

Climate Emergency Action Plan

Wokingham Borough Council

January 2020

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Message from Cllr Gregor Murray, Executive Member for Climate Emergency

Wokingham Borough's residents, businesses, schools and services contribute more than 770,000 tonnes of carbon dioxide to the atmosphere each year. While this is a very small fraction of the planet's overall carbon footprint, it has a significant impact on the air we breathe, the water we drink, the spaces we enjoy and the wildlife we share our community with.

We create carbon emissions from almost everything we do. It's not just how we travel and distances we cover, it's also our houses and how much energy we generate, use and waste, how much food we consume or throw away, how many trees, bushes, plants and wildflowers we have surrounding us and how we go about doing business with each other.

CO₂ emissions in the U.K. have already declined by over 38% since 1990, but, at Wokingham Borough Council, we believe that more can and must be done to reduce our carbon footprint and improve our environment sooner rather than later.

This is a live document that lays out the initial steps that we intend to take on our journey to net zero carbon by 2030¹. Some actions are small, but, when taken by our nearly 170,000 residents will quickly add up. Other actions are bold but necessary initiatives that will dramatically reduce large elements of our carbon footprint once implemented.

We have been consulting with residents since we declared a Climate Emergency. Some ideas submitted are impractical at this moment in time. Others fall outside our sphere of influence, but, I am pleased to say that many of the ideas and initiatives conceived and suggested by our residents can be found in the actions and targets presented in this document.

We cannot hope to reach carbon neutral within ten years without implementing some significant actions, which is why, in this document, we are proposing to;

- Review and revise our transport network to enable more shared, electric or human-powered journeys
- Create a 'Green Bank' to help residents and businesses pay for the cost of environmentally positive improvements to homes, offices and equipment
- Construct solar farms for the generation of clean energy for our community
- Revise our Local Plan to require carbon-neutral construction and environmentally beneficial infrastructure
- Plant 250,000 new trees over the next five years
- Launch a sustainable schools programme backed up with clean, onsite energy generation
- Send zero waste to landfill, with refuse either recycled or incinerated for carbon contained heat and energy generation

¹ Net zero means that the UK's total greenhouse gas (GHG) emissions would be equal to or less than the emissions the UK removed from the environment. This can be achieved by a combination of emission reduction and emission removal. Office for National Statistics

- Invest heavily into educational programmes for residents, businesses, schools, charities and other organisations to help them calculate and reduce their own carbon footprints

Climate change may be a global problem but local actions can make a difference. We can make a significant, positive impact on our environment, our quality of life and our community if we choose to act, together.

Taking the necessary steps to reach our aim of becoming net zero carbon by 2030 will not only improve the quality of life of all our residents, it will also act as an example to others, around the world, that positive environmental change can be made when individuals, groups, towns and communities decide to take action.

Cllr Gregor Murray

Background

The United Kingdom was one of first countries to ratify the Paris Agreement designed to limit greenhouse gas emissions to levels that would prevent global temperatures from increasing to more than 2°C above the temperature benchmark set before the beginning of the Industrial Revolution. This was considered, at that time, to be the tipping point that would trigger extreme weather events across the world. Resulting in risks to health, livelihoods, food security, water supply, human security and economic growth

The Paris Agreement improves upon and replaces the Kyoto Protocol, an earlier international treaty designed to curb the release of greenhouse gases. Adopted in December 2015, the Agreement's central aim is to strengthen the global response to the threat of climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future.

In autumn 2018, the Intergovernmental Panel on Climate Change (IPCC) published a report, which advised that global warming must be limited to 1.5°C as opposed to the previous target of 2°C to avoid the devastating impacts of climate change. As the climate has already warmed by 1°C since the industrial revolution benchmark. The report warned that there are now only 12 years (to 2013) left within which to take the actions required to avert a crisis, rather than the 32 previously thought (to 2050).

In response to the claims made by the IPCC, in the autumn of 2018 councils across the world started declaring a climate emergency starting with Durban, South Africa. To date 245 local authorities in the UK have done so with more declaring by the day.

Wokingham Borough Council declared a Climate Emergency on 18th July 2019. The declaration set out the commitment to play as full a role as possible, leading by example as well as by exhortation, in achieving a carbon neutral Wokingham Borough by 2030. The motion committed Wokingham Borough Council to produce a Climate Emergency Action Plan within six months, to report the actions that the council will take to achieve its target and to set up a cross-party working group to monitor progress. With the publication of this Climate Emergency Plan all of these commitments are now in place.

The UK introduced the Climate Change Act into the legislation in 2008. This seeks to reduce carbon emissions by 100%² (from where they stood in 1990) by 2050. However, 2019 marks an important milestone year as global carbon emissions have almost doubled since the Act was adopted in 2008 much soon than was originally anticipated.

Policy Context

The development of the Climate Emergency Action Plan aligns with national legislation and policy including the Climate Change Act, Industry Strategy; The Clean Growth Strategy; Road to Zero; the Future of Heating.

² The Climate Change Act 2008 (2050 Target Amendment) Order 2019

The plan also aligns with the regional draft Berkshire Local Industrial Strategy (BLIS) and the Thames Valley Berkshire Local Economic Partnership Strategic Economy Plan.

The Climate Emergency Plan aligns with the following priorities set out in the council plan

- **Clean and green spaces** - Including becoming net zero carbon but also providing parks and green spaces
- **Keeping the borough moving** - Including encouraging active and sustainable transport modes
- **Enriching lives** - Including encouraging more people to be involved in volunteering and community activity, taking pride in their community and looking after their own wellbeing where possible and that of their families and neighbours.

One of the council’s key strategies is the Wokingham Borough Sustainable Environment Strategy 2010 – 2020. Its priorities are to

- **Engage** - Raising awareness, fostering respect for our environment and changing behaviours
- **Take action** - Minimising waste, pollution and greenhouse gas emissions.
- **Prepare** - Planning for the likely impacts of climate change and managing limited resources efficiently

This is an overarching strategy, which includes the wider environmental priorities for Wokingham Borough including biodiversity and recycling. This strategy will be reviewed and updated over the coming year and further inform the Climate Emergency Plan.

There is a clear link between the aims and objectives of the Climate Emergency Plan and other council plans and strategies. How these plans interrelate is set out below in Figure 1.



Figure 1. Climate Emergency Plan and its links to other Wokingham Borough Council Plans and Strategies

The 2030 United Nations Agenda for Sustainable Development³, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are 17 Sustainable Development Goals (SDGs), which act as an urgent call for action to all countries - developed and developing – to work as a global partnership. They recognize that ending poverty and deprivation must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – at the same time as tackling climate change and working to preserve our oceans and forests.

The council recognises the importance of the United Nations’ SDGs and has decided to align the actions within the Climate Emergency Action Plan to the SDG framework. In doing so, the council hopes to ensure that its actions lead to a socially just response to climate change. The UN’s 17 SDGs are outlined in Figure 2 below.



Figure 2. United Nation’s 17 SDGs

³ [Resolution adopted by the UN General Assembly on 25 September 2015.](#)

Section 1. Wokingham Borough Carbon Footprint and Targets

Carbon Footprint

Figure 1 shows Wokingham Borough's carbon footprint, which is a breakdown of carbon dioxide emissions by emitting sectors (emissions are expressed in kilotons of carbon dioxide or ktCO₂e). This footprint is based on government figures, reported two years in arrears, from the department for Business, Energy & Industrial Strategy (BEIS). Total emissions are made up of three sectors; commercial and industrial, domestic and transport.

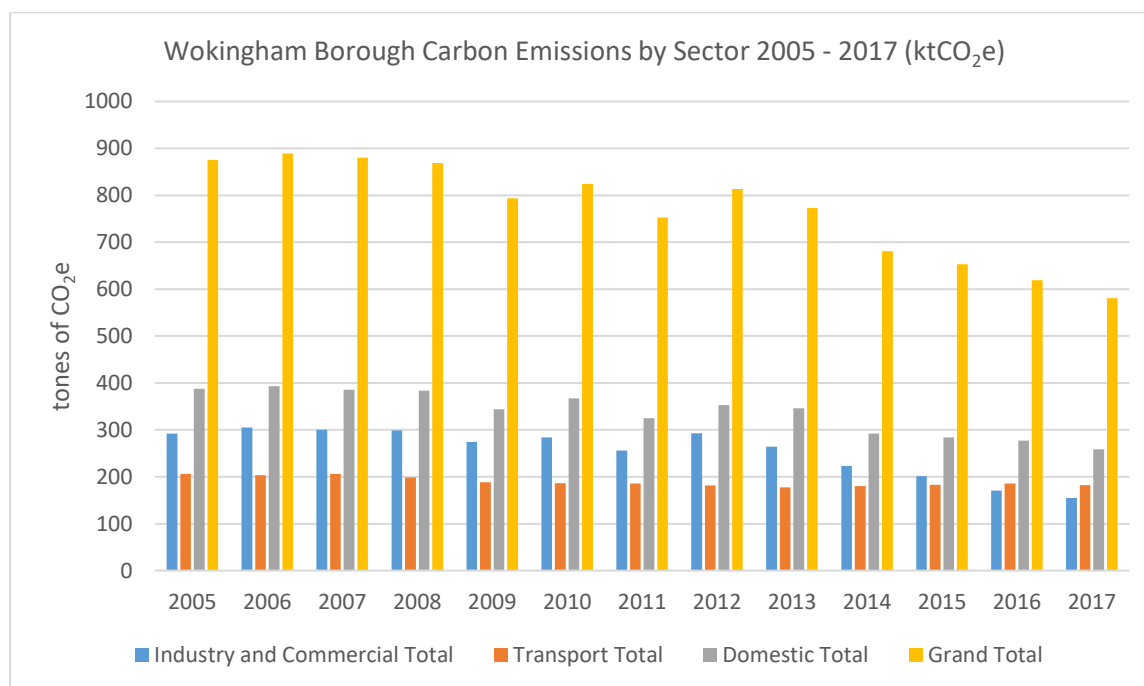


Figure 3. Wokingham Borough Carbon Dioxide Emissions 2005 -2017

Wokingham Borough's overall carbon foot print was **580.9 ktCO₂e in 2017**. This is comprised of transport emissions (31.4%), emissions from the industrial and commercial sector (26.6%), and domestic sector emissions (43%). This borough wide carbon footprint will be used as a baseline against which future carbon dioxide emissions are measured.

This figure excludes sectors that are completely beyond the council's scope of influence, namely the emissions from major transport links (M4) as well as diesel rail transport, which are managed by Highways England and national rail companies, respectively. These subsectors emit a total of 189.8 ktCO₂e. Including these figures would mean that Wokingham Boroughs carbon footprint would amount to 770.7 ktCO₂e in 2017⁴. Despite being outside the council's sphere of influence, the council will do whatever practically possible to reduce the carbon dioxide emissions generated from rail and motorway transport systems. This will include seeking to influence Government at a national level to help reduce carbon dioxide emissions from these sources.

