Boiler | 2x160 | 500,000 | No | |
| | Danesgate | Biomass Boiler | 1x450 | | No | Not eligible / Is not being used |
| | Huntington Secondary School | Solar Thermal | | | No | |
| | Joseph Rowntree Secondary School | Biomass Boiler | | n/a | | Out of commission |
| | Our Lady Queen of Martyrs RC Primary School | GSHP | | | | |
| | Wheldrake with Thorganby C of E Primary School | Solar Thermal | | | | Not fitted by CYC |
| | York High School | Biomass Boiler | 3X450 | 830,600 | No | Not eligible |
| Social Housing | Gale Farm Court, City Mills, Lincoln Court, Glen Lodge, Barstow House (community heating with CHP) | CHP | | | | |
| | Social housing (541 systems) | PV | | | | Each PV installed has between 16 to 18 panels |

**DATA COLLECTION TEMPLATES**

The following section outlines the questions and forms that were used for compiling information on the baseline and the carbon saving projects.

Template Questions for Compiling the Baseline

**Corporate Utility Consumption:**

- How much electricity (kWh), natural gas (kWh), gas oil (litres) and water ($m^3$) were used throughout the corporate estate during 2014/15? How much was the Council charged for each one? – Please attach the summary spreadsheet of each utility bill, listing the buildings/sites and their respective consumption and charges.

**Schools Utility Consumption:**

- How much electricity (kWh), natural gas (kWh), gas oil (litres) and water ($m^3$) were used throughout the non-academy schools during 2014/15? How much was the Council charged for each one? – Please attach the summary spreadsheet of each utility bill, listing the schools and their respective consumption and charges.

**Street Lighting:**

- How much electricity (kWh) was used from the metered and unmetered streetlights during 2014/15? How much was the Council charged for each one? – Please attach a summary spreadsheet of the 2014/15 bill, including the inventory of the streetlights.

**Fleet Travel:**

- How many litres of fuel (diesel, LPG, gas oil, super unleaded, unleaded) were used in the Council's Fleet during the previous financial year? How much did the Council pay for each one?

**Business Travel:**

- What is the total distance (in miles) travelled by: pool cars, hire cars, staff own cars, taxis, buses, train and bicycle? How much did the Council pay for each one?

**Corporate Waste:**

- How many tonnes of waste were disposed in the landfill, from the Council Offices during 2014/15?

- How many tonnes of waste were recycled, from the Council Offices during 2014/15?

**Schools Waste:**

- How many tonnes of waste were disposed in the landfill, from the non-academy schools during 2014/15?

- How many tonnes of waste were recycled, from the non-academy schools during 2014/15?

**Social Housing:**

- Based on each household's (2014) SAP rating, what is the total $tCO_2e$ emitted from the Council's Social Housing stock?

Carbon Saving Projects - Form

**Table A7. Carbon Saving Projects – Form 1 (all scopes)**

| | |
|---|---|
| **Project Title** | |
| **Project Description** | |
| **Qualitative Benefits** | |
| **Quantitative Benefits** | **Activity savings** *(in tonnes, litres, kWh, miles or $m^3$)*:<br>**Financial savings:** £<br>**CO2** |
| **Project Status** | |
| **Timescales** | **Start date:**<br>**End date**<br>**Lifespan:** |
| **Costs** | £ |
| **Source of Funding** | |
| **Payback Period** | ___ years |
| **Monitoring method** | *(How are the savings recorded, where, who, when, etc.)* |
| **Responsible officer(s)** | |

