

Cherwell District Council

Carbon Management Plan 2015 – 2020

Date: 09/11/2015

Version control number: 1.3

Author: Sam Thomas

Summary

The two targets that this carbon management plan form are the following:

- A greenhouse gas reduction target of 2% per year between 2015 and 2020 against a 2008/09 baseline
- Cost avoidance estimate target: £1,033,000

Introduction

The publication of the Intergovernmental Panel on Climate Change (IPCC) fifth assessment in 2014 identified an even higher probability (95-100%) than previous reports that human influence is the dominant cause of global warming between 1951 to 2010. This has been widely recognised by Cherwell District Council following publication of the previous IPCC reports, subsequently leading to the signing of the Nottingham Declaration committing Cherwell, amongst other things, to contribute to the UK climate change programme.

This consequently resulted in the council's first carbon management plan 2009 – 15, which has recently come to an end. With the on-going concerns related to climate change and a succession of bodies recognising the need for increased action this document sets out Cherwell's next 5 year carbon management plan 2015 – 2020.

Legislation

The Climate Change Act 2008 was passed in accordance with meeting the UK's international agreements in reducing its carbon footprint, in conjunction with other nations, to limit global temperature rise to less than 2^oC. The overall target in this Act was by 2050 to reduce the nations greenhouse gas emissions by 80% compared to 1990 levels, in combination with this overall target a number of targets were identified in the intervening years to ensure the UK is on course to meet these aims. Figure 1 sets out these key targets.

Target Date	Emissions Reduction Figure
2020	35%
2025	50%
2050	80%

Figure 1: UK Greenhouse Gas Emissions reduction targets

Cherwell District Council signed up to the Nottingham Declaration in 2007 which was a public commitment accepting that climate change is occurring and that the council needs to reduce its greenhouse gas emissions and contribute to the UK's national reduction targets.

As part of the Oxfordshire wide Climate Local commitments Cherwell District Council has signed up to meeting a 50% reduction by 2050.

Previous Carbon Management Plan

In 2011 Cherwell District Council adopted a Carbon Management Plan with two key targets, to reduce the council's carbon emissions by 22% by 2015 against a 2009 baseline and to realise savings of up to £1,070,000.

While good progress has been made on reducing the carbon footprint, the council has fallen short of meeting the target; achieving a direct reduction of 11.1%. This was partly due to some factors

beyond the councils control such as an anomalous year where electricity carbon factor is concerned due to the national makeup of the UK electricity generation mix, taking this alone into consideration it can be considered a reduction of 15.2%. The first plan also did not account for the districts increasing population placing more demand upon services and in conjunction with a number of unrealisable projects meant the carbon target was not met. Although further additional projects were identified to cover meet the target they were not able to overcome all of these setbacks. One of these projects was the Bicester biomass boiler which would have achieved approximately 8% of the target alone, however was hindered by delays and integration issues which restricted its effectiveness in this year but is anticipated to make substantial savings in the future. Additionally there have been a number of notable successes; the solar PV installations across the council are generating more electricity than expected and are continuing to save and generate an income of £89,000 per year. Some of the councils sites have dramatically reduced its consumption of electricity and gas; one in particular showing reductions of 52% and 38% respectively

Figure 2 highlights the emissions split for the final year 2014/15.