⁴ UK local authority and regional carbon dioxide emissions national statistics: 2005-2017

Trajectory for Carbon Dioxide Emissions in Wokingham Borough

Wokingham Borough's emissions have been steadily decreasing since 2012. This is partly due to:

- Central Government targets to increase the renewable energy infrastructure resulting in a higher proportion of renewable energy feeding into the electricity supply
- Technological advances leading to greater energy efficiency
- Improved awareness amongst the public and businesses of the impact of carbon dioxide emissions on the climate and resulting changes in behaviour
- Increased tree planting and afforestation rates resulting in increased sequestration of carbon

If we project the current rate of carbon dioxide emissions reduction through to 2030 Wokingham Borough's carbon footprint will be approximately 274.6 ktCO₂. However, it is anticipated that the current 'business as usual' approach emissions will eventually plateau at a much higher level well before this as most of the 'quick wins' will have already been achieved (Figure 4).

The projected reduction rate of carbon dioxide emissions required to achieve net zero carbon by 2030 is also shown in the table (Figure 4). It can be seen that large-scale carbon dioxide reduction activities, strategically targeted at the highest emitting areas will be needed to achieve the ambitious targets that the council has set itself. This includes interventions led by the council (e.g. retrofitting domestic properties and renewable energy generation projects) but also changes expected to take place on a national level (e.g. decarbonisation of the national electricity grid). To become net zero carbon, the borough will also need to invest in carbon sequestration projects – such as tree planting and the creation of carbon sinks.

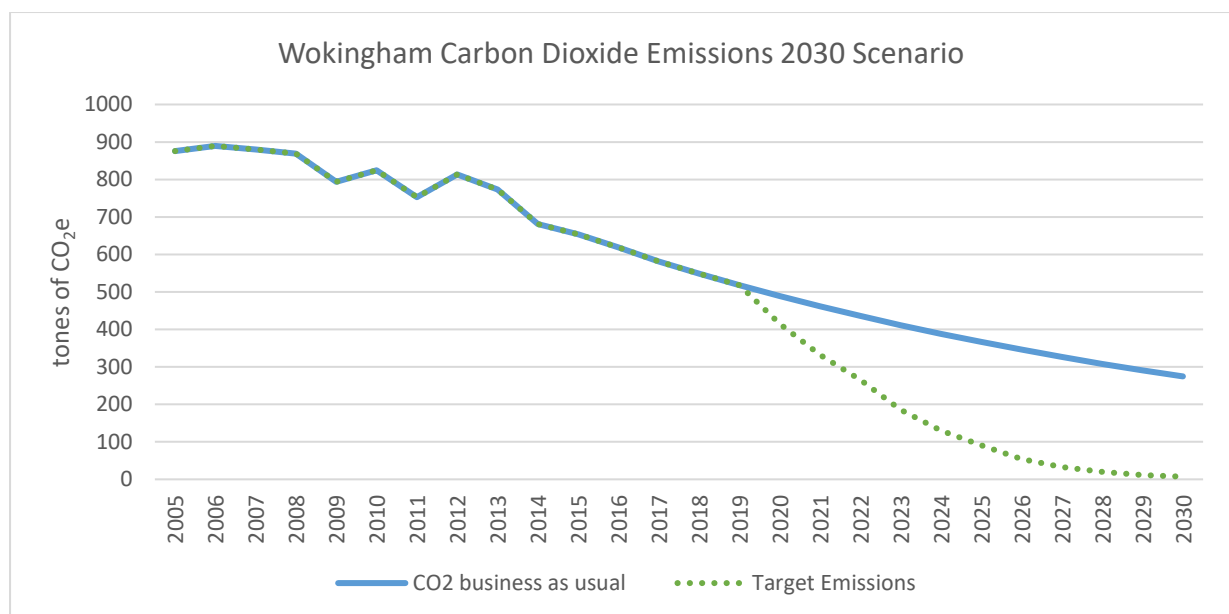


Figure 4. Projection of current rate reduction of carbon dioxide emissions to 2030 in Wokingham Borough

Council's Priority Areas for Reducing Carbon Dioxide Emissions with Targets

Figure 5 below gives a detailed breakdown of Wokingham Borough's carbon dioxide emissions in 2017. Our highest emitting areas are transport and the use of gas in the domestic sector. These will be key areas on which we will focus our efforts to reduce carbon dioxide emissions. We will also seek to increase the amount of carbon sequestration in the borough.

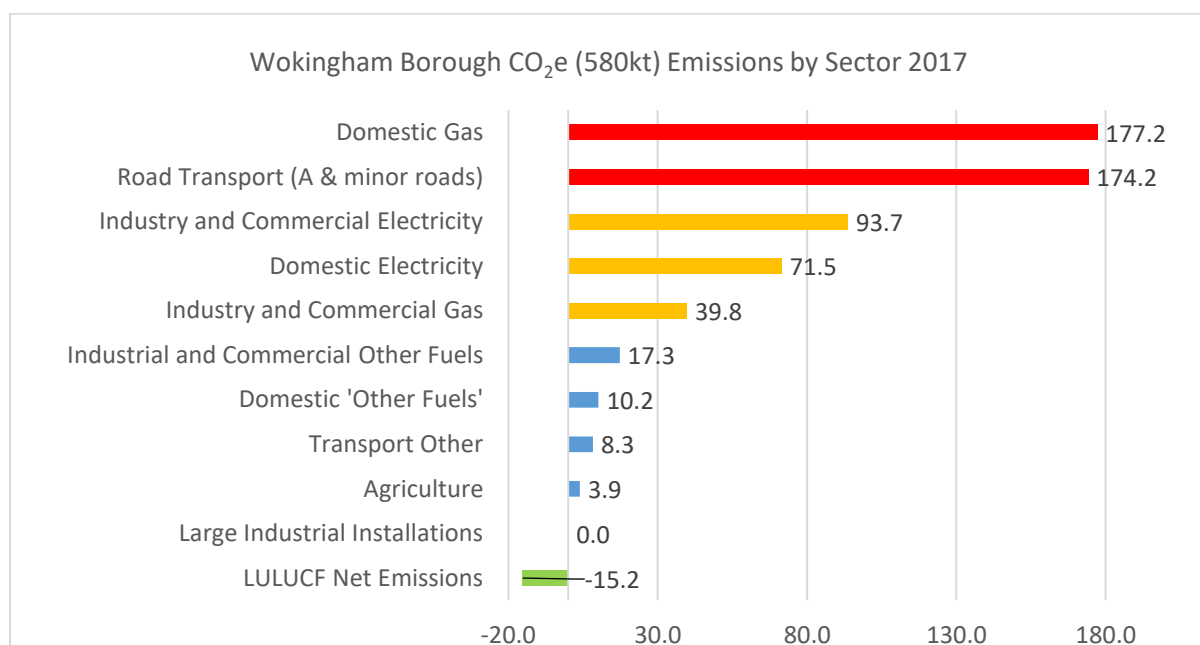


Figure 5. Detailed breakdown of Wokingham Borough Carbon Dioxide Emissions 2017⁵

Based on the BEIS data, predicted carbon dioxide emissions for 2018 and 2019 for transport, domestic gas and carbon sequestration can be seen in the table below (Table 1). Along with estimated targets for 2021 and 2025.

Emission Sector	Carbon Emissions (ktCO ₂ e)	Predicted Carbon Emissions (ktCO ₂ e)		Target Carbon Emissions (ktCO ₂ e) over the next five years	
	2017	2018	2019	2021	2025
Total Emissions	580.9	548.4	517.7	419.3	275.11
Transport	182.0	180.7	178.9	144.8	95.06
Domestic Gas	177.2	170.6	164.3	105.2	43.1
Forestry/Sequestration	-15.2	- 15.6	- 16.00	-18.5	-26

Table 1. Projected predicted and targeted emissions for WBC priority areas based in BEIS figures.

Carbon Footprint: Emissions Per Capita

Wokingham Borough is in a period of growth, seeking to develop over 13,900 homes and associated infrastructure by 2026. The Local Plan Update (LPU) is scheduled to be adopted in winter 2021 which will set out additional development targets up to 2036. Wokingham Borough Council recognises that this growth will increase carbon dioxide

⁵ Source: National Atmospheric Emissions Inventory (2017)

emissions in the borough through both construction work and population growth. These additional emissions may have a negative overall impact on the council's carbon footprint even after all of the actions in the action plan have been implemented. An alternative way to measure the council's carbon footprint is on an emissions per capita basis. This will demonstrate the decrease in emissions in the context of a growing population. The aim of the LPU policies is to make the fullest contribution possible to the mitigation of, and adaptation to, climate change and the transition to a low-carbon economy, by requiring the highest possible sustainability standards from the new development.

The per capita measure for emissions in Wokingham Borough for 2017 is **3.5 tCO₂e**.

Further analysis of the Borough's carbon footprint is provided in Appendix 2.

Carbon Off-setting/Sequestration

To become net zero carbon the borough will need to off-set some of the carbon dioxide that it emits. Off-setting is where carbon is removed from the atmosphere to help negate the emissions that are pumped into the air by human activities. Planting trees (and other foliage) is one of the best ways of doing this as plants store carbon and release oxygen into the atmosphere. Presently, the borough offsets 15.2 ktCO₂e a year through forestry and natural land use (labelled as LULUCF in Figure 4). These levels have been steadily increasing with an average annual increase in carbon capture of 0.4 ktCO₂e. Converting improved grassland (grassland makes up most of the WBC landholding) to woodland would sequester 7.83 tCO₂e ha⁻¹ yr⁻¹ in the first year, which would raise to 13.7 tCO₂e ha⁻¹ yr⁻¹ in subsequent years⁶ (assuming 1000 trees by hectare are planted). The council aims to increase the current afforestation rate to expand our carbon sequestration rate.

Wokingham Borough Council's Carbon Footprint

As an organisation the council produces 7,098 tCO₂e per annum from electricity and a further 4,058 tCO₂e per annum from Gas. This total carbon footprint (11,156 tCO₂e) accounts for 1.45% of the total Borough's footprint. The council aims to continue to reduce these emissions by improving energy efficiency and increasing renewable energy generation to become a net zero carbon organisation by 2030.

Section 2. Challenges

Wokingham Borough is an affluent, semi-rural area with a wide range of open spaces, agricultural land and several country parks. Over the last ten years, the Borough's population has grown by more than 10%, and is expected to reach 180,900 by 2037⁷. In 2018, there were over 67,000 dwellings in Wokingham⁸, and steady growth is projected into the future. Without significant compensatory action, this ongoing growth will inevitably add to the carbon footprint and is a substantial challenge to achieving overall net zero carbon.