## Appendix B: Baseline Summary

### Table B1. Baseline Summary

| Scope | Activity | Costs | kg CO2e | kg CO2 | kg CH4 | kg N2O |
|---|---|---|---|---|---|---|
| **Corporate Utility** | | | | | | |
| Electricity (kWh) | 7,197,074.10 | 820,050.54 | 3,557,225.84 | 3,528,221.64 | 2,375.03 | 26,557.20 |
| Natural Gas (kWh) | n.d. | 111,948.06 | n.d. | n.d. | n.d. | n.d. |
| Gas Oil (L) | 94,384.00 | 50,707.15 | 276,145.91 | 257,337.57 | 238.75 | 18,569.59 |
| Water (m3) | 95,450.00 | 230,208.64 | 32,844.35 | | | |
| Renewables | n.d. | 14,484.40 | n.d. | n.d. | n.d. | n.d. |
| Total | | **1,227,398.79** | **3,866,216.10** | **3,785,559.21** | **2,613.78** | **45,126.80** |
| **Schools Utility** | | | | | | |
| Electricity (kWh) | 8,849,895.80 | 1,039,942.49 | 4,374,149.50 | 4,338,484.42 | 2,920.47 | 32,656.12 |
| Natural Gas (kWh) | n.d. | 511,674.00 | n.d. | n.d. | n.d. | n.d. |
| Gas Oil (L) | 307,618.00 | 145,220.32 | 900,019.63 | 838,719.16 | 778.12 | 60,522.35 |
| Water (m3) | 95,980.00 | 248,524.67 | 33,026.72 | | | |
| Renewables | n.d. | 94,691.00 | n.d. | n.d. | n.d. | n.d. |
| Total | | **2,040,052.48** | **5,307,195.85** | **5,177,203.58** | **3,698.59** | **93,178.46** |
| **Street Lighting** | | | | | | |
| Electricity (kwh) | 7,946,915.20 | **905,686.01** | **3,927,842.31** | **3,895,816.24** | **2,622.48** | **29,324.12** |
| **Fleet Transport** | | | | | | |
| Diesel (l) | 756,039.77 | 764,244.74 | 1,967,517.90 | 1,951,565.46 | 529.23 | 15,423.21 |
| LPG (l) | - | - | - | - | - | - |
| Gas Oil (l) | 42,665.80 | 24,783.35 | 124,830.33 | 116,328.12 | 107.92 | 8,394.29 |
| Super Unleaded (l) | 2,088.73 | 2,238.69 | 4,577.24 | 4,560.32 | 6.27 | 10.65 |
| Unleaded (l) | 21,914.54 | 22,331.47 | 48,023.52 | 47,846.02 | 65.74 | 111.76 |
| Total | 822,708.84 | **813,598.25** | **2,144,949.00** | **2,120,299.92** | **709.16** | **23,939.92** |
| **Business Travel** | | | | | | |
| Car Distance (mi) | 705,044.00 | 247,549.05 | 214,938.33 | 213,610.78 | 113.47 | 1,214.08 |
| Rail Distance (mi) | 408,054.00 | 105,236.64 | 12,013.34 | 11,942.35 | 10.14 | 60.85 |
| Total | 1,113,098.00 | **352,785.69** | **226,951.67** | **225,553.12** | **123.61** | **1,274.94** |
| **Corporate Waste** | | | | | | |
| Landfill General Waste (t) | 352.52 | | 70,151.48 | | | |
| Recycling (t) | 160.32 | | 3,366.72 | | | |
| Total | 512.84 | **71,099.21** | **73,518.20** | | | |
| **Schools Waste** | | | | | | |
| Landfill General Waste (t) | 733.42 | | 145,950.58 | | | |
| Recycling (t) | 341.35 | | 7,168.35 | | | |
| Total | 1,074.77 | **85,438.57** | **153,118.93** | | | |
| **GRAND TOTAL** | | **5,496,059.00** | **15,699,792.05** | | | |