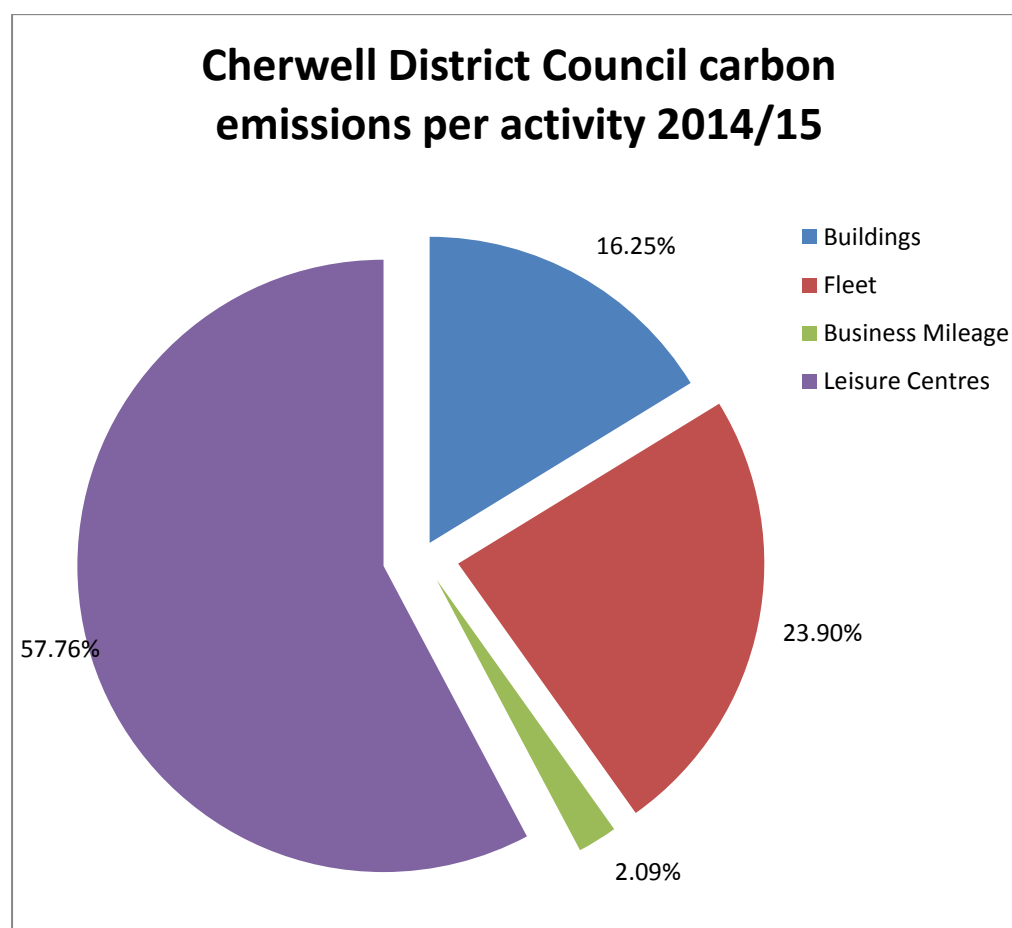


Figure 2: Cherwell District Council Carbon emissions per activity for the year 2014/15

However financially the savings, income and cost avoidance totalled £1,100,000; more than was originally thought achievable due to the greater than expected fluctuations in energy prices. Ultimately therefore the Carbon Management Plan 2009-15 was successful.

Future Reporting

As noted there have been significant changes throughout the course of the previous carbon management plan; the most significant change being the release of the major greenhouse gas data instead of just carbon dioxide. Consequently organisations can now more fully account for their impact of climate changing emissions.

Therefore for Cherwell District Council to fully account for its impact upon climate change future reporting and targets should be based upon Greenhouse Gas emissions rather than carbon dioxide emissions alone. The difference between Carbon Dioxide reports and Greenhouse Gas Reports is highlighted in Figure 3.