⁶ Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources. Natural England Research Report

⁷ Office for National Statistics (2013) NOMIS – Census 2011

⁸ Department of Communities & Local Government (2019)

In addition, to the expected high levels of growth, the greatest challenges to becoming net zero carbon, within the local sphere of influence, are:

- Wokingham is a historic borough with many older houses, which are not built to high-energy efficiency standards - often lacking insulation and double glazing for example, making retrofitting difficult. In 2017, 6.7% of households in Wokingham experienced fuel poverty, this compares to 8.7% in South East England, 7.2% in West Berkshire and 7.8% in Windsor and Maidenhead⁹. Our challenge to achieve carbon neutrality is subject to progress on retrofitting existing homes which requires a significant policy shift and injection of funding at a national level.
- Wokingham is a rural borough, which means that some of the settlements are remote and not easily accessible through public transport. This means private transport is heavily relied upon.
- There are high levels of car ownership (around 53.2% of households have 2 cars or more).¹⁰
- Many people feel unsafe, or do not feel confident to take up cycling, in the borough. The high speed limits and widths available on the country lanes in particular make cycling in these areas less attractive to many.¹¹
- There are 8,865 businesses in the Borough, a high proportion of which are office based service industries¹². Although, office based industries tend to use less energy than the manufacturing sector they still use energy to heat and light large areas of open space. Commuting to work also by private car contributing to congestion and carbon dioxide emissions.
- The area is prosperous so residents tend to be relatively liberal with their energy consumption in terms of use of appliances and heating.

Section 3. Opportunities

By taking a proactive approach to becoming net zero carbon by 2030, Wokingham Borough residents can look forward to a low-carbon future. Wokingham Borough is fortunate in that it has a number of opportunities that will help reduce carbon dioxide emissions.

- The council is able to use its own land holdings and assets to increase the contribution of renewable energy to the grid electricity supply through the creation of solar farms and the installation of solar panels on buildings where possible. The adoption of renewable energy generation and storage projects can provide greater energy security, lower our energy bills and has the potential to generate revenue to fund further carbon saving opportunities.
- The council has a wealth of expertise in-house that can improve energy efficiency in homes and businesses across the borough. This will contribute to a reduction in energy bills and fuel poverty rates.

⁹ Public Health Outcomes Framework 2018

¹⁰ Licensed vehicles by Local Authority: 2018. Department for Transport statistics.

¹¹ WBC travel patterns survey, April 2019

¹² <https://www.nomisweb.co.uk/reports/lmp/la/1946157290/printable.aspx>

- The initiatives for tackling the carbon dioxide emissions might also help to reduce congestion, which is a cause for concern for the Borough's businesses and residents alike. The awareness of the impact on the climate emergency has put this issue under further scrutiny with more improvements to traffic management being introduced.
- Changes implemented to reduce transport emissions such as encouraging active and sustainable transport modes can also contribute to health benefits including reductions in cardiovascular conditions such as heart disease
- With the introduction of strategies such as, the Local Transport Plan 4 there are new opportunities to support the transition to Electric Vehicles (EV), as well as to enable mode shift to public transport, walking and cycling. Where new development takes place there are opportunities to construct sustainable transport infrastructure from the outset.
- As the LPU is in the process of being developed there is an opportunity to implement sustainable planning policies that will help all new major development to be built to net zero standards that will take effect in the near future.
- There are numerous opportunities for implementing carbon-offsetting initiatives by planting trees and creating carbon sinks within the borough. Trees can also help to fight flooding, reduce pollution, nurture wildlife and make our landscapes more resilient. Being a semi-rural borough, Wokingham has a plentiful supply of open spaces to implement forestry projects, and there is also potential to implement smaller scale 'scattered' woodland planting schemes on existing public spaces.
- Wokingham Borough Council has the opportunity to lead by example and make sure that we are ahead of the game in achieving net zero carbon on our own estate.

Finally, the council recognises the magnitude of achieving the 2030 net zero carbon target and understands that it cannot achieve the ambitions for the borough working alone. We need to connect with residents as well as partners both within the borough and across the region turning their concern and fear for the future into hope and successful action.

The council has started to engage and create strong partnerships with residents, businesses, charities, Town and Parish Councils as well as with schools and young people. Working with other local authorities across Berkshire the council has been able to deliver projects such as the Cross-Berkshire Cycle Route, which is being delivered by four local authorities across the county. The council will also engage closely with Thames Valley Berkshire Local Enterprise Partnership and support their efforts in delivering a low carbon economy in Berkshire, as well as and the Greater South East Energy Hub and the University of Reading.

Section 4. What Wokingham Borough Council have already done – Looking back

Prior to declaring a climate emergency on July 18th 2019, the council was already committed to reducing carbon dioxide emissions and caring for the environment across the borough. The Sustainable Environment Strategy adopted in 2010 has the priorities to reduce, reuse and recycle. Over the lifetime of this Strategy, the council has seen a reduction of 42% on its carbon dioxide emissions from energy and transport. Some of the council's key actions and achievements are set out below.

The council has sought to reduce the energy use of its own state over the years to become more efficient. Some of the highlights of this work include:

- As of 2018, 25% of the energy purchased by the council is generated from renewable sources.
- Installing solar panels on council buildings where possible. The council has 31 solar sites of varying scale;
- Over 15 council sites have had minor energy reduction measures installed;
- investment in green technology by installing the most energy efficient plant and equipment in council buildings;
- Low energy lighting has been fitted in over 30% of council buildings, which has saved an estimated 11% in electricity consumption;
- Insulation has been installed in over 20 council buildings, saving over 3% in energy consumption;
- Other members in the community are also working towards becoming net zero carbon. St Mary's Junior School is now one of the first schools in the world to achieve the Carbon Neutral Gold Standard. The school also became a participant in the United Nations Climate Neutral Now Initiative. Their achievement will be used as an example to inform other local schools on their net zero carbon initiatives.

In terms of transport, the council has worked to reduce carbon dioxide emissions and congestion by

- Enabling and encouraging more active and sustainable travel through enhancing pedestrian, cycle and bus routes;
- Developing a 'Greenway Project' which aims to deliver an active and sustainable transport network; providing traffic-free commuting and leisure routes connecting new Strategic Development Locations with the existing settlements;
- Supporting bus usage in Wokingham Borough. Which has grown by 18% over the last financial year and 38% between 2009/10 and 2018/19 compared to a -1% decline in the same period in the South East region;
- Requiring businesses to provide Sustainable Travel Plans as part of the planning process when building new premises;
- Installing new electric vehicle-charging sites across the borough;
- Encouraging the take up of electric vehicles. Between 15/16 and 17/18 growth in the number of licenced Ultra Low Emission Vehicles (ULEV) in Wokingham Borough was 456 vehicles (76.3%), compared to 30,632 vehicles (74.3%) in the South East region.¹³
- Promoting 'My Journey Wokingham', an active and sustainable travel campaign that supports Wokingham residents to travel by alternative modes. By creating journey routes, providing travel advice, attending community events, organising cycle training, guided walks, and producing personalised travel packs for residents, from 2016-2018 My Journey has seen
 - An 8% increase in the number of residents indicating that they cycle at least once a week

¹³ Vehicle licensing statistics: 2018. Department for Transport statistics.

- A 4% increase in the number of residents indicating they walk at least once a week. And
- From 2015-2018, 1,770 children were trained by Bikeability

The council has improved its recycling rates

- In 2018/19 it is estimated that 9% of household waste was sent to landfill, with 41% recycled. This is an improvement from 5 years earlier (2013/14) where 16% of household waste was sent to landfill, and 39% recycled
- As part of council plans to recycle at least 60% of all household waste by the end of 2020, residents have been recycling food waste since April 2019. 30% of all waste sent to landfill can be recycled in food waste collections (10,000 tonnes pa)

The borough has three Air Quality Management Areas and seeks to improve air quality through the actions in the Air Quality Management Plan. Such as

- Set a target to reduce Nitrogen Dioxide emissions from transport in Wokingham Town Centre
- Carried out diffusion tube monitoring out at 47 locations across the borough. The annual mean objective of 40 ug/m³ was only exceeded at 2 of the monitoring sites, 1 within the Wokingham Town centre AQMA and 1 within the Twyford Cross Road AQMA.
- Run a Clean Air Day on 20th June 2019 in Wokingham Town Centre. This annual event is focused on changing behaviours by creating awareness of the dangers of congestion in Wokingham Borough and engaging residents and businesses on the possible positive impact they can have on air quality.
- Planted 45,000 trees since 2011, throughout an accessible area of 120ha of green space in the borough.

Section 5. Wokingham Borough Council Key Priorities – Looking forward

The council has developed a Climate Emergency Action Plan that sets out the actions that will help the borough reach its target of becoming net zero carbon by 2030 from its baseline footprint of 580.9 ktCO_{2e} per annum

The priority areas of focus for the council's actions to reduce carbon dioxide emissions over the coming year are tackling carbon dioxide emissions from transport, reducing energy use (particular gas usage) in domestic properties, generating renewable energy, planting more trees and other green foliage and encouraging behaviour change. The action plan is not exclusively limited to these areas.

Below is some more detail on what we plan to do approach these nine priorities areas.

1. Reduce Carbon Dioxide Emissions from Transport

- **Promoting Active and Sustainable Transport Modes**

It is a council priority to avoid the use of private cars where possible. The ongoing 'My Journey' project is a behaviour change programme aimed at encouraging walking, cycling, bus and train travel as a viable alternative to the private car. The outcomes of My Journey include reducing congestion, improving local air quality and improving both mental and physical health. The council has recently adopted the Rights of Way Plan and plans to increase the number of cycle lanes in the borough.

- **Public Transport**

Residents will be encouraged to use public transport more frequently. The council is reviewing its tendered bus network and aims to expand and improve the use of public transport. Wokingham already makes use of gas powered, hybrid and Euro VI engine buses on its contracted service. However, as technology develops the council will be looking to move to even greener vehicles.

- **Traffic Management**

Wokingham Borough Council views technology as vital in achieving the net zero carbon target and is undertaking ongoing work to look at 'Smart City' interventions that can improve traffic flows, reduce congestion and stimulate behaviour change to optimise the use of the existing road network.

- **Electric Vehicles (EV)**

The council has installed a number of EV charging points across Wokingham Borough in anticipation of the increasing take-up of EVs in the future. The council will develop an EV strategy to build on this work.

- **Air Quality**

One major challenge for Wokingham Borough is the negative impact that the emissions from transport and congestion have on air quality. Emissions from traffic include nitrogen oxide particulates as well as greenhouse gasses. Air pollution has become an increasingly significant topic because of the negative impacts on respiratory health. The council is looking into new technologies to create intelligent transport systems and prevent congestion in the future, including air circulation technology to manage air flow as well as digital signage, to alter flows of traffic.

- **Using Smart Technology to Reduce Emissions in the Borough**

Wokingham Borough Council is a partner in the Berkshire Smart City Cluster which looks at introducing smart technology to improve efficiency and the ADEPT 'Live-labs' project. Both projects are exploring smart technology solutions to reduce energy usage and improve transport efficiency.

2. Reduce Carbon Dioxide Emissions from Domestic and Business Property - Green Bank Project

There are around 72,000 dwellings in the Borough, of which 85% are estimated to use fossil-fuel based natural gas. The council will set up the Green Bank Project to help residents and businesses pay for the cost of energy efficiency improvements to homes, offices and equipment.. This is run by neighbouring Windsor and Maidenhead council on behalf of the region. The scheme aims to help residents retrofit their own homes.