**Social Housing**: 31,653,523.33 kg CO2e

## B2. Detailed baseline.

| Scope | Activity | Costs | kg CO2e * | kg CO2 | kg CH4 | kg N2O |
|---|---|---|---|---|---|---|
| **Corporate Utility** | | | | | | |
| Electricity (kWh) | 7,197,074.10 | 820,050.54 | 3,557,225.84 | 3,528,221.64 | 2,375.03 | 26,557.20 |
| Natural Gas (kWh)*** | n.d. | 111,948.06 | n.d. | n.d. | n.d. | n.d. |
| Gas Oil (L) | 94,384.00 | 50,707.15 | 276,145.91 | 257,337.57 | 238.75 | 18,569.59 |
| Water (m3) | 95,450.00 | 230,208.64 | 32,844.35 | | | |
| Renewables | n.d. | 14,484.40 | n.d. | n.d. | n.d. | n.d. |
| Total | | **1,227,398.79** | **3,866,216.10** | **3,785,559.21** | **2,613.78** | **45,126.80** |
| **Schools Utility** | | | | | | |
| Electricity (kWh) | 8,849,895.80 | 1,039,942.49 | 4,374,149.50 | 4,338,484.42 | 2,920.47 | 32,656.12 |
| Natural Gas (kWh) | n.d. | 511,674.00 | n.d. | n.d. | n.d. | n.d. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Gas Oil (L) | 307,618.00 | 145,220.32 | 900,019.63 | 838,719.16 | 778.12 | 60,522.35 |
| Water (m3) | 95,980.00 | 248,524.67 | 33,026.72 | | | |
| Renewables | n.d. | 94,691.00 | n.d. | n.d. | n.d. | n.d. |
| Total | | **2,040,052.48** | **5,307,195.85** | **5,177,203.58** | **3,698.59** | **93,178.46** |
| **Street Lighting** | | | | | | |
| Electricity (kWh) | 7,946,915.20 | **905,686.01** | **3,927,842.31** | **3,895,816.24** | **2,622.48** | **29,324.12** |
| **Fleet Transport** | | | | | | |
| Diesel (l) | 756,039.77 | 764,244.74 | 1,967,517.90 | 1,951,565.46 | 529.23 | 15,423.21 |
| LPG (l) | - | - | - | - | - | - |
| Gas Oil (l) | 42,665.80 | 24,783.35 | 124,830.33 | 116,328.12 | 107.92 | 8,394.29 |
| Super Unleaded (l) | 2,088.73 | 2,238.69 | 4,577.24 | 4,560.32 | 6.27 | 10.65 |
| Unleaded (l) | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 21,914.54 | 22,331.47 | 48,023.52 | 47,846.02 | 65.74 | 111.76 |
| Total | 822,708.84 | **813,598.25** | **2,144,949.00** | **2,120,299.92** | **709.16** | **23,939.92** |
| **Business Travel** | | | | | | |
| Car Distance (mi) | 705,044.00 | 247,549.05 | 214,938.33 | 213,610.78 | 113.47 | 1,214.08 |
| Rail Distance (mi) | 408,054.00 | 105,236.64 | 12,013.34 | 11,942.35 | 10.14 | 60.85 |
| Total | 1,113,098.00 | **352,785.69** | **226,951.67** | **225,553.12** | **123.61** | **1,274.94** |
| **Corporate Waste** | | | | | | |
| Landfill General Waste (t) | 352.52 | | 70,151.48 | | | |
| Recycling (t) | 160.32 | | 3,366.72 | | | |
| Total | 512.84 | **71,099.21** | **73,518.20** | | | |
| **Schools Waste** | | | | | | |
| Landfill General Waste (t) | 733.42 | | 145,950.58 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Recycling (t) | 341.35 | | 7,168.35 | | | |
| Total | 1,074.77 | **85,438.57** | **153,118.93** | | | |
| **Scope** | **Activity** | **Costs** | **kg CO2e *** | **kg CO2** | **kg CH4** | **kg N2O** |
| **Total Cost (£)** | | **5,496,059.00** | | | | |
| **GRAND TOTAL (kg)** | | | **15,699,792.05** | **15,204,432.07** | **9,767.62** | **192,844.23** |
| **GRAND TOTAL (Tonnes)** | | | **15,699.79** | **15,204.43** | **9.77** | **192.84** |