Emissions included in Carbon Dioxide Reports	Emissions included in Greenhouse Gas Reports
Carbon Dioxide – CO ₂	Carbon Dioxide – CO ₂ Methane – CH ₄ (25 times more potent than CO ₂) Nitrous Oxide – N ₂ O (298 times more potent than CO ₂)

Figure 3: Difference between Carbon Dioxide Reports and Greenhouse Gas Reports

The change does have some impact upon monitoring our environmental impact, specifically there are some processes which although do not produce much carbon dioxide would produce other gases such as methane or nitrous oxide. A good example would be the improvements in vehicular engines between 2008 – 2015, in the early years incomplete combustion would produce a lot of methane and more nitrous oxides but these would not be taken into account and would artificially keep Cherwell’s carbon dioxide reduction figures lower than they should be. However greenhouse gas reports would capture the environmental impact these would have by including both methane and nitrous oxides in the calculations. Equally the improvements in the engines between 2008 - 2015, particularly in Nitrous Oxides, is well documented and as noted in Figure 3 these gases are 298 times more harmful to the environment than carbon dioxide. The Greenhouse Gas reporting uses carbon dioxide equivalent in order to compare the impact of all the gases associated with processes at the same time, the potency of the different Greenhouse gases compared to carbon dioxide are noted in Figure 3.

The previous Carbon Management Plan set the financial year April 2009 – March 2010 as a baseline due to the actions initially taken as the start of the plan, however given the legislation has set a national baseline as 1990 there is a need to set the baseline as earliest as possible. Therefore the earliest reliable data for Cherwell District Council is the financial year April 2008 – March 2009 and this should be set as the baseline year. With a view to future targets the previous plan should be taken into consideration such that the progress that has been made must be incorporated with no plan completed in isolation. Taking each plan with a new target in isolation would also raise the potential for statistical anomalies to creep in, therefore when setting future targets the previous plans with progress should be considered.

In addition to this a significant change in the electricity markets has also led to potential future changes, specifically these refer to the use of renewable energy certificates to guarantee where each kilowatt hour has been generated from, known as carbon offsetting. Previously there was little in the way of a market standard and as such renewable, green or low carbon electricity tariffs would not

mean 100% renewable electricity. A wide variation in the market standards could mean a site would have 80% renewable electricity alongside 20% fossil fuel generated electricity being marketed as 100% green. The change in the market and our future energy contracts ensures that we can fully audit exactly where and of what percentage our electricity consumption will be from renewable energy and can therefore take this into account when calculating our carbon footprint.

One of the assumptions of the first Carbon Management Plan (2009-15) which was not taken into full consideration was the expansion of the district itself in terms of number of houses and future population. This has and will continue to have a significant and greater demand impact placed upon the different services the council provides. Between 2015 and 2031 the local plan to guide development within the district sets out provisions for the building of 22,840 homes in a district which currently has approximately 60,000, this equates to an increase of 2.38% per year.

Future Provision for Fleet Emissions

It has long been expected that there would be significant advancements in alternative fuels for heavy goods vehicles but unfortunately this has not materialised in this country. As a result the opportunity to fundamentally alter the waste and recycling fleet, which accounts for the cause of the majority of the fleet underlying emissions, is severely restricted. The changes in reporting, i.e. carbon dioxide only to the Greenhouse Gas reporting would encompass specifically Nitrous Oxides, the improvements in vehicles via the EURO standard emissions has had a significant impact upon these gases. As a result the reductions in the maximum levels of Nitrous Oxides emitted between Euro V and EURO VI is over half (180mg/km to 80mg/km) and as the vehicle fleet modernises this will have a positive impact. However as there is no foreseeable alternative to diesel over the timeframe of the next Carbon Management Plan and given the substantially increasing demands from an expanding district, it is anticipated the emissions related to the fleet aspects of the council may to see a small increase.

Future Provision for Business Mileage

The current staff travel plan, from 2014 – 2019, is for both Cherwell District Council and South Northants Council, its primary aim can be described in the hierarchy of travel in Figure 4, which delineates the preferences for the travel options.