The council will implement the necessary measures to improve the current energy usage of its own corporate properties, and together with the planned renewable energy generation infrastructure aim to become net zero carbon by 2030.

3. Generate more Renewable Energy in the Borough

The council plans to develop five largescale solar PV farms throughout the Borough over the next five years, to ensure that all of our corporate property sites are supplied with net zero carbon energy. This will not only increase the production of renewable energy, but has the potential to generate an income, which will then be reinvested into delivering other carbon dioxide reduction projects.

4. Create a Local Plan that Specifies Net Zero Carbon Construction and Infrastructure

All major residential and commercial developments will be expected to deliver high sustainable construction standards. Policies to enable this will be embedded in the upcoming Local Plan Update (LPU). Within the statutory planning framework, Wokingham Borough Council aims to encourage, as far as possible, sustainable lifestyles that are net zero carbon. To this end, developments will enable the use of walking, cycling and public transport through ensuring that these options are central to the design and layout of new development. Major developments will embrace innovative sustainable design solutions for energy efficiency and low carbon energy generation and use.

The council expects all new major developments to be net zero carbon by building net zero carbon homes for sustainable longevity and offsetting any emissions from the construction period. Building low carbon technology into new communities will encourage sustainability in the everyday life of Wokingham Borough's residents.

The LPU will also facilitate the positive role that new developments can have in supporting the establishment of new renewable energy technologies as a key part of the development. The LPU will also require development proposals to maximise opportunities that support the expansion and efficiency of existing renewable energy schemes where it is appropriate to do so.

Additionally, embedding net zero carbon into planning policies will allow the borough to tackle emissions from domestic gas. This will build on imminent government legislation to ensure all future homes are built to be low-carbon.

5. Increase the Levels of Carbon Sequestration in the Borough Through Greening the Environment

The council will plant 250,000 new trees over the next five years. Greening the Borough is a project which will see afforestation occurring all over Wokingham. The council will encourage and support residents to plant trees in their gardens. The Local Plan Update will incorporate landscaping and net gain biodiversity principles to ensure afforestation and natural space is a prominent feature of any new development taking place throughout the borough.

Voluntary groups have been and continue to be essential in environment conservation in ways which are woven through communities. For example, community garden schemes such as the Gypsy Lane Community Garden. Encouraging these forms of grassroots conservation project, particularly where carbon saving techniques can be incorporated, is an aim for the council. Additionally, there are several Allotment sites across Wokingham Borough where communities can conserve the land as they see fit, increasing the carbon capture capability of the land. There is a new allotment site due to be open in 2020 as part of the South Wokingham SDL. The council hopes this will encourage the new communities in this development to see nature at the heart of their community and reduce their carbon dioxide emission contribution.

As well as increasing the capacity for carbon offsetting, afforestation will allow for a biodiversity net gain, an approach to development that increases levels of biodiversity to a greater state than before. This approach works in addition to mitigating biodiversity loss. This will be done in an effort toward rewilding areas to their natural state and allowing habitats to expand, a process which allows communities to reconnect with nature.

6. Engaging with Young People and Supporting Sustainable Schools

The council will launch a sustainable schools programme, to speed up the shift to clean, onsite energy generation. The programme aims to promote behavioural change amongst young people by engaging with schools to work with children to encourage the adoption of new 'climate-friendly' behaviours that will influence their families and communities.

To achieve a holistic approach to net zero carbon, this programme will be supported by a raft of clean energy generation and saving technologies such as retrofitting school buildings, better cycle routes to schools, no-idling policies etc.

Engaging with and hearing the voices of the younger generations in the borough is essential to the council's approach to the climate emergency. It is evident that climate change is a particularly significant issue for many young people and that they can be highly effective advocates for change. It is evident that climate change is a particularly significant issue for the next generation and they have already demonstrated that they can be highly effective advocates for change. School visits are seen by the partnership as essential for promoting key beneficial messages around issues such as public health and sustainable choices and allowing them to gain momentum. Raising awareness will occur in several ways, for example, through assemblies, workshops, conferences, and competitions, as well as implementing strong partnership working between schools, communities, university, businesses, the council and local charities.

7. Reduce Waste sent to Landfill

The council aims to achieve zero waste to landfill and 90% recycled by 2030. The council will reach its 60% recycling target in the borough by 2020. This step-change has been achieved through encouraging people in the borough to change their behaviour and recycle more whilst enabling them to do so. An example is the introduction of food waste collection which has been a great success borough-wide. Wood recycling from household recycling centres has also been introduced. There

remains great scope for future improvement with opportunities available regarding glass recycling and increasing the range of plastics that can be recycled.

8. Encouraging Behaviour Change

Invest into educational programmes for residents, businesses, schools, charities and other organisations to help them calculate and reduce their own carbon footprints.

- **Leading by example**

As a community leader the council will set an example and set high standards in becoming net zero carbon. Not only practically on its own estate but also across its policies, service delivery and investment decisions.

- **Wokingham Borough Council staff getting involved**

'The Green Team', is an internal team of staff who have a keen interest in the environment and climate change and are enthusiastic to roll out necessary sustainable changes across the whole staff cohort. This includes encouraging the removal of single use plastics and encouraging active and sustainable travel for both journeys to and from work and work related trips.

- **My Journey**

The My Journey team work with local communities, schools, businesses and transport providers to address the barriers to walking and cycling, and travelling by bus and train. In addressing the barriers to active and sustainable travel, the My Journey team deliver road safety and cycle training, provide advice on route planning, highlight the benefits of non-car based travel, organise led walks and cycles and provide incentive and discounts. In 2018-2019, our schools saw a 5% reduction in children driven to school compared to 2015-2016.

Section 6. Climate Emergency Action Plan

This Climate Emergency Action Plan was developed to set out the activities that will be undertaken in order to reach the 2030 carbon neutral target. This Action plan is the collective effort of consultation processes implemented since August 2019, and includes views from our members, parish councils, local schools, members of the public and the council staff. We have also consulted with consulted the following organisations in preparing the plan;

- The Energy Hub South East (Part of the Department of Business Energy and Industrial Strategy)
- University of Reading - Sustainable Futures in the Built Environment Department
- WSP –Transport and Environmental Consultant
- Chair of WBC Business Group

There is a level of interaction between the Climate Emergency Action Plan and existing plans and strategies to which Wokingham Borough Council contributes to or manage. Key actions by the council across its various functions and as a large organisation are summarised within the Action Plan.

The Climate Emergency Action Plan is aligned with the UN's 17 Sustainable Development Goals (SDGs). The SDGs give us an opportunity to create greater value for organisations and society and help us to understand these systems and how we interact with them. Appendix 1 goes into more detail on the UN's 17 Sustainable Development Goals and how they relate to the activities of the Climate Emergency Action Plan below. Appendix 1 also acts as a useful reference to how the SDG codes link back to the actions in the Climate Emergency Action Plan.

Areas of carbon reduction	Outcomes	Actions
Transport	<p>Increase the take up of sustainable transport modes (Spatial Strategy for the Local Plan will partly influence this) (SDG11; SDG13; SDG17)</p> <p>Increase the number of electric cars in the borough (SDG7)</p>	<ul style="list-style-type: none"> • Local Transport Plan (LTP4) will include consideration of the future of transport and CO₂ • My Journey to increase focus on CO₂ • Enabling mode shift to increase active and sustainable travel opportunities across the borough

Areas of carbon reduction	Outcomes	Actions
	<p>Improve air quality in the borough. (SDG3; SDG4; SDG5)</p>	<ul style="list-style-type: none"> • Identify and improve key routes to get maximum uptake of walking and cycling • Make public transport more convenient and greener to operate • Increase the electric vehicle charging network in the borough • Considerations to pedestrianising retail centres except to buses. • Bike storage and car clubs to be installed around the council buildings • Cross Berkshire Cycle Route • Improve air quality in areas of concern. • Introduce intelligent transport systems – traffic lights and digital signage linked to the emissions levels • Rotation of the road signage (digital signage) to increase awareness of emissions levels • Assess the effectiveness of introducing green walls, green roofs and other plantings around main roads • Banners up to encourage motorists to switch engines off whilst queuing • Introduce measures to discourage and penalise vehicle idling
<p>Green Bank Project</p>	<p>Explore opportunities to make the existing buildings net zero carbon. (SDG11) Explore alternatives to make new construction net zero carbon.</p>	<ul style="list-style-type: none"> • Set up the Green Bank Project to support reducing energy use from domestic housing and encourage switch from gas to electricity • Create a programme for retrofitting and improve insulation of buildings • All corporate sites and council housing to become net zero carbon • Considerations to an Energy Company Obligation (ECO) scheme for the Authority. • Move away from ‘gas provision’ for all new build council properties.

Areas of carbon reduction	Outcomes	Actions
		<ul style="list-style-type: none"> Partner with businesses to introduce and test the most sustainable new technologies
Generating Renewable Energy	Generation of renewable energy and use battery storage technology to manage renewable energy more effectively. (SGD7)	<ul style="list-style-type: none"> Feasibility studies for new renewable installations in the borough Installation of large scale renewable energy generation technologies such as solar farms on Wokingham Borough Council land Where possible we will look at the potential of commercialising energy generation and storage
Local Plan and New Development	<p>Introduce a planning policy framework which:</p> <ul style="list-style-type: none"> Requires all new major housing development to be net zero carbon (SDG9) All non-major residential development and non-residential development to deliver high sustainable construction standards (SDG9) Encourages retrofit improvements to existing buildings (where planning permission is required) Facilitates renewable / low carbon energy generation across the borough (e.g. ground source heating), either standalone or part of developments (SDG 7) Formalises the requirement for EV charging points as part of parking policy <p>Use the opportunity presented by key future developments to include cutting edge net zero carbon innovation (SDG9)</p>	<ul style="list-style-type: none"> Develop suite of policies covering climate change, building standards, and energy Draft policies incorporated into Draft Local Plan Update for approval of Executive and consultation (January 2020) Final Draft policies incorporated into Pre-submission Local Plan Update for approval of Executive and consultation (July 2020) Embed climate protection in branding Incorporate smart tech solutions and latest build standards into new development master plan Adopt modern methods of construction to reduce carbon dioxide Consider energy generation and waste management Public transport oriented design to encourage modal shift Public realm design to encourage walking/cycling possibly through a cycle superhighway Transport Future Proofing through Smart Technology, Autonomous vehicle R&D, Electric vehicle charging points/filling station Green and Blue Infrastructure for biodiversity net gains Incorporate carbon offsetting projects