## APPENDIX C: Carbon Saving Projects

**Table C1. Completed Carbon Saving Projects (2013/14)**

| Scope | Core Objective | Project Description | Lead Officer |
|---|---|---|---|
| Corporate Utility | Improve lighting levels and energy efficiency | Fossbank Car Park: Installation of LED lighting. T12/T8 to LED including new fitting | GC |
| | | Energise - Sport Facilitie's Changing Area: Installation of LED lighting. Compact Fluorescent to LED including new fitting | |
| | | Energise Sports Hall: Installation of LED lighting | |
| | | Energise Climbing Wall: Installation of LED lighting | |
| | | Energise: Upgrade of low energy lighting. Compact fluorescent to LED using same fitting | |
| | | Huntington Wilberforce: Upgrade of low energy lighting. T12/T8 using the same fitting | |
| | Improve comfort level, building fabric and energy efficiency | 18 Back Swinegate: Supply and installation of 170mm of insulation (laid at right angles to the existing insulation in a 270m2 loft) | |
| | Reduce waste heat | 29 Castlegate: Installation of Heatmiser Senior heating controls | |
| | Reduce number of computers left switched on, improve energy eff. | ICT / Network PC power management | |
| | Improve energy efficiency | Energise - main pool, small pool, hydro pool: Installation of Powermaster variable speed drives (including 3 IWEMS pool systems). Includes remote device monitoring | |
| | | 22 The Avenue: Rationalise / improve heating controls system | |
| | Optimise voltage | Energise: Installation of pP-560kVA / 800 A power perfector unit | |
| Schools Utility | Improve comfort, reduced heat waste | Ralph Butterfield TRV's: Installation of thermostatic radiator valves | |
| | Reduce waste heat | Acomb Primary School: Replacement of inefficient heating controls | |
| | | Archbishop of York Primary School: Installation of cavity wall insulation and pipework/flange insulation | |
| | | Millthorpe School: Installation of new energy management controls | |
| | | Millthorpe Secondary School: Installation of thermostatic radiator valves and tamper proof covers | |
| | Improve lighting levels and energy efficiency | Dunnington CE School: Installation of LED lighting including PIR / lux level detectors. T12/T8 to LED using the same fitting | |
| | | Canon Lee School: Upgrade of LED lighting. T12/T8 using the same fitting | |
| | | Dunnington Nursery: Low energy lighting upgrade. T12/T8 to LED using same fitting | |
| | Optimise voltage | Canon Lee School: Installation of power perfector unit | |
| | | Huntington School: Installation of power perfector unit | |
| | | York High School: Installation of pP-560kVA / 800 A power perfector unit | |
| | Improve energy efficiency | Canon Lee: boiler / heating repairs. | JW2 |
| | | Copmanthorpe: Rewire | |
| | | Headlands: heating upgrade | |
| | | Hempland: lighting / wiring upgrade | |
| | | Huntington Primary: boiler replacement | |
| | | Yearsley Grove: rewire | |
| | | Millthorpe: emergency boiler replacement | |
| | | Huntington Secondary: new block | |
| | | Knavesmire Primary: major expansion | |
| | | Millthorpe Secondary: replacement windows | |