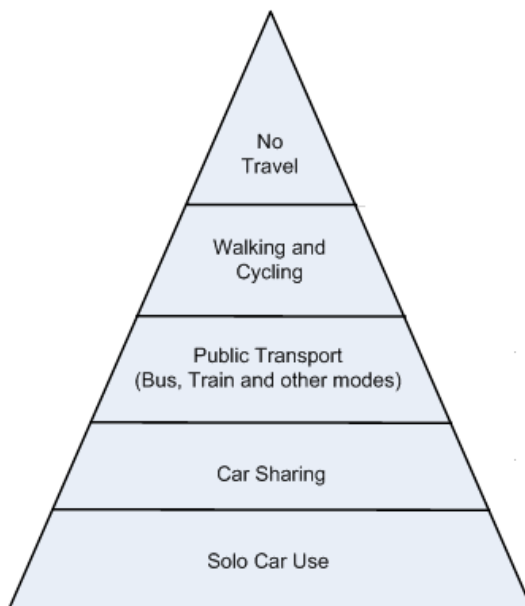


Figure 4: Staff Travel Hierarchy

There is a multitude of actions assigned by the travel plan, a number of key ones are:

- Homeworking and agile working – staff members working from home or working from the most suitable offices sometimes for the different council(s)
- Video and Tele Conferencing
- Encourage the use of public transport

Given the increasing joint nature of the council and its partners it is expected there will be an increased need to travel between the different working sites which will increase the amount of miles covered by staff. However the downward trend in emissions seen over the previous carbon management plan was in part due to use of increasingly efficient vehicles, the advances being made in increasing the efficiency of vehicles is expected to continue and as such should counter any increases in mileage.

Although the business mileage is a relatively small part of the council's carbon footprint as a whole it has a significant financial impact, there are some achievable methods of reducing the carbon footprint associated with business mileage within the travel plan which ultimately will have a positive financial implication.

Future Provision for Leisure and Buildings

As can be seen from Figure 2, the leisure centres represent over half of the council's greenhouse gas emissions for the financial year 2014/15 with the Buildings representing another significant portion of the emissions. It should be noted that a number of the 'easy wins' have already been achieved and with some of the potential changes to be made, including installation of energy efficient equipment, having working lifetimes of up to 40 years, decisions in the coming years will have an impact upon the future targets. As a result potential fundamental changes need to take into consideration how the council will meet its later target milestones in 2025 and 2050.

One of the examples of this is relating to heating provision for our leisure centres and buildings, our experience of the biomass industry is that it is still a maturing market which is compensated via the renewable heat incentive to cover the potential risks involved. An alternative to biomass is combined heat and power, either approach would require a feasibility study to analyse the suitability of either technology. By conducting these feasibility studies early it will place the council in a position to capitalise upon whichever suitable technology when the level of risk and rewards is at a suitable level. It should be noted the Bicester leisure centre biomass boiler was anticipated to deliver 90% of the sites heat, unfortunately due to teething problems and delays it has not met this figure. However in the 9 months it was operational in 2014/15 it did deliver approximately 25% of the sites heat bringing in £23,000 and saving 81 tonnes of carbon dioxide.

A major change to the electricity market is also expected to come into place in the next few years known as electricity 'sleeving' – allowing the unused renewable electricity produced at one site to be put back into the local electricity grid and taken out at another site. An example would be any renewable electricity produced by the solar PV at Thorpe Lane Depot which isn't used could be placed into the grid at the site and taken out at Bodicote House, the main council offices, instead of having to purchase new electricity. One of the major successes of the previous carbon management plan was surrounding the installation of solar PV; producing more than expected and subsequently both reducing our emissions by almost 200 tonnes of CO₂e and financially bringing in £89,000 per year. The potential for electricity sleeving within the energy grid will enable the council to pursue solar PV installations on a wider range of their assets.

As noted in the above Future Reporting section fully auditable carbon offsetting, where the electricity that we purchase comes from renewable sources, can contribute positively to reducing our greenhouse gas emissions. This potentially could facilitate significant emissions reductions to be made, albeit would not enable any financial savings.

In addition the relatively minor improvements such as lighting upgrades, insulation improvements and regular efficiencies will continue to be undertaken as a matter of course. This will be alongside the continuing process of updating our IT infrastructure in the course of joining systems together with both Stratford District Council and South Northants Council.