Areas of carbon reduction	Outcomes	Actions
Carbon Off-Setting	Realise the positive impact that the carbon capture properties of plants will have on our carbon footprint. (SDG3; SDG15)	<ul style="list-style-type: none"> • There are several tree planting schemes the council is been looking at to increase overall woodland cover in the borough • Under the current Local Plan we have a further 75ha of SANGs to deliver and expect that to equate to an additional 30,000 new trees • Encourage and support residents to plant new trees in their gardens
Sustainable schools programme	Encourage the younger generations in the borough to get involved in cutting carbon dioxide emissions. (SDG4; SDG5)	<ul style="list-style-type: none"> • Engage schools in the borough with climate emergency • Support schools to implement onsite energy generation • Obtain feedback from school children on the Climate Emergency • Climate conference to be host for the students of secondary schools in March 2020 • Hold the Climate Competition for students to implement their own sustainable ideas • Launch an environmental awards for schools • Engage local schools with various air quality awareness programmes.
Reduce and Recycle	<p>Increase carbon savings opportunities that can be made from recycling waste. (SDG12)</p> <p>Develop an action plan to phase out single use plastic across council activities, for example parks, markets and events. (SDG12)</p>	<ul style="list-style-type: none"> • Link to Joint Central and East Berkshire Minerals and Waste Local Plan <p>Considerations to achieve 90% recycling by 2030:</p> <ul style="list-style-type: none"> • Work with re3 partners to reduce contamination • Work with re3 colleagues to increase recycling currently in the blue bags • Improve recycling in flats and multi occupancies especially around food waste and general contamination • Convert from a tonnage based approach to a carbon based approach to waste

Areas of carbon reduction	Outcomes	Actions
<p>Changing Behaviours - Engagement & Communications</p> <p>Activities of Council Staff</p>	<p>Introduce a culture of carbon neutrality through the council with all staff and services. (SDG12, SDG13)</p> <p>Ensure the council encourages local residents and businesses to support the ambition of becoming net zero carbon by 2030. (SDG13)</p> <p>Communicate the council’s carbon management activity by demonstrating that the council is leading in cutting carbon. (SDG13)</p> <p>Help business to develop low carbon business models, reduce their own carbon footprints and build climate resilience. (SDG13; SDG17)</p> <p>Ensure businesses allow for everyone to benefit from the prospering low carbon economy (SDG1; SDG10)</p> <p>Aid businesses and industrial process in being as sustainable as possible, particularly the prominent agricultural sector (SDG2)</p>	<ul style="list-style-type: none"> • Ensure that the theme of net zero carbon is embedded in the council operations and encourage behavioural change • Setting up a Green Team made up of staff interested in sustainability action • Encourage council staff to adopt sustainable modes of transport • Requiring carbon targets on our suppliers and taking carbon dioxide emissions into account when procuring goods and services • Establish corporate principles for internal and external operations undertaken by the council • Create a climate emergency communications plan • Consult with staff members, schoolchildren and businesses on their carbon neutral ideas as part of a wider engagement programme • Carry out a consultation with residents to gather ideas on reducing the Borough’s carbon dioxide emissions • Engage with the charity and voluntary sector to aligned their efforts with the climate emergency strategy • Raise awareness of the benefits of active and sustainable travel through the My Journey social media feeds, in presentations to school children and businesses, at events. • Arrange a Fit for Business event to support business in becoming net zero carbon and educate entrepreneurs in sustainable practices • Create partnerships with local business and provide the opportunities for the delivery of new and/or green technologies which will allow the low carbon economy to grow in the borough

Section 7. Finance and Resource

The council will seek funding wherever possible to support the delivery of the actions in the Climate Emergency Action Plan. This will include bidding for funds and applying for crowdfunding where applicable.

Some of the activities in the action plan will generate income or make savings. This funding will be ring-fenced to be reinvested on other projects in the Climate Emergency Action Plan.

The council has already established a new role, the Climate Emergency Strategy Officer, as a commitment to the work that needs to be carried out in delivering the Climate Emergency Action Plan to help Wokingham Borough become net zero carbon by 2030.

The council will make the financial provision shown in table 2 to implement the actions in the action plan over the next three years (subject to approval at council).

Table 2. Wokingham Council Budget between 2020 and 2023

Project Name	Project Description (for MTFP)	2020/21 £'000	2021/22 £'000	2022/23 £'000
Public Rights of Way Network	Investment in all public rights of way and other non-motorised routes to support the needs of all types of users	612	737	737
Wokingham Borough Cycle Network	Investment in current/future cycle networks in the Borough	500	500	1,000
Greenways	A network of quiet commuting and leisure routes for pedestrians and cyclists	610	874	742
South Wokingham Railway Crossings (Foot and cycle)	New Foot and cycle structures in the borough	0	0	1,500
Byways	Foot/bridal/cycle ways enhancements or new build in the borough	100	100	0
Winnersh Triangle Parkway	Transport infrastructure enhancement in the borough	3,100	0	0
Coppid Beech Park and Ride	Transport infrastructure enhancement in the borough	2,700	0	0
Transport infrastructure enhancement in the borough	Bus Stop Infrastructure Works to Support North Arborfield SDL Bus Strategy	54	0	0

Renewable Energy Infrastructure projects	Renewable energy generation infrastructure. i.e. solar farms (fields of solar panels) feeding into a battery or grid arrangement.	3,500	6,500	8,000
Waste Schemes - Recycling	The purchase of brown bins, paper sacks and recycling boxes to enable the Borough to continue their waste/recycling scheme	89	89	89
Support Services Energy Reduction Schemes	Investment in energy reduction schemes through various mechanisms e.g. lighting, insulation and improvements; which is envisaged to deliver demonstrable energy bill savings	250	250	250
Food Waste Collection	To provide food waste containers	20	20	20
Wokingham Biodiversity Capital Projects	A rolling programme of capital projects aimed at enhancing the biodiversity value of various sites and other assets	25	25	0
Managing Congestion and pollution	Investment in future road building/enhancement across WBC road network (including new relief roads)	3,000	5,000	5,000
Energy Reduction Projects	Expenditure on a wide range of energy efficiency projects at existing properties to improve energy efficiency. These include, installing LED lighting, Cavity Wall, loft insulation boiler controls etc, all to make the property 'consume' less energy	1,500	1,500	1,500
Climate Emergency		16,060	15,595	18,838
Grand Total between 2020 and 2023		£50 million		

Section 8. Governance and Monitoring

The **Climate Emergency Working Group**, made up of a cross party group of members, has been established to investigate and propose further recommendations to help achieve a net zero carbon Borough. The Working Group will undertake its role by:

- i. Reviewing, monitoring and contributing to the delivery of the actions set out in the Wokingham Borough Council Climate Emergency Action Plan
- ii. Providing a high level steer on policy direction in relation to carbon reduction
- iii. Reviewing the delivery and performance of key carbon reduction projects by the council
- iv. Reviewing and monitoring progress toward the council's ambition to achieve net zero carbon for Wokingham Borough by 2030 against the council's baseline carbon footprint.
- v. Liaise with and assist the Town and Parish Councils in implementing measures locally.

A **Climate Emergency Advisory Group** made up of representatives from industry, academia and charities. This group will meet quarterly to explore what new ideas and cutting edge technology can bring to reducing carbon dioxide emissions in the borough.

A **Climate Emergency Investment Board** will be established to assess each action in the CEAP in terms of carbon saved, income generated and costs to decide which actions will be invested in by the council.

The **Climate Emergency Officers Group** meets monthly and is attended by officers from across all of the departments in the council. The officers group delivers the activities set out in the CEAP.

We will set up working subgroups to work on specific areas to support the delivery of the action plan.

An annual Climate Emergency Progress report will be developed and brought to council for approval in July 2020 and annually in July thereafter. This report will have a fully costed up action plan with carbon saving quotas against individual projects. The report will summarise the boroughs achievements and demonstrate the benefits of becoming net zero carbon.

The Climate Emergency Action Plan can be called in for overview of scrutiny committees.








The Wokingham Borough Council Economic Prosperity and Place Team will lead on the implementation and monitoring of the CEAP.











Appendix 1. Climate Emergency Action Plan Key Actions and the UNs Sustainable Development Goals

Wokingham Borough Council and the Sustainable Development Goals

The Local Government Association (LGA) passed a motion in July 2019 declaring a climate emergency. At the same time offering a unified voice for local government to assist in delivering the UN's 17 Sustainable Development Goals (SDGs). In the table below each goal has been assigned an SDG number. For example, Good Health and Wellbeing is SDG3 and links back to the appropriate action in the Climate Emergency Action Plan demonstrating how Wokingham Borough are supporting the UN's 17 Sustainable Development Goals.

Wokingham Borough Council recognises that, as a local authority, we are in the best position to raise awareness and to influence in the delivery of the Sustainable Development Goals.

No poverty SDG1	Although Wokingham is an affluent borough, we will work hard to ensure the Climate Emergency action plan creates a sustainable, carbon neutral economy that will achieve economic justice as well as economic growth.	
Zero hunger SDG2	As a rural borough, sustainable agricultural practice is of high importance as well as promoting sustainable eating in the borough through the action plan which focuses on cutting down on meat consumption.	
Good health and wellbeing SDG3	We will be encouraging sustainable transport such as cycling and converting to electric vehicles through our action plan to ensure we maintain our high level of well-being across the borough	
Quality of education SDG4	The youthful population are a large part of our action plan to meet our 2030 net zero carbon target and we aim to promote sustainable lifestyles throughout our schools and ensure we hear the voices of our children.	
Gender equality SDG5	We hope the women and girls in the borough will take part to make the action plan the most effective in everyday situations like reducing waste and single use plastics.	
Clean water and sanitation SDG6	There is a strong focus on reducing water waste in the Borough which will comply with the sustainable management of water targets sat beneath this SDG.	
Affordable and clean energy SDG7	We are determined to roll out sustainable energy generating methods through the implementation of solar panels, particularly in our SDLs, which are both clean and affordable in the long term.	

Decent Work and economy growth SDG8	Wokingham Borough benefits from a below average unemployment rate and bringing more sustainable enterprises to the borough will only enhance our working population further.	
Industry, innovation and infrastructure SDG9	A large section of our action plan is dedicated to ensuring our new developments are net zero carbon through sustainable infrastructure and that we promote sustainable leaving within these new communities.	
Reduce inequalities SDG10	The UK suffers from vast disparities in wealth but this can also be seen on a local scale within the Borough. We aim to work the Climate Emergency action plan with economic development in mind to ensure we achieve economic equality throughout the borough.	
Sustainable cities and communities SDG11	Wokingham Borough is lucky to have an existent community that is resilient, inclusive and safe. We aim to build on this and strengthen this through the action plan to promote the same characteristics for the communities created in the new developments.	
Responsible consumption and production SDG12	The themes of this goal are woven throughout the action plan to promote and encourage a change in lifestyle of the residents in the borough starting with the council staff through the work of the Green Team.	
Climate action SDG13	By working towards our 2030 net zero carbon borough target we have been able to put in place Officer groups and projects that reflect the targets under our action plan and enforce action to combat climate change.	
Life below water SDG14	Protecting our bodies of water is essential for us as they are facilities for residents to enjoy in green space for non-polluting recreational activities	
Life on land SDG15	Protecting our greenspace as a rural borough is of huge significance and is reflected in the action plan, as we aim to preserve the land as a carbon sink or sustainably develop on land in a way that allows the whole borough to reap the sustainable rewards.	
Peace, justice and strong institutions SDG16	As an influential institution in the borough, we take our role in combating climate change very seriously and will show our respect of our communities through public consultation and incorporating resident's ideas throughout our action plan.	
Partnerships for the goals SDG17	Creating partnerships are an essential aspect of our action plan, especially one which is tackling such a global problem. Partnerships, especially with the businesses in the borough, will allow us to achieve more.	