## APPENDIX D: EFFECTIVE CARBON MANAGEMENT AND ENABLING PROJECTS

### Table D1: Carbon Management Embedding Matrix – Self Assessment

| | CORPORATE STRATEGY | PROGRAMME MANAGEMENT | RESPONSIBILITY | DATA MANAGEMENT | COMMUNICATION & TRAINING | FINANCE & INVESTMENT | POLICY ALIGNMENT * |
|---|---|---|---|---|---|---|---|
| **BEST** 5 | • Top level target allocated across organisation<br>• $CO_2$ reduction targets in Directorate Business Plans | • Cabinet / SMT review progress against targets on quarterly basis<br>• Quarterly diagnostic reports provided to Directorates<br>• Progress against target published externally | • CM integrated in responsibilities of senior managers<br>• CM part of all job descriptions<br>• Central $CO_2$ reduction advice available<br>• Green Champions leading local action groups | • Quarterly collation of $CO_2$ emissions for all sources<br>• Data externally verified<br>• M&T in place for:<br>○ buildings<br>○ street lighting<br>○ waste | • All staff given formalised $CO_2$ reduction:<br>○ induction and training<br>○ communications<br>• Joint CM communications with key partners<br>• Staff awareness tested through surveys | • Finance committed for 2+yrs of Programme<br>• External funding being routinely obtained<br>• Ring-fenced fund for carbon reduction initiatives | • $CO_2$ friendly operating procedure in place<br>• Central team provide advice and review, when requested<br>• Barriers to $CO_2$ reduction routinely considered and removed |
| 4 | • $CO_2$ reduction commitment in Corporate Strategy<br>• Top level targets set for $CO_2$ reduction<br>• Climate Change Strategy reviewed annually | • Sponsor reviews progress and removes blockages through regular Programme Boards<br>• Progress against targets routinely reported to Senior Mgt Team | • CM integrated in to responsibilities of department heads<br>• Cabinet / SMT regularly updated<br>• Staff engaged though Green Champion network | • Annual collation of $CO_2$ emissions for:<br>○ buildings<br>○ street lighting<br>○ transport<br>○ waste<br>• Data internally reviewed | • All staff given $CO_2$ reduction:<br>○ induction<br>○ communications<br>○ CM matters communicated to external community | • Coordinated financing for $CO_2$ reduction projects via Programme Board<br>• Finances committed 1yr ahead<br>• Some external financing | • Comprehensive review of policies complete<br>• Lower level policies reviewed locally<br>• Unpopular changes being considered |
| 3 | • $CO_2$ reduction vision clearly stated and published<br>• Climate Change Strategy endorsed by Cabinet and publicised with staff | • Core team regularly review CM progress:<br>○ actions<br>○ profile & targets<br>○ new opportunities | • An individual provides full time focus for $CO_2$ reduction and coordination across the organisation<br>• Senior Sponsor actively engaged | • Collation of $CO_2$ emissions for limited scope i.e. buildings only | • Environmental / energy group(s) given ad hoc:<br>○ training<br>○ communications | • A view of the cost of $CO_2$ reduction is developing, but finance remains ad-hoc<br>• Some centralised resource allocated<br>• Finance representation on CM Team | • All high level and some mid level policies reviewed, irregularly<br>• Substantial changes made, showing $CO_2$ savings |
| 2 | • Draft Climate Change Policy<br>• Climate Change references in other strategies | • Ad hoc reviews of CM actions progress | • $CO_2$ reduction a part-time responsibility of a few department champions | • No $CO_2$ emissions data compiled<br>• Energy data compiled on a regular basis | • Regular awareness campaigns<br>• Staff given CM information on ad-hoc basis | • Ad hoc financing for $CO_2$ reduction projects | • Partial review of key, high level policies<br>• Some financial quick wins made |
| 1 **Worst** | • No policy<br>• No Climate Change reference | • No CM monitoring | • No recognised $CO_2$ reduction responsibility | • No $CO_2$ emissions data compiled<br>• Estimated billing | • No communication or training | • No specific funding for $CO_2$ reduction projects | • No alignment of policies for $CO_2$ reduction |