Business as Usual approach

The previous Carbon Management Plan implemented savings, cost avoidance and income generation totalling £1,100,000. This was based against a business as usual (BAU) approach, where the council and its contractors would not make any modifications or actions to calculate or reduce the greenhouse gas emissions. The BAU for this carbon management plan is based upon the increases in costs indicated by our current fuel suppliers and an increase in raw consumption based upon the increasing demands placed upon the service by the districts growth (2.38% per year).

The impact upon the council's greenhouse gas emissions is estimated to be a rise of 13% over the 5 years, from its current position of 5,150 tonnes of CO₂e to 5,825 tonnes of CO₂e by 2020. As a result of the largely incongruous energy prices and the substantial variations within the markets under the

BAU approach, the council and its contractor's costs would balloon over the 5 years from the current £1,286,000 per year to an estimated £1,787,000 per year by 2020.

Target and plan for 2015 – 2020

The significance of the greenhouse gas emissions reduction cannot be denied and therefore propose a reduction target of 2% per year which equates to 31% reduction against the baseline, as there is already an approximate 21% reduction.

It should be noted this is a challenging target over a relatively short space of time due to the level of complexity and the unprecedented levels of growth within the district, representing significant ambition but the council recognises that it must lead by example in reducing its emissions..

As a result of the future provisions for the different services, a required significant reduction in the buildings, leisure centres and business mileage to offset minor increases in fleet mileage, there have been a number of assumed reductions in certain areas. Given the need to meet the target and the length of the plan, opportunities to meet the target in a different way (i.e. increased reduction in gas compared to electricity) may arise and alter the underlying financial figure and therefore any figure provided is only an estimate. In addition our energy providers have indicated substantial increases in the cost of energy over the next 5 years, electricity to rise by 46% and gas to rise by 37%. Consequently even though the council plans to reduce its underlying consumption in order to meet its greenhouse gas reduction target by a very substantial amount the financial cost of its energy bills will still rise. Therefore the savings in effect will be cost avoidance targets; this is highlighted in Figure 5.

If the reduction target is met the estimated savings and cost avoidance is likely to total £1,033,000 over the course of this carbon management plan with the energy cost per year amounting to £1,787,000 in 2020. This is highlighted in Figure 6