Appendix 2: Further Analysis of Wokingham Borough's Carbon Footprint

Analysis

National Comparison

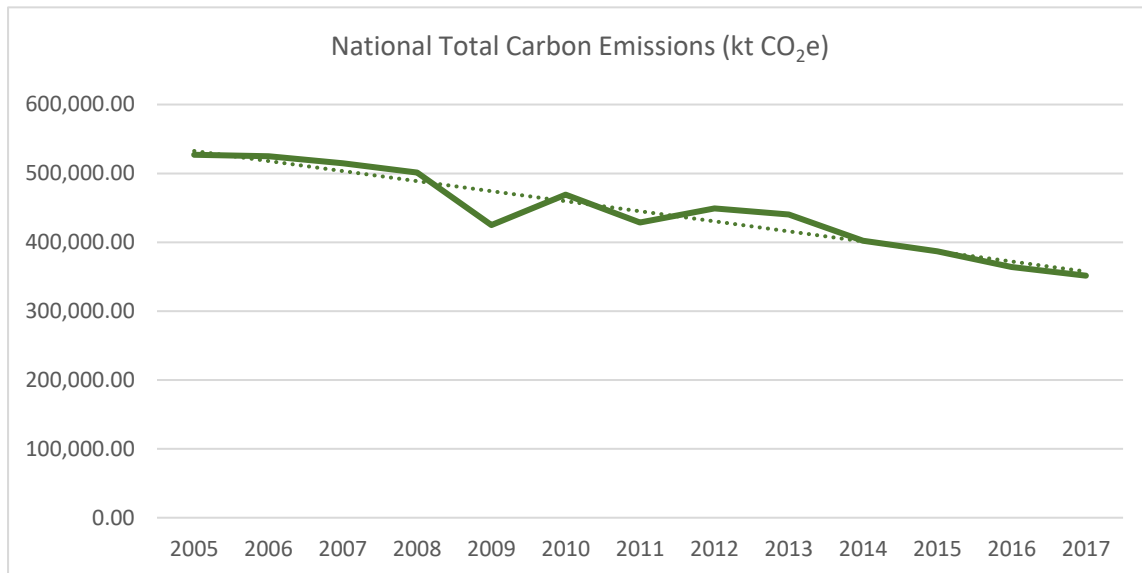


Figure 2 National Total Carbon Dioxide Emissions (kt CO₂e)

Wokingham Borough has followed very similar peaks and troughs experienced nationally. This suggested there are no key issues where Wokingham Borough went 'off-track' and should be in a good position to begin making significant moves to meet the 2030 net zero carbon target.

Surrounding Area Comparison

The local authorities surrounding Wokingham will be used throughout this section to further illustrate the borough's emissions and put them in perspective. The graph overleaf (figure 3) shows total carbon dioxide emissions of each local authority. Wokingham sits in the middle of the areas with similar emissions in 2017 to Slough. West Berkshire has very high emissions relative to the surrounding areas and this is mostly due to high private car travel and the resulting road emissions, as it is such a rural area. Bracknell on the other hand, has the lowest emissions due to a well-used public transport system and many new and energy efficient homes.

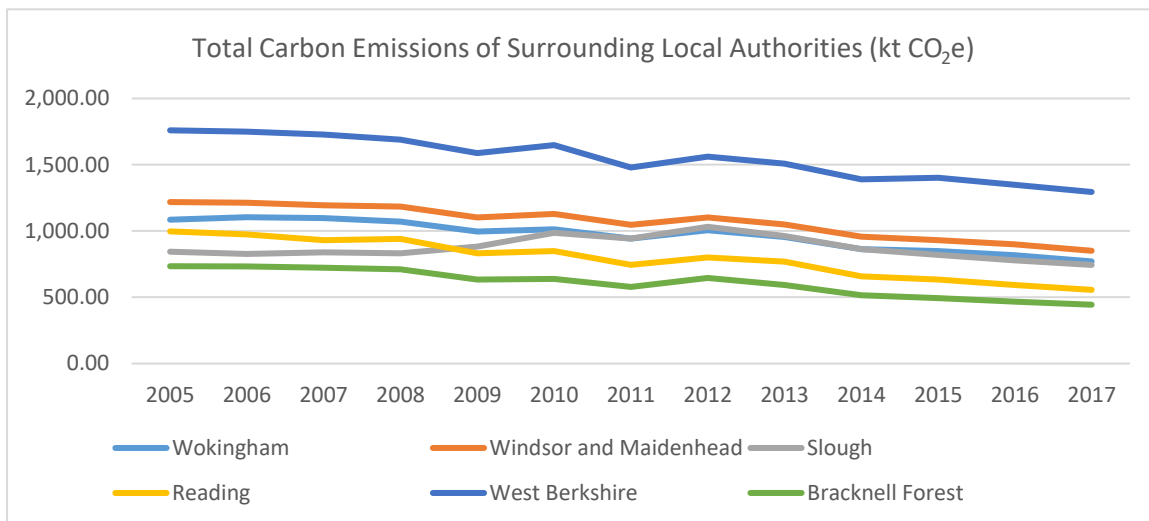


Figure 3 Total Carbon Dioxide Emissions of Surrounding Local Authorities (kt CO₂)

Per capita emissions (figure 4 below) is another method of illustrating an areas carbon dioxide emissions by dividing total emissions by the population. This then represents how much carbon each person is responsible for emitting. In Wokingham the per capita emissions are 3.5 tCO₂e. This is one of the lowest relative to surrounding areas. Reading has the lowest per capita emissions which is likely to be due to good public transport infrastructure, as a city. West Berkshire has the highest per capita carbon dioxide emissions due to the reasons discussed above. The emitting sectors, as already discussed, are broken down further and analysed separately below.

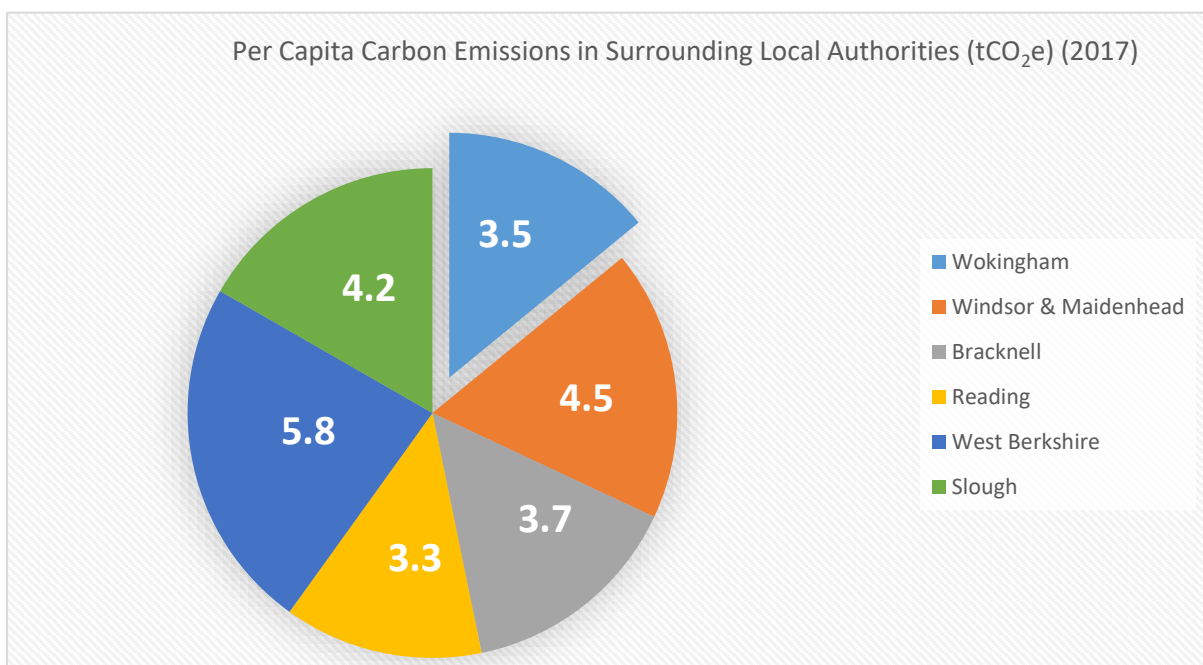


Figure 4 Per Capita Carbon Emissions in Surrounding Local Authorities (tCO₂e) (2017)

Transport

Transport contributes almost a third (31%) of the borough's total carbon dioxide emissions. Of the subsectors within transport, the greatest contributor to carbon dioxide emissions is minor roads emitting 88.7 ktCO₂e. Emissions from A-roads are slightly lower at 85.5 ktCO₂e. Both sectors have been increasingly emitting carbon dioxide in the years leading up to 2017, but decreased slightly in 2017 itself. With both sectors dropping by around 2 ktCO₂e. Further research will need to be done to understand what drove this recent slight decrease.

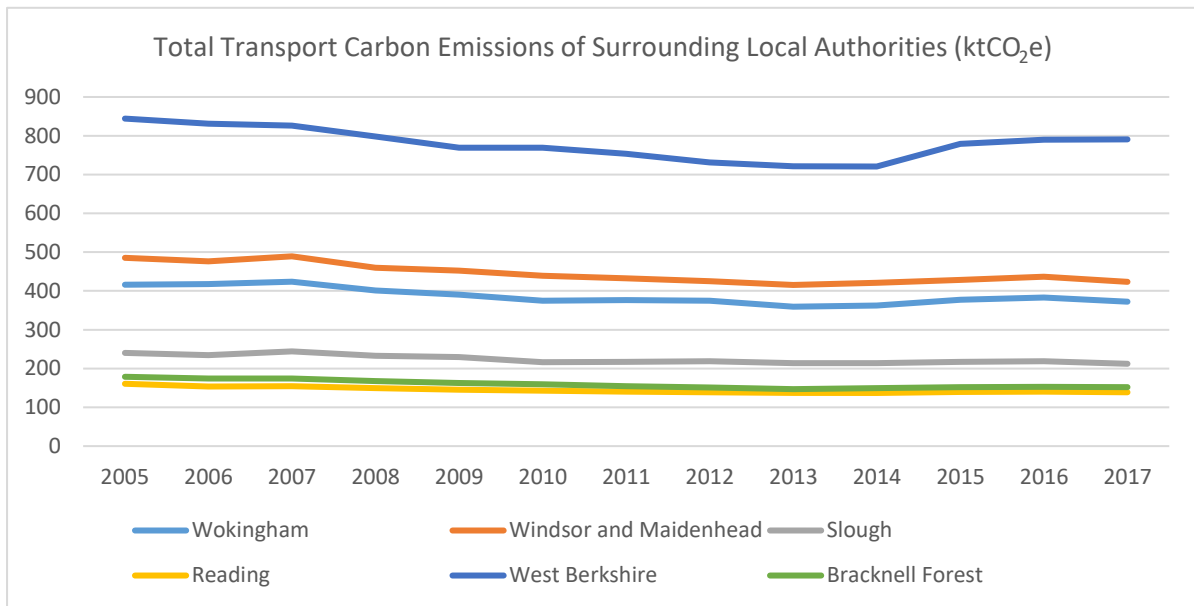


Figure 5 Total Transport Carbon Dioxide Emissions of Surrounding Local Authorities (ktCO₂e)

Two characteristics of Wokingham Borough are a factor in this large proportion. Firstly, the semi-rural nature of the area means many residents must drive for everyday activities, such as their commute and the school run. Many feel unsafe cycling on the country lanes and public transport in the borough is not easily accessible to those situated away from the main towns. This means private transport is heavily relied upon and is, of course, a damaging lifestyle in terms of carbon dioxide emissions. This can be seen in the above chart at West Berkshire has the highest levels of transport emissions because it is such a rural area.