**Table D2: Carbon Management and Enabling Projects – Strategic Implementation Plan**

| Scope | Core Objective | 2014/15 & 2015/16 Baseline | 2014/15 & 2015/16 Baseline Score | Lead Officer | 5-Month Goal (Jan - May 2016) | 10-Month Goal (Jun - Oct 2016) | 15-Month Goal (Nov 2016 - Mar 2017) | 2016/17 Score | 2017/18 Goal | 2017/18 Score |
|---|---|---|---|---|---|---|---|---|---|---|
| **Corporate Strategy** | **I. Enable effective carbon management across the estate** | Carbon reduction vision clearly stated on the Council Plan. Climate Change Action Plan endorsed by cabinet in 2010. | 3 | JW | Finalise drafting the new CEMP Strategic Implementation Plan. | CEMP strategy endorsed by Cabinet and publicised with staff. | Review and update progress against targets. (Repeat this on an annual basis). | 4 | Carry out the annual review of progress against targets. | 4 |
| **Programme Management** | **II. Coordinate actions to maximise efficiency and savings** | Ad hoc reviews of CM actions progress. | 2 | JW | Report progress of CEMP SIP to the Utilities Board. | Once the CEMP SIP is endorsed, coordinate resources across the Council to deliver CEMP. // Identify areas for improvement and adapt CEMP strategy to remove blockages. | Publish the progress against targets externally (through the CEMP-SIP). (Repeat this on an annual basis). | 4 | Provide quarterly performance reports, to the Utilities Board and CMT. // Publish progress against targets externally. | 4 |
| **Responsibility** | **III. Allocate clear carbon management responsibilities across the Utilities Board, to govern the CEMP and maximise efficiency and savings** | An individual provides full time focus for carbon reduction and coordination across the organisation. // Senior Sponsor actively engaged. // Utilities Board set up to govern the CEMP SIP. | 3 | JW | Reinforce commitment and involvement of all members of the Utilities Board. // Set up Utilities Board to meet no less than four times a year to oversee progress of CEMP SIP. | As per the above, allocate specific CM responsibilities to the Board members (to facilitate coordination of resources, remove blockages, etc.). | Integrate CM in the responsbilities of most Service Areas to enhance staff engagement and support to the CEMP - SIP. | 3.5 | Integrate CM responsibilities into all Directorate's Service Plan. // Regularly update the Cabinet SMT. // Engage staff through a Sustainability Champion Network. | 4 |
| | | | | | | Quarterly meet with the sustainability champions and Utilities Board, to monitor progress and commitment to the CEMP-SIP. | | | | |
| **Data Management** | **IV. Establish the Council's carbon and expenditure baseline (for 2014/15), set interim reduction targets (up to 2020) and regularly review progress against targets** | Collation of carbon emissions for limited scope. | 3 | GC | Create a complete and up-to-date corporate and schools energy portfolio that systematically records activity and costs data (of utility consumption and renewable energy generation) into an online portal. // Work with Property, FM officers and npower to install smart meters on all corporate buildings. // Coordinate with Finance officer, bill streamlining and consolidation. | Share access to the portal to: the Sustainability Officer, Energy Manager, Category Manager and relevant Finance Officers. // Periodically update the portfolio. | Carry out an internal audit on the energy portfolio and management database (to ensure that its complete, up-to-date and effectively used). | 3 | Collect baseline data and reduction targets for all main emissions hotspots in the Council. // Carry out an internal review of the data. // Systematic recording system in place for energy consumption and renewable energy generation. | 4 |
| | | | | GC | As per the Methodology (described in Appendix A), collate for the latest financial year: baseline data, information on the carbon saving projects and related reduction targets. // Record this on the project log and monitor progress against targets. | On a quarterly basis, update the status of the carbon-saving projects and monitor progress towards targets. | | | | |
| | | DECs & ARs not issued for several buildings, as per legislation. | | GC | Develop longer term management system to ensure energy efficiency and carbon reduction. // Make arrangements to: 1) update the DECs and ARs that have expired/are expiring this year (buildings >1000m2), and 2) generate DECs & ARs for all corporate buildings with floor area between 250m2 - 999m2 that are visited by the public, as per new legislation. | Updated DECs & ARs (for all relevant buildings). Consider implementing the recommendations proposed on the ARs, to improve buildings' energy efficiency and reduce related financial expenditure. | | | | |
| | **Measure the renewable energy generated across the Corporate and Schools' estate** | Collation of renewable energy generation for limited scope and outdated renewable energy portfolio. | | GC | Compile list of where there is renewable energy technologies installed and add Property's recent schemes. // Do site visits to determine installed capacity and identify any operational issues. // Create a complete and updated renewable energy portfolio (for corporate and schools) that systematically records energy generated and costs (wherever applicable) into the online portal. | Carry out a review of the renewable energy portfolio (to ensure that all technologies are working properly and that the newly installed ones are included. | | | | |
| **Communication and Training** | **V. Raise staff awareness and involvement in corporate carbon and wider sustainability actions through increased communications and training** | Regular awareness campaigns. // Staff given CM information on ad-hoc basis. | 2 | JW | Publicise the baseline, carbon saving projects and reduction targets with the Utilities Board and the CMT. | Publish the new CEMP SIP once it is endorsed by the Utilities Board and CMT. | On a quarterly basis, meet with officers across the Council to discuss progress made against targets and SIP recommendations; identify opportunities for improvement (i.e. allocate more resources, plan how to improve data quality, etc.). | 3.5 | Maintain the staff informed on the progress of the SIP through annual reports and internal news letters. // Annually publish the Council's CEMP. | 4 |
| **Finance and Investment** | **VI. Specify clear capital projects and actions needed to meet targets and routinely seek internal and external funding to deliver change** | Ad hoc financing for carbon reduction projects. // Finance representation on Utilities Management Team.// Salix ring-fenced fund for energy efficiency, established in 2009. // £300k ring-fenced fund for renewable energy established | 2.5 | JW & DG | Specify clear capital projects and actions needed to meet targets (including renewable energy generation). Allocate funding. | Allocate more centralised resource for carbon saving projects. | | 3 | Coordinate financing for carbon reduction projects via Programme Board. // Commit finances one year ahead. // Obtain some external funding. | 4 |
| | | | | | Identify, on a quarterly basis, additional (internal and external) funding opportunities for subsidizing ongoing and future carbon-saving projects. | | | | | |
| **Policy Alignment** | **VII. Through the One Planet York Programme, implement a corporate One Planet Policy that supports carbon management across the Council and embeds it into everything the Council does** | Partial review of draft One Planet Policy. | 2 | JW | Policy endorsed by Cabinet and publicised with staff. | Policy and SIP adopted and implemented by Council departments. | Comprehensive review of the Policy with the CMT and Utilities Board to identify and remove barriers to GHG reduction. This must be done on an annual basis. | 3.5 | Comprehensive review of the Policy with the CMT and Utilities Board to identify and remove barriers to GHG reduction. | 4 |