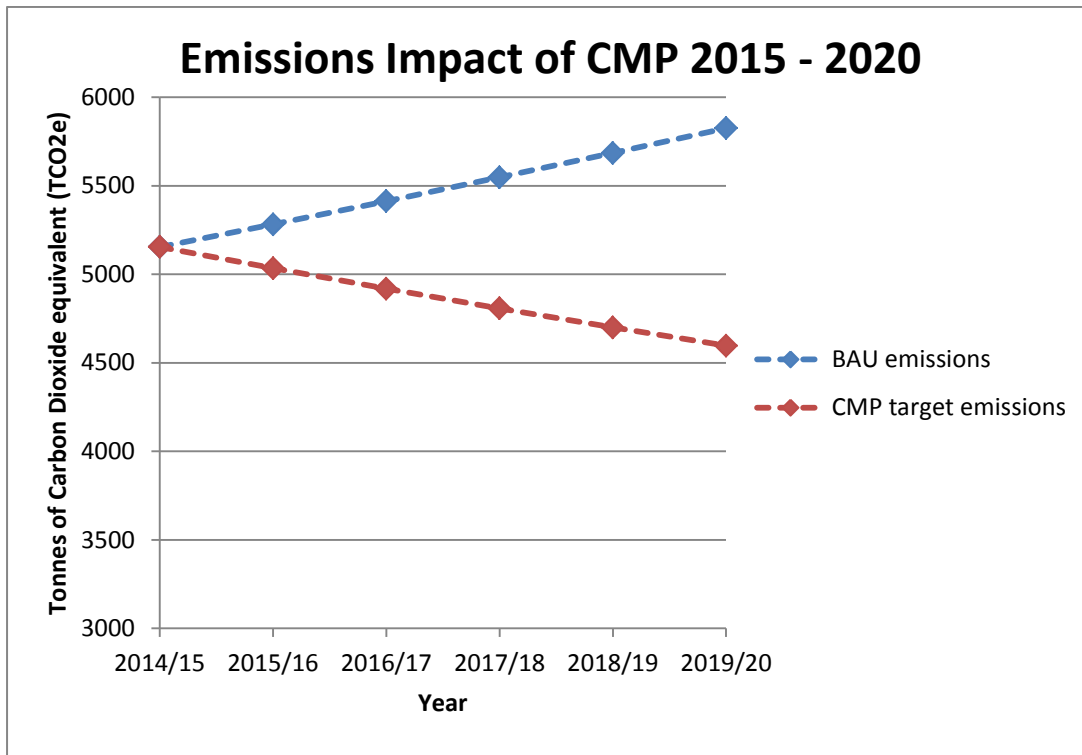


Figure 5: Emissions Impact of the CMP 2015 - 2020

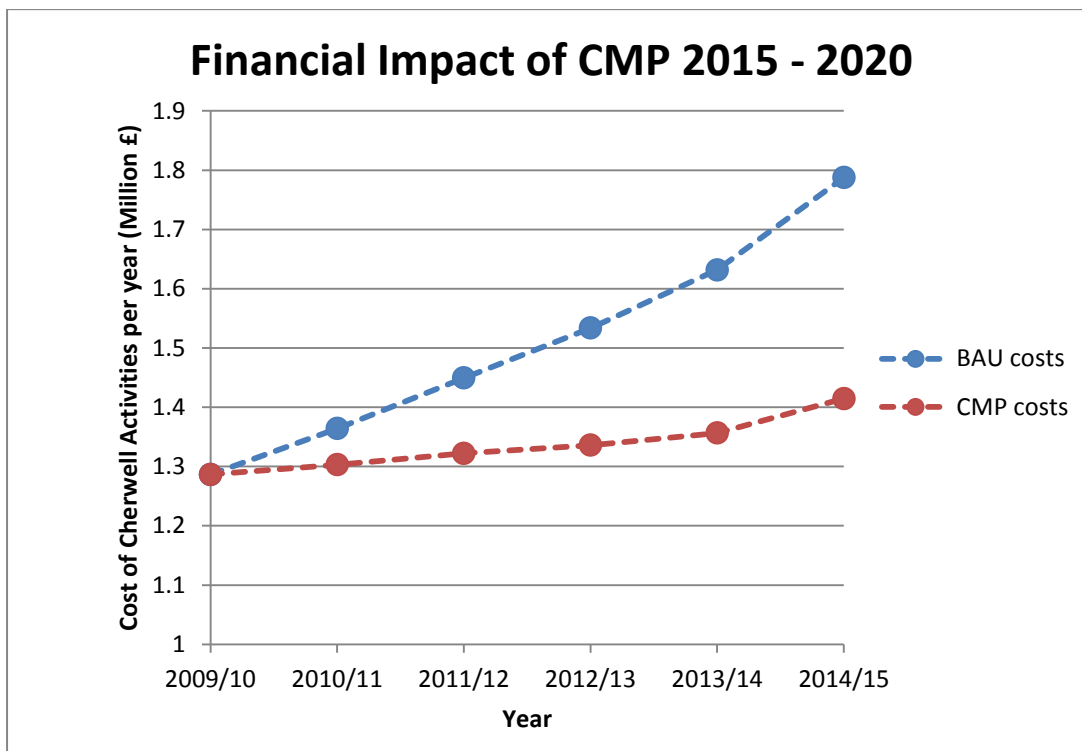


Figure 6: Financial Impact of CMP 2015 - 2020