Secondly, the affluence in the borough leads to high numbers of cars per household and also cars with larger engine sizes which are bigger polluters. Congestion has been a large cause for concern in Wokingham for years but the realisation of the impact on the climate emergency has put this issue under a new lens with further ideas and scope for improvement being realised.

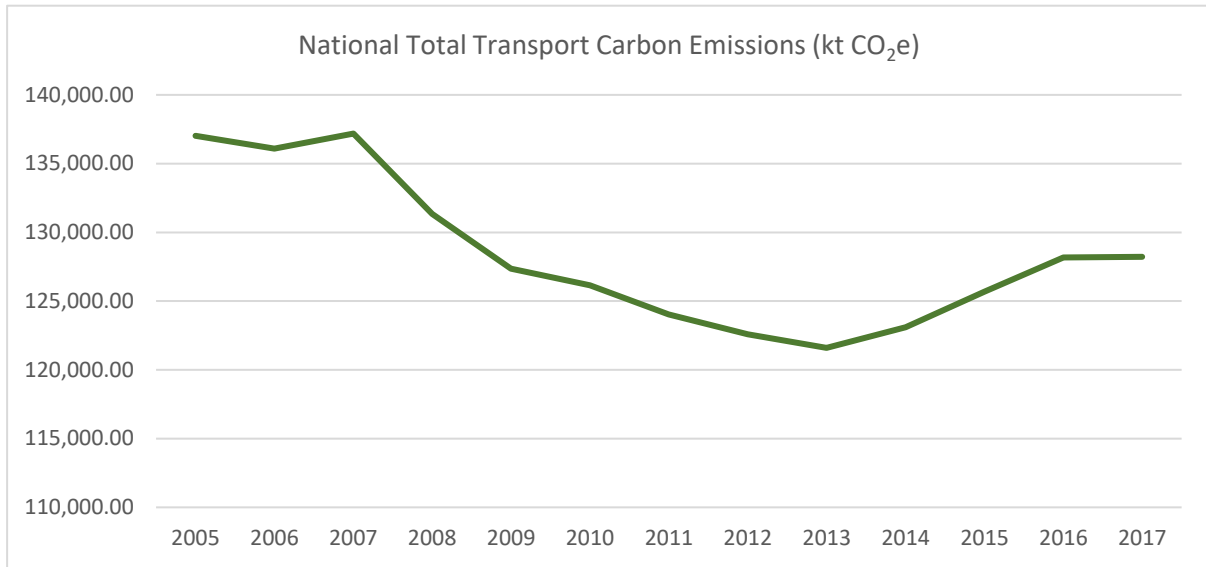


Figure 6 National Total Transport Carbon Dioxide Emissions (kt CO₂e)

Domestic/Residential

This is the largest emitting sector, contributing 43% of Wokingham Borough’s total carbon dioxide emissions. Wokingham is a historic town with many older houses which, do not lend themselves to be energy efficient, a lacking in insulation and double glazing. Domestic Gas contributes 68.4% of all Domestic Emission and 30.5% towards the overall carbon footprint. Therefore, retrofitting existing homes to become more energy efficient, away from gas as fuel will be key to reducing domestic emissions. Domestic gas emissions have remained relatively stable over the period set out below from 2005. This is because there has been very little mitigation in residential buildings and the boroughs older houses are not well insulated or efficient.

On the other hand, domestic electricity emission have been decreasing since 2012 and in 2017, carbon dioxide emissions from electricity stood at half of what they were in 2012. As mentioned above, energy sources for electricity supply have become increasingly renewable since 2012 as solar, wind and hydroelectric energy infrastructures began to supply larger amounts of the UK’s renewable energy generating capacity. Furthermore, the UK Government’s Renewable Obligations required 10.4% of the country’s energy to be renewably sourced by 2012. With other targets along the way, the next is a 20% target in place for 2020-2021.

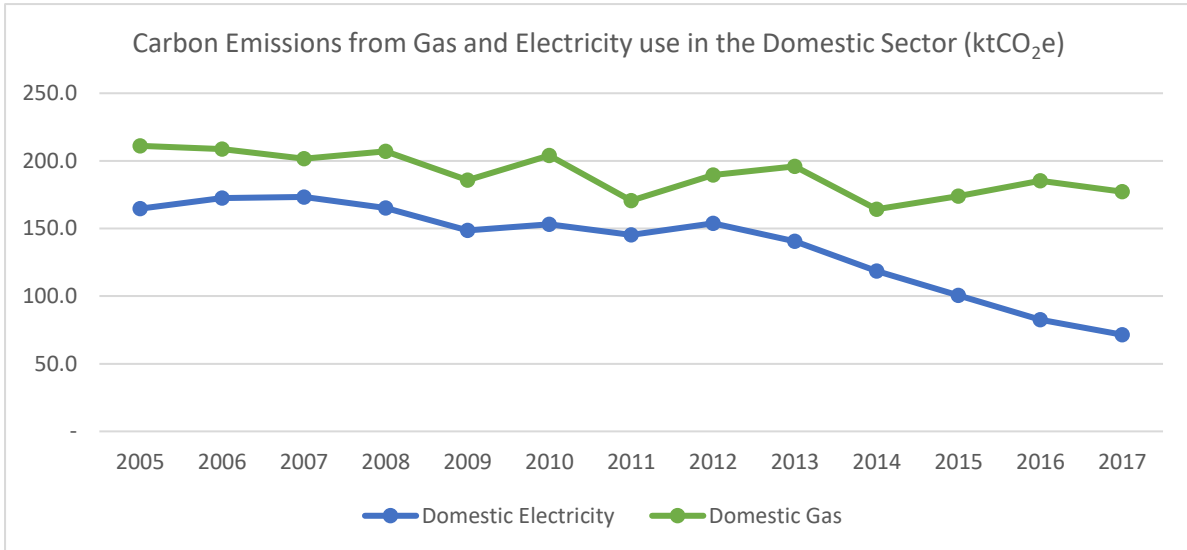


Figure 7. Carbon Dioxide Emissions from Gas and Electricity use in the Domestic Sector (ktCO_{2e})

The trends in the surrounding areas are very similar to Wokingham Borough's due to the nature of the energy sector being dictated by government policies on energy sources. Currently domestic carbon dioxide emissions reduction is mostly from energy efficient homes, particularly gas emissions. The levels of emissions vary suggesting the local authorities with newer buildings as the lowest such as Bracknell and Slough, and the more historic and rural areas are at the top including Wokingham which follows very similar trend to Windsor and Maidenhead.

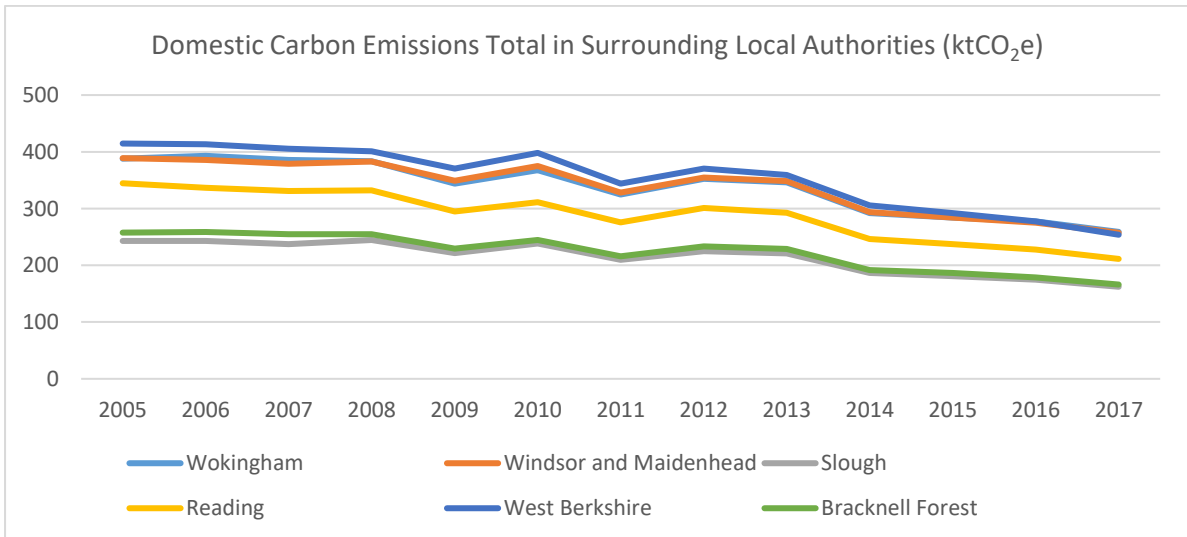


Figure 8 Domestic Carbon Dioxide Emissions Total in Surrounding Local Authorities (kt CO_{2e})

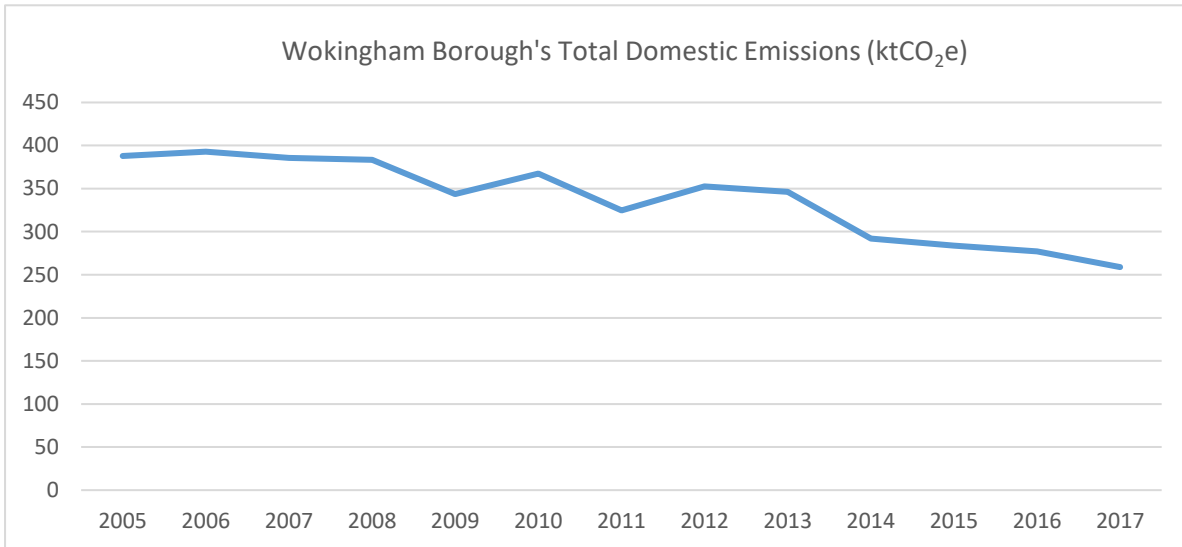


Figure 9 Wokingham Borough's Total Domestic Carbon Dioxide Emissions (ktCO₂e)

Likewise, Wokingham Borough's domestic emissions follows national trends. This further supports the idea that these emissions are part of national energy policy as there is such little variation across the immediate area and across the country.