**Roles and Responsibilities**

The Utilities Board is responsible for monitoring and ensuring delivery of the CRSMP. Currently (April 2016) this Board includes the following members:

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|---|---|
| Andrew Bradley | Sustainable Transport Manager |
| Andy Wilcock | Category Manager |
| Chris Slade | Operational Manager Fleet Service |
| Claire McCormick | Planning & Development Manager |
| Dave Atkinson | Programme Manager |
| David Gladders | Accountant |
| Derek Grant | Street Lighting Supervisor |
| Derek McCreadie | Low Emission Officer |
| Eleanor Cranstoun | Facilities Management Manager |
| Elizabeth Parker | Waste Management Officer |
| Emily Clarke | Category Officer |
| Gary Christie | Energy Manager |
| Ian Asher | Head of Commissioning and Design Services |
| Jacqueline Warren | Sustainability Officer (Programme Leader) |
| Jake Wood | Planning & Development Manager |
| James Williams | Travel Management Officer |
| Laura Dickson | Street Lighting Commercial Assistant |
| Linda Brook | School Business Support Manager |
| Lesley Elliker | Head of Facilities Management |
| Luke Richardson | Investment and Data Officer |
| Mark Hewlett | Travel Management Officer |
| Martin Grainger | Head of Integrated Strategy (Chair) |
| Michael Slater | Assistant Director – Planning & Sustainable Development |

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|---|---|
| Michael Southcombe | Environmental Protection Manager |
| Neil Ferris | Acting Director of City and Environmental Services |
| Nick Ross | Contracts Manager |
| Paul Shepherd | School Business & Monitoring Officer |
| Philip Callow | Head of Asset & Property Management |
| Ricky Watson | Engineer - Highway Infrastructure |
| Shaun Donnelly | Waste Management Officer |
| Tracey Carter | Assistant Director of Finance, Property and Procurement |
| Tony Clarke | Head of Transport |

**Communications Plan**

A communication Strategy has been developed to enable successful implementation of the Carbon Management Plan. This is part of the wider OnePlanetCouncil Communication Plan.

**Funding Sources**

The following table outlines the possible funding sources available for the carbon saving projects.

**Table D3. Funding Sources**

| Fund | Description |
|---|---|
| Salix | The Carbon Trust's Salix scheme provides interest-free match funding to the public sector to invest in energy efficiency measures and technologies that will reduce carbon emissions. Currently, there is £72,229 remaining in the Council's Salix fund. |
| Prudential Borrowing | Loan given by the Public Loans Board, to the local authorities, at a comparable low-rate. |
| Leeds City Region Energy Accelerator | Programme that provides grant funding and specialist expertise to help public and private sector organisations in Leeds City Region develop low carbon local energy projects. CYC is bidding for approximately £1 million of support. |
| Existing CYC Pot | £~300k of capital to support renewable energy projects. |
| Horizon 2020 | Research and Innovation funding from the European |

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|---|---|
| | commission for low carbon and energy efficiency projects. |
| European Regional Development Fund (ERDF) | £32 million available to the Leeds City Region Local Enterprise Partnership (LEP) and £6m from the York, North Yorkshire and East Riding LEP for low carbon innovation projects (Priority Axis 4) |