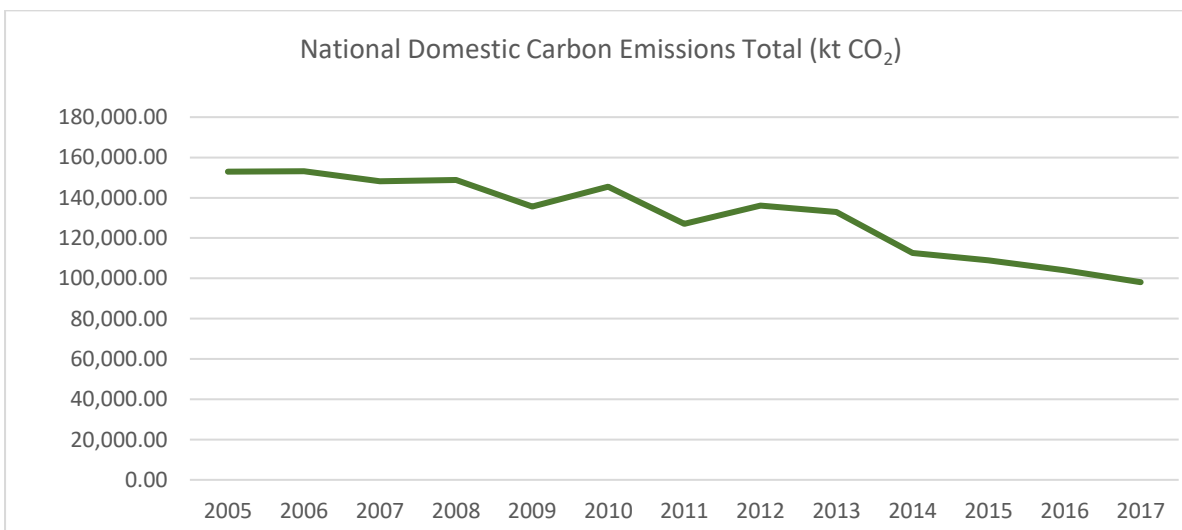


Figure 10 National Domestic Carbon Dioxide Emissions Total (kt CO₂)

Industry and Commercial

Similarly to domestic emissions, industrial and commercial buildings also emit through gas and electricity consumption. Contrary to domestic emissions, electricity contributes a much larger proportion of industrial and commercial emissions, contributing 60.5% of total industry and commercial emissions. However, emissions from electricity use have been decreasing at a relatively rapid pace since the previous increase in 2012. Industrial and commercial gas emissions account for a quarter of the sectors total.

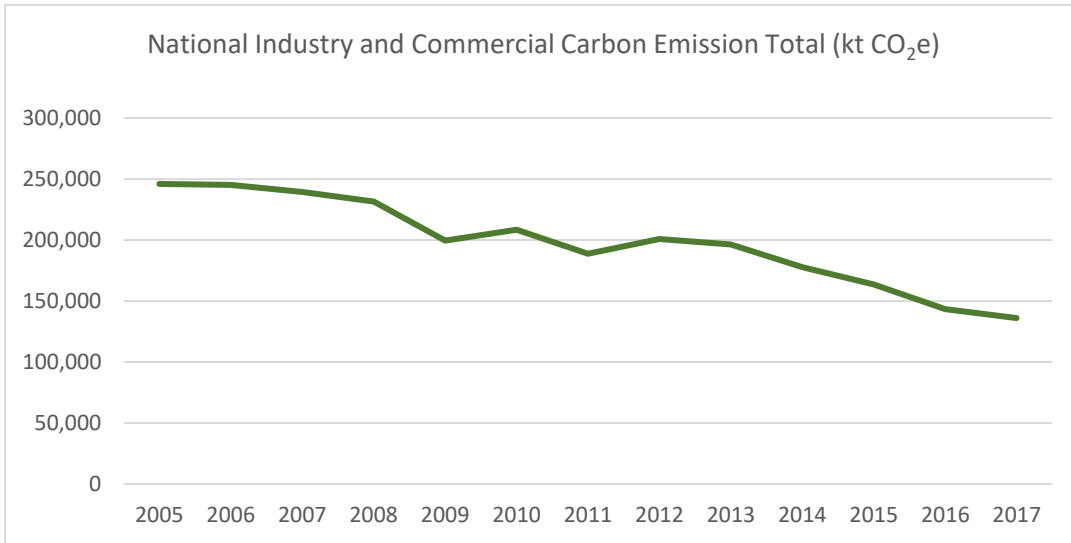


Figure 11 National Industry and Commercial Carbon Dioxide Emission Total (kt CO₂e)

Nationally, carbon dioxide emissions from the industry and commercial sector have also been decreasing. Again this has occurred since 2012, likely due to the increase in renewable energy supplying electricity as outlined in the domestic section above. Additionally, the UK has continued to move further away from the production sector and into the services sector which is less polluting due to the lack of industrial processes taking place which can cause high carbon dioxide emission rates.

This shift is true for Wokingham as a Borough located in the prospering South East. The borough has almost 9,000 enterprises active of all sizes from micro to large, most of which are low emitting office based organisations. The economic climate is changing as the low-carbon economy is rapidly growing in the UK as consumers are beginning to demand sustainability from their purchases, particularly in affluent areas like Wokingham Borough.

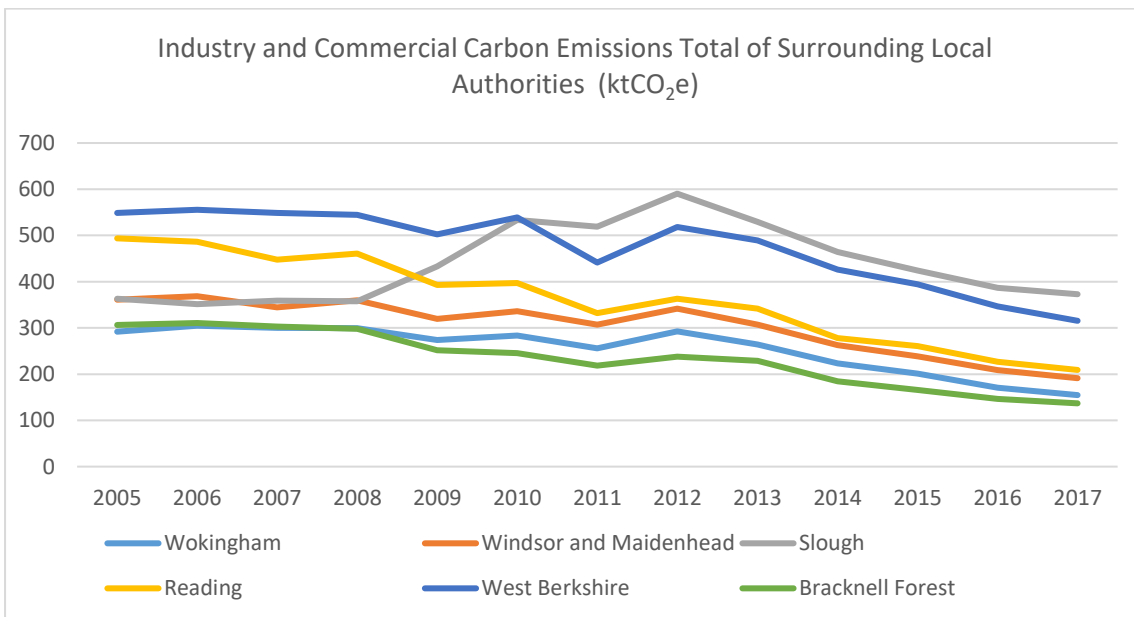


Figure 12 National Industry and Commercial Carbon Dioxide Emission Total (kt CO₂e)

In the surrounding areas, each local authority has seen a downward trend since 2012. This trend is starting to level out in the least emitting boroughs such as Bracknell Forest and Wokingham. Wokingham is the second lowest due to the nature of the industries that operate in the borough. Generally, these are office-based operations which mainly relies on electricity which can be supplied through renewables, rather than gas or any other form of energy which cannot.

Offsetting

Offsetting carbon is very important in order for the borough to grow in a sustainable way, as to reach net zero carbon the borough can only emit what it offsets. Presently, the borough offsets 15.2 ktCO₂e a year through forestry and land use. These levels have been steadily increasing over the data period with an average annual increase in carbon capture of 0.4 ktCO₂e. Wokingham sequesters a middling level in terms of surrounding local authorities. Although the carbon captured has increased over the data period, there is a large range through the region. Rural West Berkshire offsets 65.5 ktCO₂e while Slough and Reading as more built up areas only sequester 3 ktCO₂e through forestry and land use. Nationally, recent figures suggest that 11323.4 ktCO₂e is offset through this sector, this amount has been increasing in the 5 years up to 2017.

There is a large scope for improvement in this sector as Wokingham is a semi-rural borough with a lot of open space. Thousands of trees have already been and continue to be planted in Wokingham Borough. More tree planting is part of Wokingham Borough Council's future planning policies where a quota for offsetting construction with trees can be set. Conserving our current trees is very significant, as mature trees sequester a much higher amount of carbon than new trees which take years to reach the same level of maturity depending on the tree type.

Carbon Budgets

The Tyndall Centre from the University of Manchester¹⁴ have created a projection based on the borough's maximum carbon budget of 5.0 MtCO₂, to stay within Paris Agreement Requirements, until the end of the century. At current consumption rates, Wokingham Borough would use this budget in seven years. This allocated carbon budget is middling in terms of surrounding local authorities with West Berkshire having the highest budget of 8.2 MtCO₂ and Bracknell allocated the lowest at 3.0 MtCO₂. Minimum average annual reduction rates to keep within these budgets in the area are all between 12.3-13.7%. Across the whole South East Region this percentage in 13.3% and in Wokingham specifically it is just under this regional reduction rate at 13.1%. This again confirms that Wokingham Borough Council is on track with the rest of the region in terms of a carbon reduction pathway. However, the Tyndall Centre has created this reduction until the end of the century, therefore the council's projection to net zero emissions by 2030 is significant. This will allow the council to prioritise and map the Action Plan accordingly to meet the 2030 target.

¹⁴ <https://carbonbudget.manchester.ac.uk/reports/E06000041/>